THE PROTECTION OF INNOVATION AND THE MUSICAL INSTRUMENT INDUSTRY

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I would like to dedicate this work to my late mother Joan, who would have been very impressed by the weight of the volume, and by the quality of the binding.
ABSTRACT

The aim of this study was firstly to examine how musical instrument makers had historically used patents to protect their inventions, and to investigate whether there were any links between the development of the law of patents and musical instrument technology, and secondly to investigate the modern use of industrial property rights by the industry.

In Part One original research has uncovered a musical instrument patent dating from 1583 that previously was only briefly mentioned in a legal journal at the turn of the century and firstly, shown it to be a patent in the modern sense that compares with patents that have expired as recently as 1997; secondly, subjected it to rigorous legal and historical analysis that shows it to be one of the Tudor patents that laid the foundations of the modern patent system; and thirdly subjected it to rigorous technical, commercial and economic analysis, that demonstrates the extent to which the patent was worked, used and abused. Contemporary records and iconography, later technical, musical, legal and historical journals and works have been searched and critically analysed to support this hypothesis. This approach was continued in subjecting musical instrument patents up to 1839 to a similar process of critical analysis. Certain themes became apparent, and these were used to select patents from 1840 onwards as applications and grants became much more numerous.

In Part Two an empirical survey of the use of all relevant industrial property rights in the musical instrument industry was undertaken. This was then expanded upon by looking at the changes and proposed changes in modern law in this area, from a national viewpoint and in a
European context. Some modern leading cases concerning the musical instrument industry were discussed, and their effect critically analysed.

It is submitted that this study has contributed to the general understanding of what the historical relationship between the use of patents and technical development in the musical instrument industry has been. The study also shows how the modern musical instrument industry actually uses and potentially might use intellectual property more effectively, and includes a rigorous analysis of perceived advantages and disadvantages of patents, designs and utility models, with comparisons of U.K. and European law, both actual and proposed, of each. The importance attached to utility model protection for individual inventors and SMEs by the European Commission was noted.

This thesis has shown above all that the musical instrument industry is highly inventive, and that historically the development of musical instrument technology has been linked particularly with the changing law of patents. The most technically innovative and commercially aware inventors have used patents to protect their ideas, from the sixteenth century through to the present. There has also been a thread running through the research that reveals a determined if ill-advised intention to try and use the patent system to gain a monopoly over ideas that are not original, which shows up past and present shortcomings in the patent registration system. However, there is a significant reluctance to rely on the patent system for the protection of innovation by small and medium sized enterprises (SMEs) in the industry because of its expense, complexity and lack of certainty. The research concludes that the most potentially valuable system for small and medium-sized enterprises to use to protect their inventions is the proposed community utility model.
AIMS AND OBJECTIVES

The principle aim of this research thesis is to assess the development of intellectual property rights in an historical context, and then to analyse the use of those property rights by musical instrument manufacturers by means of case studies. The object is to subject the effects, if any, on the development of particular musical instruments resulting from the exploitation and abuse of those rights to close critical scrutiny, and to compare and contrast the application of different intellectual property rights to particular areas of creative effort in the musical instrument industry.

METHODOLOGY

Legal and technical journals were searched, chiefly by physically sifting through indices in the SRIS, De Montfort University and University of Leicester Libraries. Searches for musical instrument patent specifications up to 1910 were made from the Patent Rolls at PRO, and at SRIS in Southampton Buildings from the red Woodcroft abridgements 1617-1876 in Vault 38, the blue abridgements in the main reading room, and the Subject Matter Index 1617-1852 of Patents of Invention. A representative sample of full specifications was then taken from the Old GB Patent Vault. European Patent Office (EPO) abridgements from 1978-89 and
1990-94 were searched by CD-ROM using the Access database at SRIS. These were then followed up by hand search in the yellow ledgers at SRIS.

Law reports prior to 1949 were searched by hand, looking where available through subject indices, likely known names of litigants and Trade Mark Classification. The great majority come from the Patent Office Reports [RPC], though some of the older cases were found in Hayward's Patent Cases [HPC], Webster's Patent Cases [WPC] and Carmael's Patent Cases [CPC]. More recent cases were gathered by searching LEXIS and EPO Reports on-line. These cases were looked at to analyse the particular exploitation and possible abuse of intellectual property law by the litigants in a legal sense, for example the ambiguity of new legislation, but also from a commercial and technical viewpoint, for example the breakdown of a partnership or the effort to avoid using an alleged prior invention in a specification by employing some new technical process. The purposes of the analysis were to:

- identify relationships between the development of relevant industrial property law and musical instrument technology, if any.
- assess the utility and effectiveness of relevant industrial property rights in the musical instrument industry in an historical context.
- assess the impact on technological development of the application of industrial property law.
PART ONE

HISTORICAL USE OF PATENTS IN THE MUSICAL INSTRUMENT INDUSTRY

I

ORIGINS OF PATENTS IN THE COMMON LAW THAT PRECEDED THE STATUTE OF MONOPOLIES 1624

Outline of patent law 1336 to 1624 and the use of Patents to gain an individual monopoly.

Though it is generally assumed that the passing of the Statute of Monopolies in 1624\(^1\) is the effective foundation of the granting of letters patent by the Crown, E.Wyndham Hulme established\(^2\) that the practice of granting letters of protection and certain privileges to alien workmen in medieval times in order to entice them to bring over to the Kingdom their more advanced technologies and industries, had developed into the first recorded monopoly patents of invention granted by Queen Elizabeth I. By compiling a list of all such grants made prior to March 1st 1623 from the Patent Rolls and Calendars, he made it possible to trace the historical development of monopoly patent rights in industrial inventions from the first letter of protection issued to Johanne Kempe in 1331\(^3\) in favour of all foreign weavers, dyers and fullers by Edward III and to two Brabant weavers to settle at York in 1336\(^4\). The medieval

\[\text{References:}\]
1 21 Jac 1 c.23
2 The History of the Patent System under the Prerogative and at Common Law, E Wyndham Hulme (1896) LQR XLVI 141 et seq. and The History of the Patent System under the Prerogative and at Common Law - A Sequel (1900) LQR LXI 44 et seq.
3 Hulme [ibid.] (1896) 142
4 10 Ed 111, Dec. 12 [see Hulme ibid. (1896) LQR at 143]
policy was one of encouragement of industry by means of open letters bearing the King's Great Seal on the bottom which granted rights, usually to foreign nationals to practice their trade in the Kingdom, and thereby to establish new methods of industry and commerce.

These Litterae Patentes or "open letters" became known as letters patent and were confirmed by statute in 1337, by which foreign cloth workers were given protection to come safely and surely within the King's protection. They were distinguishable from letters close in the sense that they were addressed "to all to whom these presents shall come", and were therefore sealed in such a way as to enable them to be read without breaking the seals, whereas letters close were addressed to individual persons and could not be read without breaking the seal.

Letters patent had been used since the earliest times in order to bestow various privileges on individual persons by the monarch, however this part of the work is solely confined to the granting of letters patent of invention. Crown protection was extended to the introducer of a newly invented process for the first time in 1440 to John of Shiedame for the introduction of a new method of manufacturing salt.

This system however changed with the accession of the Tudor dynasty, which saw the Crown entering into secret negotiations in order to bring in skilled foreign workers to the Realm. The elimination of competition became a natural progression in the development and transformation of early letters of protection into the granting of monopoly rights for alien immigrant workmen. There were no longer open letters patent, and there are therefore no

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6 10 Ed I cap. 5
7 A.A. Gomme, Patents of Invention 1946, Longmans London
8 18 Henry VI [ibid. at 143]
9 See generally Fox, II G: Monopolies and Patents, University of Toronto 1947, Ch 9
grants recorded to, for example, the German armourers and Italian shipwrights who were attracted into the service of the Crown during this period. The rise of a capitalist middle class and of the Joint Stock Companies during the reign of Henry VIII again led to changes and in 1555 Italian merchants who manufactured various cloths were rewarded for their success in competing with foreign rivals with the grant of a charter giving them a practical monopoly of the industry. Hulme makes the point that the early Tudor practice should be regarded as a perversion of the mediaeval policy of the encouragement of industry, which divested it of all constitutional value.

Benefit for the common wealthe.

However a perusal of the Elizabethan Patent Rolls exhibits a reconstruction of the mediaeval system, and it was in the reign of Elizabeth I that the principles of the modern patent system were first clearly identifiable. Hulme demonstrates that the effect of the Statute of Monopolies was to confirm, albeit in a condensed and imperfect way, the practise of the Crown during the reign of Queen Elizabeth I. That is to say, that the applicant would introduce "at his own cost a new manufacture, the knowledge of which he has attained either by the procurement of foreign workmen, by travel or by experimental research." They therefore form the basis of a contract between the state and the grantee, based upon the value of the new industry to the realm, or for the common wealthe.

Monopoly Clause

10 1&2 Phil & Mary c.14 [ibid. at 144]
11[bid] (1896) at 144
12 [bid] 1900 at 44
13 21 Jac 1 c.3
There is a distinction between the later Tudor grants and those of their medieval predecessors, which is the addition of a monopoly clause in the Tudor grants. The open letters of protection granted by Edward III had been replaced, initially by secret grants and then by the monopoly grants and licences of Elizabeth I and the Stuarts. Fox argues that this was no more than a natural progression once the value of protecting foreign workmen was perceived. More important trades could be introduced by protecting those workers from competition. It was then no more than a logical extension of that policy to accord the same encouragement to domestic workmen, who would be induced to establish new manufactures, whether by original invention or by importing ideas and technology from abroad. These documents, written either in English or Latin on vellum membranes which were sewn together into a roll of about forty, were known as letters patent, meaning that they were "open" to public scrutiny, which phrase was retained in the U.K. until 1977. This then is the fertile ground upon which grew the monopoly patent of invention out of the early grant of letters of protection and privilege, though the process was to be by slow and uncertain degrees.

It is generally accepted that the patent system of granting monopoly patents to inventors was established in England as a system in 1561, the first grant being for a license for ten years to Stephen Groyett and Anthony Le Leuryer to make white sope. This may or may not have been due to the suggestion made to the Crown by James Acontius in 1559 that a monopoly was the most effective method for rewarding an inventor, who was in fact granted a license...
for the manufacture of grinding machines in 1565.  

**Distinction between the patent monopoly and other types of Tudor monopoly.**

Merchant Guilds.

It is useful to distinguish here the early development of patents as a form of monopoly from other medieval monopolies with which it may be confused, particularly in light of the importance which will be attached to the Langdale patent of 1583. In the middle ages there were essentially three types of monopoly which granted exclusive privileges under the feudal system of government, based on the power of the Crown to grant rights to a particular town or body of persons. The Merchant Guilds of the eleventh century were obtained by charter and gave a monopoly of trade and manufacture to a group of persons, usually within a town. These were never granted to individuals, and gave rights of exclusive sale, regulation and supervision of the trade. Within the Merchant Guild there would have been free competition, but membership of freedom of the Guild was only open to an individual if men of the same mystery were ready to undertake for him. Guilds were subject to the right of market or fair, which were granted by Royal Charter or acquired by custom.

**The Hanseatic League**

The Hanseatic League grew out of the turbulence of the feudal period during the late twelfth and early thirteenth centuries to become the most powerful of commercial institutions.

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18 Hulme [ibid.] 148
Emanating from the Baltic Sea, there were sixty-four cities at the end of the fourteenth century, of which London was the English depot or stilliard. The system was based on the holding of regular markets with fixed prices. England's foreign commerce was largely controlled by the League up to the end of the reign of Edward III by the merchants of the Staple, which was the local constituent of the Hansa, particularly the wool trade. It is noteworthy that the Staple was transferred from Brugges to London in 1353, and also that the privileges granted to the Staple were withdrawn in favour of the Merchant Adventurers by Elizabeth I. The Queen's preference for companies created by Royal Charter as the recipients of monopolistic privileges led to the eventual displacement of the Hanseatic League.

Craft Guilds

The growth of the cloth trade during the twelfth century led to the merchant guilds gradually giving way to craft guilds which comprised all the artisans engaged in a single branch of industry in a particular town. They had very much the same directive, regulative and restrictive powers as the merchant guilds, and were secured by payment to the King up to the reign of Edward III, who confirmed their rights by granting charters under royal prerogative in return for a fixed sum. The effect of this was that the craft guilds regulated their own affairs of internal government, and of the maintenance of quality and quantity. In this sense they constituted a trade or industrial monopoly. Prices were also maintained. It should be noted that during this period merchant and craft guilds existed side by side, and that the transfer of regulatory authority from the larger merchant guilds to the smaller craft guilds was a gradual process. The main distinction between the two was then that the craft guilds suppressed competition from non-members locally, based in a town. Craft guilds were
subjected to the submission of their regulations and ordinances before justices of the peace by Henry VI, and thereby became an element in the national regulation of trade. In doing so they became more diversified, and gradually lost their jurisdiction and power. The confiscatory legislation of Edward VI against guild property led to their demise.

It is important to note that all these monopolies - the merchant and craft guilds, and the Hanseatic League - were group monopolies, and were never granted to individuals. They never amounted to private monopolies. They were also directed towards commerce rather than manufacturing industry. Acontius' Patent of 1565 was the first grant of a monopoly privilege by royal prerogative to a private individual "introducer" of a new product or process. The development of Tudor letters patent has been shown above, and it was noted that the introducer of the invention, which was usually from without the kingdom, received a grant for a specified length of time, usually with conditions attached, for example the teaching of mere Englishmen or the achievement of a better quality of product. It is characteristic of letters patent that the Crown lost control of the invention, which passed to the patentee, who it should be emphasised was a private individual, and was not answerable to any other regulatory authority. Gaining authority from the royal prerogative, the patent was not justiciable before the courts of common law until the proclamation of 1601, which was not enshrined in statute until 1624. Typical also is the derogation of trading privileges already granted to other monopolies, e.g. to the craft guilds. If this had not been so, then any new form of manufacture would have been strangled at birth, since the inventor would have been almost certain to have found himself in conflict with the local guild, probably the craft guild.

19 Statute 15 c. 6
20 Statute of Monopolies 1623 Jac 1 c.3 s 1V.
The early letters patent of Edward III were then in some ways analogous to, but clearly distinct from, the other forms of commercial monopoly at that time. These were granted for example to John Kempe of Flanders in 1331, and his servants, apprentices and other members of the weavers mysteries, and fullers and dyers. This was an example of a policy of protection to the textile industry as a whole, and in that sense was not a patent, which to conform with the definition being developed here, must be granted to an individual. The Elizabethan patent was, for the reasons stated above, a newly enhance vehicle for the promotion of industrial development within the Realm.

Elizabethan Patent Rolls

Looking through the list of Elizabethan Patent Rolls compiled by Hulme[^21] from entries on the Calendars, they are broadly based upon the contractual consideration that new industry of value to the realm would contribute to the common wealthe. They were granted for periods of between six and thirty years. During the period 1561-1603 there were a total of 55 letters patent granted [see fig. 1]. It is interesting to note that as the reign progresses, the number of alien grants falls and the number of native grants rises.

<table>
<thead>
<tr>
<th>Period</th>
<th>Alien Grants</th>
<th>Native Grants</th>
<th>Grants for regulating trade</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1561-70</td>
<td>15</td>
<td>8</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>1571-80</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>1581-90</td>
<td>2</td>
<td>11</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>1591-1600</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>1601-03</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

[^21]: [ibid.] LQR (1896) & (1900)
It is not relevant to this research to list all the inventions, discoveries or acquisitions to which the letters patent relate, but reading them through reveals that in the main they relate to inventions (using the word in its broad Tudor meaning which includes "bringing in") of utility during the early part of the reign, but that there is a tendency towards the end of the reign for grants of letters patent in respect of monopoly rights which contributed nothing either new or industrial to the common wealth, and which were therefore abuses of what had become a state monopoly system.

It will be observed that unfortunately the granting of letters patent to inventors\textsuperscript{22} of industrial processes which were for the sake of the public good at the commencement of the reign did not continue to its end. For example, early grants are for the manufacture of "white sope"\textsuperscript{23}, a dredging machine for harbours\textsuperscript{24}, and of course to James Acontius for the manufacture of machines for grinding\textsuperscript{25}. In the 1570s there were grants for an engine for land drainage\textsuperscript{26}, mills for grinding corn\textsuperscript{27} and a grant made for the transmutation of iron into copper, apparently by laying iron rods in the copper bearing waters of Angelsea, and of lead and antimony into quicksilver\textsuperscript{28}.

There were twenty-three grants during the period 1561 - 1570. Langdale's grant of 1583

\textsuperscript{22} "inventor" using its Tudor meaning, which included the bringer-in or importer of another's idea from abroad into the realm.
\textsuperscript{23} P.R.No. I of 1561
\textsuperscript{24} P.R.No. III of 1562
\textsuperscript{25} P.R.No. XVII OF 1565
\textsuperscript{26} July 15th 1571 to Sir Thomas Goldinge
\textsuperscript{27} June 13th 1573 to John Payne
\textsuperscript{28} February 14th 1575 to the Earl of Leicester and others
came at a time of transition. For example, Peter Morris's engines for water-raising\textsuperscript{29} was of undeniable value to the realm. However, the infamous grant to Richard Drake to make vinegar in 1594 is typical of the abuse of grants of letters patent towards the end of the reign to court favourites which led to a build up of political pressure on the Queen to discontinue them altogether, which a glance at the table in fig. 1 demonstrates. The special licence of Aug. 11th 1598 to Edward Darcye for the sole importation and making of playing cards led to considerable pressure being brought to bear against the granting of letters patent altogether, and subsequent litigation in the case of Darcye v Allin\textsuperscript{30}, Coke's celebrated "Case of Monopolies".

There were no grants from 1601 to 1603, and only four for actual "inventions" during the period 1561 - 1600. The end of the reign in 1603 coincided with the expiry of Langdale's patent, which was not subsequently renewed. This is not the proper place for a full discussion of the relationship between the Tudor Parliament and the sovereign, however it will suffice to say that Elizabeth I paid attention when Mr. Laurence Hide brought in a declaratory bill in 1601 entitled "An Act for the explanation of the common law in certain cases of letters patent", designed to restore common law freedoms of trade. In this the Queen's last Parliament she issued a proclamation against the principal monopolies complained of, surrendering the power to grant general monopolies under the Royal Prerogative to the common law, which was undoubtedly hostile to monopolies in general but which until this proclamation had been prevented from determining the validity of these grants. Until 1601, monopoly holders could appeal to the Star Chamber whose duty it was to uphold the Royal

\addcontentsline{toc}{section}{References}

\textsuperscript{29} P.R.No. XXXV of 1578
\textsuperscript{30}(1602) 1 WPC I
Prerogative, but against whose judgement those who were injured had no redress\textsuperscript{11}.

\textbf{Origins of the Statute of Monopolies in the Common Law that preceded it.}

\textit{Darcye v Allin}\textsuperscript{2} (1602) presented the first opportunity for the Court of Queen's Bench to rule on the validity of a monopoly granted under the late Queen's Royal Prerogative, since judgement was delivered after her death by Popham CJ in 1603. The case did not concern patents as such, since there was no element of invention in the exclusive right to make, sell and import playing cards. However, the jurisdiction of the common law courts was declared to include monopolies by King James I in his Book of Bounty published in 1610, which confirmed the King's proclamation against monopolies of 1603. The main principles of the Book of Bounty were incorporated into the Statute of Monopolies 1624. These were essentially that all monopolies, letters patents, licences and so on other than those for "the sole working or making of any new manner of new manufactures within this realm to the true and first inventor"\textsuperscript{33} were void, and that the force and validity of them was to be determined according to the common law and not otherwise\textsuperscript{34}. The complex constitutional and political history of the struggle between James I and his Parliament is not properly within the four corners of this work, however a thumbnail sketch is provided below in the section of this work dealing with the development of the law of patents after 1601. It will suffice to say that as Fox\textsuperscript{35} has pointed out, "the only legislative measure of importance gained by the Commons during a struggle of more than twenty years" was the Statute of Monopolies. It

\textsuperscript{11} Klaus Boehm, The British Patent System - 1. Administration, Cambridge, CUP 1967, Ch 2 generally
\textsuperscript{2} WPC 1
\textsuperscript{33} 21 Jac.1 c.3 s.6
\textsuperscript{34} ibid. s.2
\textsuperscript{35} ibid. at 116
should perhaps be emphasised that the grant of a privilege under the royal prerogative did not confer upon the grantee a property right, since the common law did not oblige the Crown to issue letters patent as a matter of right.

The purpose of introducing this thumbnail sketch of the development of late Tudor and early Stuart patent law is to place clearly and precisely within its historical and legal context the patent dealt with in the next chapter. As Hulme has commented, and this discussion has established, the effect of the Statute was essentially to confirm the practice of the Crown during the reign of Queen Elizabeth I. The wording of the Statute remained virtually unaltered until the Patents Act of 1949, and further, the concepts of novelty and invention essentially retained their Tudor meaning until the eradication of the temporal and geographical limitations in the Patents Act of 1977 which incorporated the European Patent Convention definition of the "state of the art". However, "existing" patents under the 1949 Act still enjoyed the protection of its limitations, and therefore there were still until recently patents in force which by and large, with the addition of a description of the invention, reflect the same concept as those to be seen in the patent of 1583 to be analysed in the next chapter.

36 ibid, LQR (1900)
37 s.2(2) & (3)
THE MERITS, DE-MERITS AND NECESSITY OF A PATENTS SYSTEM FOR THE DEVELOPMENT OF INDUSTRY GENERALLY AND THE MUSICAL INSTRUMENT INDUSTRY IN PARTICULAR UP TO 1852.

This thesis presents the only qualified analysis of the use of patents to protect innovation in the musical industry as a whole, though extensive reference has been made to detailed research by Harding on the use of patents specifically in the piano industry, and to Boehm, Fox, Meinhardt and others to the merits and de-merits of patenting generally. Much has been said by the present writer about the ebb and flow of pressure for abolition and promotion of the patent system, both politically and legally. However, it is useful to compare some research carried out from a different viewpoint by others concerned on the one hand with the generality of patenting and invention during the English Industrial Revolution, and on the other, with the effect on the diffusion of inventions of the use of patenting as a form of protection as opposed to reliance on secrecy. There has been some debate in the Journal of Economic History which posits some interesting and apparently controversial theses. The viewpoint followed in this thesis has been to look at the role of patents in protecting innovation within the musical instrument industry, and then to look at the effect that has had on the industry. The patent rolls were not searched primarily for evidence of innovation and diffusion of invention in the industry. Inventions that were not patented have not been specifically looked for except for the purpose of putting the patented inventions into some sort of context. Research carried out by Christine MacLeod, Gillian Cookson and Richard Sullivan has started from the other way around, that is to say whether evidence of innovation and diffusion of invention in a particular industry may be extrapolated from the patents rolls and elsewhere. In that sense their research into the patent rolls is merely a search for evidence...
of invention rather than to investigate the use of patents within a particular industry as an end in itself.

It will be shown below, particularly in for example the piano industry at the end of the eighteenth and into the early nineteenth centuries, that the patent system was pivotal in developing new technology because of the opportunities it afforded inventors such as Erard to reap commercial reward from their monopolies. This thesis does not seek to study the diffusion of innovation and invention in the musical instrument industry as an end in itself. Bearing in mind this important distinction, the work of Macleod and others may however be usefully examined in order to see whether it throws any light on the use of patents in other industries of the time.

Christine MacLeod has researched the history of diffusion of innovation and invention in the mechanical engineering industry, relying largely on the patent rolls as a source material. That reliance has itself been criticised by Gillian Cookson, and defended in turn by MacCleod. MacLeod identified the mechanical engineering industry as constituting "the major part of a burgeoning new sector, specialising in the production of capital goods, with a vested interest in their adoption, their standardisation and, arguable, in their rapid obsolescence." She draws a strong distinction between "user-inventors" and "maker-inventors", arguing that the former would tend to restrict diffusion while the latter would tend to promote it. Using her terminology, Erard the piano patentee in this thesis would for example be a user-inventor, whilst William Barton with his patent for the use of metal to make harpsichord quills would be classed as a maker-inventor. This is a distinction which

40 The peculiarities of Yorkshire inventors, EIRR XLVII, 4(1994) 754-759
41 see chapter 4 of this work.
the present writer has not chosen to make for the purposes of this thesis, since he is not looking primarily at the diffusion of innovation in the musical instrument industry, rather at the use of intellectual property as a means of protecting innovation in the industry. As Cookson rightly points out\(^\text{42}\) "... patent figures reveal more about the propensity to patent than they do about rates of innovation". This is precisely the premise upon which part one of this thesis is predicated.

In her investigation of the mechanical engineering industry MacLeod stresses the role of secrecy in inhibiting technological diffusion, noting the unpredictability, expense (before 1852) and insecurity of the patent system, in effect forcing the inventor to choose between secrecy and patenting as mutually exclusive choices. While the effect of secrecy on the diffusion of innovation in the musical instrument industry is not germane to this thesis, the labyrinthine complexities of the unreformed patent system are dealt with in detail later in this work\(^\text{43}\), with particular reference to musical instrument innovators and inventors. The general absence of violin making claims prior to the reforms of 1852 and the lack of technological progress in that sector of the industry would seem to lend support to the theory that, like MacLeod's silk crepe makers, whose art was shrouded in mystery, they opted for secrecy and monopoly over dissemination, though this is not a theme that will be developed in this work. The difficulties facing the successful patentee did not however end with the grant of the patent. Complex and difficult infringement proceedings. As MacLeod points out, "... until the 1830s judges and juries appear to have shared a prejudice that patentees were parasitic monopolists be to be unsuited at every opportunity."\(^\text{44}\) However, unlike MacLeod, who does

\(^{42}\) *ibid.* at 751  
\(^{43}\) see chapter three post.  
\(^{44}\) MacLeod *ibid.* at 288.
have a tendency criticised elsewhere to generalise, this thesis will make particular reference
to and detailed analysis of this issue in an important case concerning the jury trial of
infringement of a patent for an English flute before Lord Ellenborough.

MacLeod note a pattern in the mechanical engineering industry of and independent inventor
or user making an initial breakthrough which proving disappointing in initial use, is then
improved over a period of time. In this thesis one particular instance of this pattern will be
looked at in great detail, again not to provide evidence of diffusion of innovation in the
industry, but rather to analyse the use of patents to protect the invention, and of the monopoly
right that a patent conferred on the grantee to turn his invention to account. MacLeod
observes the monopoly that Fisher was able to obtain over the production of fashionably
spotted lace, and this thesis will analyse the monopoly that Erard, for example, was able to
obtain over the grand piano forte action.

Cookson criticises MacLeod for basing her conclusions about inventors or inventions upon
patent records, but this is not a criticism that could be levelled at this thesis, since the
conclusions that will be made will be of the use of intellectual property rights as a means of
protecting inventions. While Cookson notes for example that there were fewer than eight
textile patents per year between 1760 and 1820, the fact that there were only two per year in
respect of musical instruments is taken by the present writer at face value to indicate the
level of patenting.

45 see Cookson, ibid.
46 Bainbridge v Wigley (1810) 1 CPC 270 see chapter IV post.
47 see chapter 4 generally, and the Privy Council decision of 1835 in particular.
48 ibid.
49 see Appendix B
Sullivan\textsuperscript{50} interprets institutional and cost changes in patents through time as a meaningful indicator of change in patentable invention, rather than in the propensity to patent. It is one of the aims of this thesis to demonstrate that in the musical instrument industry, that is not the case, and that the reforms of 1852 increased the propensity to patent in that industry. The increasing frequency of violin patents for example after that date is evidence of a heavy reliance on patents rather than secrecy to protect innovation. Whilst Sullivan agrees with MacLeod\textsuperscript{51} that the increase in patents and "... increase in willingness to invest in the time and expense of invention.", it will be argued in this thesis that the increase in patenting in the musical instrument industry was prima facie evidence of an increase in the desirability of using the reformed patent system as a means of protecting invention and innovation.

\textsuperscript{50} Richard J Sullivan, The Revolution of Ideas: Widespread patenting and Invention During the English Industrial Revolution, JEH L(1990) 349-392
\textsuperscript{51} Christine MacLeod, Inventing the Industrial Revolution,.: the English Patent System, Cambridge 1988
II

THE GEORGE LANGDALE PATENT OF 1583.

Grant to George Langdale for the making of sackbutts and trumpets, patent roll ref. 
c66/1231 m.22 10th april 1583.

It is in Hulme's list¹ that a brief reference to the only letter patent granted to a musical 
instrument manufacturer during the sixteenth century must be examined. This document 
appears to be the first evidence of the protection of an invention of a new musical instrument 
by the grant of a monopoly patent, and is also the first incidence of protection of a musical 
itstrument by any form of intellectual property right. A search of the Index of Patent Rolls in 
the Round Room of the Public Records Office indicated that it had survived the passage of 
time, and such is the durability of goatskin vellum that the document remains in virtually "as 
new" condition. A bromide photocopy of the original membrane is attached as Appendix A. 
A "translation" from the Elizabethan script reveals a great deal about patent requirements at 
this embryonic stage in their development, as well as giving valuable insight into the state of 
brass instrument technology and commercial exploitation of the inventions at that time. It 
therefore provides an invaluable original source by reference to which the actual use of the 
Elizabethan patent monopoly right in an important contemporary sector of the musical 
itstrument industry may be assessed, and by reference to other sources of contemporary data 
the effects of the use and exploitation of the patent may also be assessed.

The text reads as follows, as far as possible relying on the original spelling, but with the 

¹ ibid.
addition of abbreviations which have been written out in full in square brackets:

"Elizabeth by the grace of god &C To all maiors sherriffs bailiffs and constables and to all other
our officers ministers and subjects to whom theses presents shall come greetinge Whereas our well beloved
subject George Langdale one of our trumpetters to his greate ??pains?? and charges hither byn the
firste deviser and maker within this our Realme of England of sackbutts and trumpetts not heretofore
made We as well in consideracon thereof as for som other good causes especially movinge of our
great especiall certen knowledge and meere motion have gyven and graunted and by thes p'sents
for us our heires and successors do give and graunte to the said George Langdale free license and
priviledge for the making of sackbuttes and trumpets so that he only by himselfe or by his xx
deputie or deputies shall and may from henceforth the duringe the space and tearme of twenty
years after the day of the date of these our l[ett]res patent make or cause to be made the said
sackbutts and trumpetts Wherefor by thes p'sent for us our heires and successors We doe straightleye
phibite charge and command all and singuler our subject and others whatsoever that they nor any
of them at any time or times duringe the said time and tearme afore named shall in no wise xx
make or cause to be made any sackbutts trumpett or other instrument which he the said George
Langdale now maketh or hereafter shall devise and make of his own invention or the sev'all
prices of any of them nor buy sell utter or bring over or cause to be bought brought over uttered xx
or solde to any pson or psons either sackbutt or trumpet or the sev'all peices of any of them x
but such as shal be made and devised by the said George Langdale or his deputie
or deputies upon paine of forty shillings for every trumpet and for every sackbutt fower pound
and for every severall peice of the said instruments twenty shillings so made uttered solde or
brought over by any pson or psons and the said instruments to be forfeited to our use What
so ever so made sold bought or brought over contrary to the tenor and true meaninge of
these p'sents and also that none within our city of London nor within seven myles compass

19
of the same shall mende either sackbutt or trumpet except Peter Grinn who heretofore xx

only mended trumpetts upon paine of tenne shillings for every one so mended and repaired

and because it may the better appere that our servant George Langdale hath no meaninge

hereby to raise the prices of these instruments before mentioned he is content to sett them

more reasonably then heretofore they have byn sold That is to say the best trumpett not

above forty shillings the single sackbutt fyve pounds beinge not garnished with silver

Wherefore by these p'sents for us our heires and successors We do will and command all mann[er]

our officers ministers and subjects but specially the masters and wardens of the xx

mystery of gold smythe as they tenderour favoure or will advise our displeasure that they

do not only p[er]mitte the said George Langdale or his deputie or deputies quietly to enjoye

the whole benefit of this our license but also that they and any of them if need shall x

require do aid and assiste him and his in the full emoyenge due exercising and execucion

of this our p'sent license and priviledge with effect according to the truexxx

meaninge of the same and sin ther that any pson or psons makeinge utteringe or sellinge

any if those instruments or peices thereof shall be comitted to warde 38??until?? he or they be bound

or put in sufficient sureties not to deale with thos instruments hereafter and also that it

shall be lawfull for our servante George Langdale or his assignes by virtue herof to x

make searche in any place where he or they shall understand any of those instruments to be x

made sould or brought over or any parte or parcell of them contrary to the effect of thes our letters

patent without lette or contradiction and to seise the said instruments to our use and ??behoyfe?? that

express invention &C in witnes whereof &C witness ourself at Westm[ister] the tenth day of Aprill

P bre de priuerto sigillo &C x

The patent is a grant to Geo Langdale, a private individual, to make sackbutts and trumpets
for 20 years, which extended to London and a seven mile radius. The Patentee is described as "one of our trumpeters", and the grant covers all future improvements, regulates prices, and reserves the right of one Peter Grinn "who has heretofore mended trumpets". It will be observed from the table in fig. 1 that this was one of only 14 letters patent granted during the period 1581 to 1590, and that a grant to a mere native of England was part of a trend throughout the reign away from grants to aliens. There was also a gradual decline in the overall number of letters patent granted during the reign, which was only 55.

This patent appears therefore to be an illustration of Fox's argument that the use of letters patent for the encouragement of domestic workers was a logical extension of the protection accorded to alien immigrants. Fox identifies in the grants of Elizabeth I a recognition that by similar means which had been used to encourage the establishment of new industries in the period 1561-70, "old and established trades which were in a backward and languishing condition might be stimulated to further endeavour and ultimate success". He argues that on this basis the Elizabethan monopoly system stands fully justified, "whatever may have been the result in operation and later abuse".

THE PATENT OF 1583 IN ITS HISTORICAL AND LEGAL CONTEXT.

Gomme said that "Patents of invention existed for many years before 1602 and have a continuous story to the present day...". It is one of the objectives of this part of the thesis to establish that the Langdale letter patent should be recognised for what it is - a very early
Substance

Elizabethan monopoly patents granted during the reign of Queen Elizabeth I have been divided into four separate categories. The first was for original discoveries and the introduction of technical processes from abroad. The second was for the granting of licenses which relaxed the rigidity of the law, e.g. those permitting the export of unfinished cloth. The third bestowed powers of supervision over an industry or trade, e.g. to Sir Walter Raleigh for keeping taverns and retailing wine. The fourth handed a settled trade over to one or more persons for the sake of personal gain. These categories are not mutually exclusive. The third and fourth were abuses of the system that led to the Queen's Proclamation of 1601, and ultimately to the Statute of Monopolies of 1624.

However, Prof. Davies has identified a fifth category, which show an element of inventiveness as a consideration for the grant of monopoly rights, but which also allow a monopoly of importation and of the entire conduct of a newly established trade from another part of the world. Prof. Davies cites as examples Otiata Cavalcaunt's patent for the importation of dyestuffs "not ... brought heretofore into this our Realme" and Nonnes's Patent for importing unwrought wool from the "Kingedome of Spayne". George Langdale's Patent would appear to fall into the first and fifth categories, in the sense that it has apparently been granted for an original invention in the sense that the patentee is the

8 [bid] LQR [1932] 398
9 Patent Roll 3 Eliz m. 13
10 Patent Roll 15 Eliz. m.5
"firste deviser and maker" of sackbutts and trumpets in the realm, where they have not been heretofore made, and also provides for him to be the sole person entitled to bringe over the said instruments. This suggests that they are being made abroad at the time, and that this is known to the patentee, who is the first person to establish trade in these instruments from abroad. It is important to note the reference here in the letter patent to the concept of novelty, which was in essence similar to that with which a modern reader would be familiar. The apparent contradiction in terms - first deviser and maker and bringer in - is simply explained by the geographical limitation placed on the monopoly grant, which of course as has been pointed out remained until the Act of 1977. Davies refers to "abundant evidence from the earliest days of the patent system"¹¹ that the Crown, though not instigating any regular procedure, took steps to investigate the novelty of inventions for which grants were sought. However, the enquiries of, for example, William Cecil, Lord Burghley were generally to discover the merits of new inventions, and that the aspect of novelty was seen as being merely part of the enquiry, rather than as an end in itself.

Monopoly over the right to repair trumpets and sackbutts.

The monopoly right also extends to repairing these instruments, notwithstanding the right of one Peter Grinn to continue repairing them. This part of the patent appears to grant a monopoly right over a settled trade, and would appear to fall within Davies' category four (referred to above). Mention should also be made here of a petition in the state papers domestic in the Public Records Office ¹² dating from April 1584 of one Simon Brewer to Sir Francis Walsingham "That he may be permitted to exercise his trade of making trumpets and

¹¹bid at 106
¹²Vol. CLXXV entry number 109, available on microfiche in the Rolls Chapel Eliz SP 12
sackbutts, not withstanding the privilege granted to Geo. Langdale: having no other trade to maintain himself, his wife, and nine poor children." The importance of this document will be assessed later in this chapter.

The patent also regulates prices for both new instruments and for repairing old ones, and though Langdale "hath no meaninge hereby to raise the prices of those instruments", it is clear that the sum of ten shillings for a trumpet repair, forty shillings for a new trumpet and four pounds for a new sackbutt "not garnished with silver" was a great deal of money in 1583! Nef notes that between 1540 and 1640 the average wage earned by an unskilled workman "seldom rose above £5 or £6 and almost never reached £10". The price of a plain brass sackbutt was therefore approximately three-quarters of the annual wage of an unskilled worker. This part of the research will go on to examine the state of development of the sackbutt and trumpet in Europe in order to attempt to establish how Langdale worked the patent, and what effect, if any, it had on the trade.

Disclosure

The letter patent does not disclose the nature of the invention as such, merely referring to the trumpett and the sackbutt, there being one reference in the section of the grant dealing with pricing to a "single" sackbutt. The development of the requirement for filing of a specification will be dealt with in much more detail later in this work, however it is necessary to briefly allude to it in this section of the work in order to demonstrate how the consideration which formed an essential part of the contract between the patentee and the Crown during the

reign of Elizabeth I was secured for patents. This element of the patent procedure and rationale of the period provides an essential link between Langdale's patent of 1583 and the modern patent, and therefore needs to be critically analysed.

Prof. Seabome Davies carried out extensive and detailed research on Elizabethan and Early Stuart patents in 1934, basically concluding that the introduction of the "specification clause" in 1711 constituted the first undertaking to submit a description, required by a condition in the grant of the patent. John Nasmith petitioned the Crown in June of that year "for the Preparing and Fermenting of Wash from Sugar, Molasses, and all sorts of Grain to be distilled". The description was enrolled in Chancery early in April 1712, describing the use of "yest...gott from the fermented wash itself" rather than "from the brewers of ale or beer". This became customary in about 1734, there being only eight such requirements between 1712 and 1718, and only fifteen between 1720 and 1733, though there was at that time no settled notion as to what exactly the specification should include.

There was a statute of Henry IV dating from 1399 that required the petitioner to "make express Mention in their Petitions of the Value of the Thing so to be demanded", which had to a degree been softened by a statute of 1400 which allowed for the Crown to "do Grace and Pardon to those ... of as much as they have mistaken themselves in their suit...". These statutes had not been repealed in the reign of Elizabeth I, however it was common to put in a non obstantibus clause at the end of patents, and in effect this clause became a mere formality, the practice developing of excusing patentees from omitting or making mistakes as to descriptions of their inventions. Prof. Davies relies on research carried out by Crump to

14 The Early History of the Patent Specification (1934) CXCVII LQR 86 et seq.
15 1 Henry 4, Ch 6
16 1 Henry 4, Ch 2
reach this conclusion". Hulme had attempted to trace the development of the specification back to early Tudor times by arguing that Simon Sturtevant's "Treatise of Metallica" anticipated the modern specification, but Davies demonstrates conclusively that the treatise did not reveal the exact nature of the invention, and that was not its real object. It was intended in Davies' opinion to "set forth the many wonderful feats which he promised to accomplish" and was more of a prospectus for his application of coal for the smelting of iron than a description of an invention. Honicke was required in 1561 to provide a document entitled "The true and perfect arte of the making of saltpeter to grow in Cellars, Barnes or in Lyme or Stone quarrees", but this was apparently far from being a complete technical description.

Consequently, it would appear that Langdale's patent is far from unique in lacking a description, and the lack of a non obstantibus clause is not all that unusual. Walterscheid has recently had another look at the articles by Hulme, Davies and so on, and points out that "the need for an adequate specification in return for the patent grant is so ingrained in modern patent law that it appears startling that it was almost never a consideration in the early English patent custom. No explanation for this lack has been found in the state papers of Elizabeth I ...

As both Hulme and Davies have pointed out, it would have been impracticable to have insisted on a detailed description of the patents relating to what we would now recognise as new products, since this would have firstly created a new precedent which would not have been justified by authority, and secondly would have materially detracted from the

17 Essays in History Presented to R Lane Poole, ed. by H W C Davies (Oxford) 1927
18 [ibid.] 267
19 see Davies [ibid.] 264
concession offered by the Crown. Walterscheid cites the historian Gomme\textsuperscript{21} who said that since technical literature was in its infancy at this time, a demand for technical descriptions of products and processes would have been difficult to perform. Waltersheid\textsuperscript{22} concludes that "the rationale for not requiring a specification in any modern context under the early English patent custom arose more out of a concern of both the Crown and the patentees to avoid being embroiled in legal arguments than anything else." Seabome Davies\textsuperscript{23} observed that some petitioners chose to submit "discourses" concerning their inventions, several of which are to be found in the Elizabethan patent rolls. Davies cites Hulme\textsuperscript{24} as unjustifiably describing a statement made by Gerard Honricke in 1561 contained in the State Papers Domestic that he would submit within a specified time full directions in writing what soils, grounds and so on were required for "the arte of making salte peter". There is apparently a document which is a copy of this description, but according to Davies "it is far from being in the nature of a complete technical description of the process of manufacturing saltpetre such as one would expect to find in a modern specification". Davies also points out that Honricke never received sole privileges of manufacturing saltpetre, and in that sense the description, such as it is, could not be said to attach to a monopoly grant of the type that form the body of Tudor letters patent. It is true that the rights under the agreement that Honicke had with the Crown were subsequently transferred to two London tradesmen, but they were not required to submit a description at that time.

Gomme\textsuperscript{25} neatly sums up the historical and logical argument for the lack of a detailed description in the early Tudor patents when he points out that competition between rival

\begin{itemize}
  \item \textsuperscript{21} Gomme AA, \textit{ibid.}
  \item \textsuperscript{22} \textit{ibid.} at 862
  \item \textsuperscript{23} \textit{ibid.} at 264
  \item \textsuperscript{24} Selected essays in Anglo-American Legal History, III, at 142
  \item \textsuperscript{25} \textit{bid.} at 25 \textit{et seq.}
\end{itemize}
inventors working to try to solve the same problem, leading to specific improvements, great or small, being made in products or processes created the necessity for the definition of rival inventions. The insertion of caveats in the seventeenth century into letters patent, and the increasing practice of opposing the passage of Patent Bills led to the practice of revealing inventions in particular cases. This development will be dealt with in much more detail later in this work. However, it is submitted that it is more than justifiable to conclude that the want of a description or specification of the product contained in the Langdale grant is no barrier to recognising it for what it clearly is, i.e. an early English letter patent.

Novelty "True and first inventor"

It has already been established that patents were granted during this period for objects or methods which today would not satisfy the requirements of modern patent law. It falls to be considered what benefit formed the substance of this particular patent in return for which the Crown granted monopoly rights. It has been observed that there was no specification or detailed disclosure of the invention as such, though this was consistent for a Tudor letter patent. The patent does however refer to the word "invention" twice, once on line 15:

... any sackbutts trumpett or other instrument which he the said George Langdale now maketh or hereafter shall devise and make of his own invention ...

and again at the very end:

... the said instruments to our use and behalf that express invention &c ...

though never to the word "manufactures", words which were to form the basis of the wording of the 1624 Act which was to come after the expiry of this patent. Prof. Davies argues that
many of the patents of this period though not being inventions or manufactures as we would now recognise them, were nevertheless not granted in conscious abuse of the patent system as understood by Tudor statesmen\textsuperscript{26}, but were rather granted in consideration of the benefit which was to accrue to the realm by the working of the patent. The nature of that benefit varied from patent to patent. Here Langdale is the

"firste deviser and maker within this our Realme of England of sackbutts and trumpets not heretofore made We as well in consideracon thereof as for som other good causes..." \textsuperscript{27}

The motive of the Crown in granting the patent is therefore that the invention, having been found out, will be put into practice in England, that is to say that new musical instrument technology, i.e. sackbutts and trumpets, will be made here, where they have not been made before. It is submitted that this is a new invention, most certainly recognisable as such under the 1949 Act, and that as such it is of the utmost importance in tracing the history of the use of patents in the musical instrument industry. This patent is not to be confused in any way with that for the sole manufacture and distribution of playing cards. It will be interesting to establish whether the invention was George Langdale's own, or whether he brought it over from elsewhere. Exactly what had been made in England before that time will be looked at in detail below, however bearing in mind that the geographical limitation on patents did not get swept away until the reforms of 1977, finding the instruments elsewhere in Europe at that time would not alter this submission. The patent remains just as valid. There is a reference to the patentee's "greate pains and charges", and since consideration must move from the promisee, this has obviously been to Langdale's detriment.

\textsuperscript{26} [bid] p.96
\textsuperscript{27} lines 4 and 5
The Langdale patent does clearly go further than a modern letter patent in some respects, however it must be viewed in its context. Mention has been made above to the derogation of trading privileges already granted to other monopolies, e.g. to the craft guilds. In Langdale's patent it is expressly stated that

"the masters and wardens of the mistery of gold smythes ... if need shall require do aid and assiste him and his in the full..."

This form of relief from the regulation and control administered by the local craft guild would have been essential if the new manufacture of trumpets and sackbutts was to proceed. Nef²⁸ notes that the new branches of the metallurgical finishing trades produced some decentralisation of industrial manufacturing because raw materials were worked on by village craftsmen who were not subject to the municipal and guild regulations of the old towns. Nef refers to the working of bar iron in the outlying areas of Birmingham, but here the power of the gold and silver workers to exclude Langdale from the benefit of access to their craft is expressly overridden by the letter patent. Langdale would otherwise have had to conform to the restrictive quantitative, qualitative and fiscal restrictions of the guild. This is yet more evidence which clearly distinguishes the Langdale patent from other forms of monopoly of the time.

It should also be noted that the grant is to George Langdale the private individual, rather than to a group of tradesmen. It is therefore quite distinct not only from the merchant and craft

²⁸ [bid]
guilds, but also from the Hanseatic League. It should also be distinguished from the grant of Ed III to John Kempe of Flanders in 1331, since that grant was to other members of the weavers mysteries as well as the patentee. In that sense John Kempe's grant was indicative of a policy of protection in favour of the textile industry rather than in favour of an individual in return for bringing in a new manner of manufacture. It can be seen that Langdale's grant was an early example of a letter patent rather than merely an early example of a letter of protection.

The consideration is the labour and charges that Langdale has been put to, and the putting in practice of the invention so as to establish a new trade. The motive of the Crown in granting this patent is the benefit which accrues from the working of the invention, and a desire to recompense the inventor for his pains. This concept is seen also for example in Jacobus Acontius patent of 1565.

Fox notes that the Tudors recognised the benefits to be gained from the establishment of new industries as well as the stimulation of backward and languishing industries, and that the patent monopoly system owes its origins to that time. Fox also refers to the Tudor policy of issuing patents for ordnance as part of the defence of the realm, and bearing in mind the processional importance, military use and royal exclusivity of the trumpet at the time, this letter patent may be considered possibly to be part of that defence policy. Though the later Tudor and Stuart monopolies undoubtedly abused the system, the early patent of trade and manufacturing monopoly solidified into what has become the patent of invention. The English doctrine that a valid patent could be granted in respect of an invention which had

29 Davies [ibid.] p. 99
been brought in from abroad persisted effectively until the reforms of the 1977 Act which finally did away with the geographical limitations which it has been shown originate in early letters patent like the one granted to Langdale.

Fox also emphasises the importance of these early Elizabethan patents in terms of the evolutionary progress of technological development in England by citing examples of inventions which were not granted protection, and which were thereby effectively lost to the realm. Examples include Standley's invention of armour plate, Gianibell's method of land reclamation and Harington's water closet, which was introduced a century and a half later. This research will go on to examine the consequences of the Langdale patent for the manufacture of brass instruments in England, during and after the period of the grant.

In terms of the development of patent law, note the many similarities in use of words, phrases concepts from 1583 and compare with the Form of Patent under the 1949 Act\(^9\). The "first deviser and maker", which developed into the requirements of novelty and invention. The exclusive monopoly for a limited period, here twenty years, later sixteen and now twenty again. The prerogative of the monarch "... to all to whom these presents shall come greetinge ..."). The wide powers granted under the patent, preventing any other person form making, causing to be made, offering for sale ("utter"), importing ("brought over") or even repairing, which was an issue not properly dealt with until late in the twentieth century with cases like Armstrong patents, referred to later in this work. The Langdale grant should therefore be considered as the first patent granted to a musical instrument maker in the world, and is therefore extremely significant. The next chapter will investigate what effect, if any, the working of this patent had on the brass instrument industry at the time. In short, whether it was used or abused.

EVALUATION OF THE EFFECT OF THE 1583 PATENT ON BRASS INSTRUMENT MAKING IN LONDON.

30 Patent Rules 1968, Schedule 4
The task for this section of research is to attempt to ascertain whether the operation of the grant to Geo. Langdale actually stimulated the manufacturing and design technology of brass musical instruments at this early stage of their development, frustrated it or had no discernible effect. Whether at the end of Langdale's grant, the development of trumpet and sackbutt manufacturing in London showed any change from the periods before and during the operation of the grant?

Technical development of the trumpet and sackbutt up to around 1650

The "natural" trumpet, that is to say a brass aerophone using the lips as a sound generator, consisting of a mouthpiece, tube and bell in one or more pieces, but capable of producing only one fundamental note has its origins in pre-history and continued in use until the late nineteenth century, when it had been replaced by the "modern" trumpet following the invention of the valve around 1815. The Roman tuba consisted of a single, straight conical tube, about 120 cm in length, and increasing in diameter from around 10 mm to 26 mm\(^\text{31}\). The natural trumpet of the baroque era, which may be said to have commenced at the end of the sixteenth century\(^\text{32}\) and continued until the mid-eighteenth century consisted of a tube having two bends with a length of about 224 cm, a pommel and a cylindrical bore of around 12 mm\(^\text{33}\) with a pronounce flare and bell at the end with a garland, and a fairly sophisticated mouth-piece for the lips at the other. There were also a range of different sizes of trumpet, including for example the "Bach" or piccolo trumpet. The Roman tuba had developed along two distinctly separate lines, in the case of the trumpet becoming cylindrical rather than conical, and in the case of the horn maintain the conical bore and exaggerating this to

31 The trumpet, E.II.Tarr, 1988 London.
32 Music in Time, William Mann, 1982 London
33 Tarr *ibid.*
terminate in a large bell, folded round in a tight circle in order to facilitate use of the hand to
insert into the bell and vary the pitch within partials of the natural harmonic range of the
instrument. Full discussion of this instrument is not relevant to this part of the research. The
trumpet did not employ this facility for varying the pitch.

Trumpets consisting of three sections were depicted by Giotto around 1317, and the late
fourteenth and early fifteenth centuries were an important era for the development of both
straight and folded trumpets. The first folded or "s" shaped trumpets appeared in France
around c.1400, and in Italy around c. 1420. A straight trumpet dating back to the fourteenth
century was excavated in the City of London in Lower Thames Street in March 1984, which
demonstrates the use of a stitched seam in the construction of the flare to the fairly narrow
bell. This instrument is, research suggests, constructed in four parts, and if this is correct, the
instrument would have measured 144.5 cm when assembled. It is manufactured from two
metals, brass (copper-zinc alloy) and latten (copper-zinc tin). There are signs of masking of
unsightly work, including use of a decorative knot to cover a joint, and a shield-shaped
copper-alloy plated to cover a puncture.

Bowles notes that the ability to fashion a longer thinner tube around a mandrill and braising
rather than riveting it, together with tapering a bell at one end gave the trumpet its unusually
loud and bright sonority. The small sized flare reduced the intensity of the upper harmonics
and gave the trumpet a smoother clearer tone.

35 Mareuse ibid.
36 Medieval trumpet from the city of London, Graham Lawson and Geoff Egan, GSJ XLI, at 63-66 and 150-156. All
references to this trumpet are from these articles.
37 Edmund A Bowles, Correspondence, "Shaken not stirred" Early Music 1990, at p 350
Downey\textsuperscript{38} has traced the technological development of the trumpet and the radical changes it underwent during the 14th and 15th centuries. The \textit{buise}, of which the Billingsgate trumpet is the oldest known example, was a straight tube consisting of one or more pieces, total length generally 150 cm, with a rudimentary mouthpiece and a flared bell, and pitched in A. Bowles\textsuperscript{39} notes the importance at this early period of the ability to fashion metal into a long, thin tube around a mandrill without riveting, the technique of braising being well developed. The joining of the seams of the bell has been noted on the Billingsgate trumpet. The trumpet had at this early time an unusually bright, loud sonority, and the small sized flare at the bell would have given a smooth, clear tone suiting the instrument for a processional, chevalresque role.

Towards the end of the 14th century metal working technology had developed significantly and enabled the production of tightly curved metal tubes. Bowles\textsuperscript{40} notes the importance of this technological breakthrough, since it enabled the tubing to be bent without altering its internal bore. These were often referred to as folded, "French" or S-shaped trumpets, and enabled the pitch to be lowered to E by means of the longer tube of around 175 mm. During the first half of the 15th century the tube was folded back along itself in a more compact fashion, more like the shape we know today, and supplied with an extra piece of tubing called a \textit{claret-piece}, which was introduced between the mouthpiece and the narrow end of the tube, enabling the player to lengthen the tube temporarily and thereby to lower the pitch of the instrument. This was a significant technical development, which will be discussed further below. During the later 15th century, an altogether larger, compact double folded trumpet in

\textsuperscript{38} Peter Downey, The Renaissance slide trumpet - Fact or Fiction? Early Music Feb. 1984 at 26
\textsuperscript{39} \textit{ibid.}
\textsuperscript{40} \textit{ibid.}
C was developed in northern Italy, approximately 219 mm in length, and generally referred to as the Italian trumpet. This coincided with the development of an Italian style and ascendancy in music during the first half of the sixteenth century. It should be noted that the Italian trumpet was not provided with a caret-piece⁴¹, therefore presumably played in one fixed pitch. The first trombone or sackbutt appeared in 1490, and the technical development of this instrument will be dealt with separately below.

"S" form of trumpet

The first evidence of a folded "S" form of trumpet in England is a figure carved on a choir seat in Worcester cathedral from around 1400. The purpose of the two bends was primarily to facilitate ease of transport and to render the instrument capable of immediate use without reassembly, factors which became much more important during the sixteenth century as the trumpet's compass was extended upwards as far as the thirteenth partial and individual players became responsible for specific registers within a five part ensemble⁴². The S-shaped trumpet had by 1511 been discarded by "privileged trumpeters" and was used only by town musicians⁴³. A new style of playing established in Northern Italy had produced highly organised and tightly formulated ensemble music which had led to its replacement by more technically advanced instruments. During the 1580s the upper three parts in the ensemble would have been an improvised counterpoint over a tonic and dominant drone, leading to a need for the technology to construct the higher instruments from lighter materials in order to produce a brighter, more brilliant tone. The natural trumpet of the 1580s consisted of the bell

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⁴¹ C Valentin, Geschichte der Musick in Frankfurt am Main (Frankfurt 1906), where contemporary trumpet orders make no mention of accessories.
⁴² Grove's dictionary of music at 215.
⁴³ Peter Downey, ibid.
and two sections of tubing, the technology for producing which has already been observed in the Billingsgate trumpet from the fifteenth century. The two sections of tubing were joined by means of two bends or bows, which were not brazed or soldered, as were the other parts, rather were telescoped into each other, as were the tubes of the straight Billingsgate trumpet. The technological breakthrough that had taken place by this time was the making of a bend in the metal tube, which has been adverted to above and is evident from surviving examples of the period. Without bends, the instruments would not have survived for long. It has unfortunately proved impossible as yet to find an existing example of such an English instrument of this type from this period, however there is a pen and ink drawing of a similar trumpet by Hans Holbein c. 1540, which also shows a straight buisine trumpet being played.

Pitch variation

The next major development in the trumpet was for it to play in flat or minor keys by means of some sort of pitch adjustment, and Michael Praetorius wrote in 1619 that "quite a few years ago" crooks were lengthened, or else crooks were placed on them to lower the pitch of the trumpet. This type of trumpet was called a claretta, and was provided with a claret-piece to be placed between the mouth-piece and the first tube in order to lengthen it. The claret-piece developed into a single tube slide, which provided the means for the trumpeter to play in more than one key without having to stop playing. The use of the claretta in Germany by 1619 is documented by Praetorius who notes that "Quite a few years ago, however, at some royal and noble courts, they [trumpets] were lengthened, or else crooks were placed on them,

44 see e.g. two trumpets by Jacob Steiger, Basle, c. 1578 in the Historiches Musiem, Basle, and a trumpet by Anton Schnitzer I, Nuremberg, c. 1581 in the Sammlung alter Musikinstrumente, Vienna.

45 British Museum, London.

46 Syntagma Musicum
lowering their pitch by about a tone, into C according to the Hypoionian mode." He goes on to describe crooks changing the pitch by a fourth on the Italian trumpet.

It has been shown that Tudor pitch was likely to have been a minor third higher than previously thought, and the likelihood is that musicians of the period would have been expected to transpose quickly and with skill. It is noticeable that cross-stays were not present on any of the instruments so far referred to, especially the Holbein drawing, in which the player clearly grips the tube itself. There are contemporary illustrations of cross-stays, however, and this is clearly a possibility during the time of Langdale's patent.

There appears to be some debate as to the development of the brass instrument with a slide. Downey has identified a painting by Hans Memling from 1460 in which he suggests that what appears to be a claret trumpet is in fact a slide trumpet in an extended position because the body of the instrument held by one trumpeter is further away from that of his colleague on the right of the painting. Downey accepts that support for the belief that a trumpet with a single moveable slide is thin, and appears to base it on the method of holding the trumpet against the mouth with one hand, whilst with the other the trumpet is apparently being pushed outwards. What is particularly interesting about the painting is that there appear to be two trumpets with a U-bend slide and one buisine trumpet with a single slide, as in the Holbein drawing.

Against the idea that slide trumpets were available so early is the nature of the music which survives from the period, which is based on natural harmonics deriving from military signals.

47 Syntagma musicum, iii (Wolfenbuttel, 1619) noted by Downey [bid]
48 More light on early Tudor pitch, Roger Bray, Early Music Jan 1980
49 The flat trumpet in perspective, John Webb, GSJ XLVI at 154.
These could be played on a natural trumpet, and the more complex *trumpetum* parts are apparently not playable on any type of trumpet conceivable at that time, slide or otherwise, because of the inertia caused by the suggested moving metal parts. They must have been vocalised or played on other musical instruments. The painting is therefore equally likely to illustrate a fixed length crook and is in fact a claret trumpet.

Webb suggests that the development of the slide trumpet began some time in the fifteenth century, and basically concludes that the single slide trumpet was well established by the sixteenth century. Webb bases his argument chiefly on contemporary iconography, e.g. a Jean Stumpf woodcut from Zurich in 1548 shows a similar technique being used to that which appears in the Memling painting of 1460 adverted to by Downey. However, Downey concluded that iconography alone could not prove the existence of the slide trumpet at this early period. Webb accepts that the term sackbutt was applied indiscriminately to trumpets and early trombones, and on balance, it is submitted that the Downey conclusion should prevail. That is to say, that the Renaissance trumpet with two bends, in several different pitches and with the option of *claret-pieces* for changing the pitch on a particular instrument was well developed in Europe by the 1580's, but that the slide trumpet was a development of the baroque period, i.e. after 1650 and therefore long after the expiry of Langdale's patent.

Charles Burney writes of a sackbutt or double trumpet in 1613, and it is suggested that he is referring to the sackbutt or early trombone.

There is one surviving slide trumpet which is a modified Italian trumpet made at Naumburg in 1651. The slide trumpet in the sense of a U-bend slide appears to be definitely an invention.

50 Webb, *ibid.*
51 General History of Music 1613
of the baroque [1650 - 1750]. The only slide mechanism of the Renaissance was the double slide of the trombone or sackbutt. Webb agrees that there is ambiguity about the term sackbutt but it would appear that it refers to a trumpet of lower pitch with a double slide. The slide flat trumpet is therefore not to be dealt with in detail since it appears to post date Langdale's patent.

The Holbein drawing shows the player of the short trumpet having a double bend gripping the middle of the trumpet with one hand, whilst using the other to press the mouth-piece against his lips. It has been established above that the trumpets depicted in this drawing are almost certainly a buisine single tube trumpet and a claret trumpet. The player's method of holding the claret trumpet appears to be more one of holding the claret-piece in place rather than to the lips. This would appear to establish that in 1560 the claret trumpet had indeed arrived in London, though the slide trumpet had not, nor, it has been noted, had it arrived in Europe or where else.

It has been shown that the early trumpet makers had appropriated contemporary metal technology to form increasing lengths of light gauge, finely worked conical tube in order to facilitate the making of instruments of varying itches, and that the pitch of particular instruments could be altered by means of the addition of a claret-piece which would take the pitch down by a specific interval, e.g. a third. It is the aim of this section to examine the degree of technological development of the sackbutt in order to ascertain what new or brought over invention, if any, Langdale may have sought to protect by his letter patent, and from this to examine the effect on the development of the instrument of the working of the patent.
The increasing size of the lower pitched instrument would have made it very difficult to carry round a box of say a dozen instruments, as the trumpet players came to do, in order to play in all the keys that may have been required of the musician. In order to facilitate playing in more than one key with one instrument, the claret-piece had been developed for the trumpet, but some means of rapidly altering the sackbutts basic pitch needed to be developed which would enable the player to be far more flexible. Downey suggests that the sackbutt was a development of the S-shaped trumpet, with an enlarged U-bend which was made to be permanently mobile. This became the double slide of what has developed into the modern trombone. The *Virdung* illustration\(^5^2\) indeed shows a sackbutt in this shape. The instrument would therefore appear to have developed in parallel to the Italian and claret trumpets, quickly replacing the S-shaped trumpets. Philip Bate\(^5^3\) comments that the *Virdung* illustration closely resembles the earliest surviving instruments, in particular the earliest known trombones or sackbutts by Erasmus Schnitzer\(^5^4\) made in Nuremberg in 1555 and by Jorg Neuschel in 1557\(^5^5\). The bells of these German trombones or sackbutts were narrow by today's standards, flaring to approximately 13 cm, and the sliding part of the tube is cylindrical, the cone only commencing with the U-bow of the bell. Here is a fairly important clue as to the real reason why the slide was not adopted as a suitable method of construction for the trumpet, though this is not stated by Bate or Downey. The predominantly cylindrical bore of the sackbutt gives a completely different sound from the conical bore of the trumpet, and probably gave the sackbutt a sound more suited to a dance or entertainment situation rather than the processional, official and military function of the trumpet. The joints of the sackbutts

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52 Basle, 1511 referred to above by Downey \[ibid.\]
54 Germanisches National Museum, Nuremberg
55 Privately owned by Rene Clemencic, Vienna

41
are joined together without solder, a technique that goes back to the Billingsgate trumpet, allowing the instrument to be dismantled for ease of transport. Correspondence from Neuschel in 1541-2 mentions a bass model, and Praetorius illustrates five different sizes in 1619, the _alt_ (alto), the _gemaine_ (ordinary), the _quart_ (a fourth), the _quint_ (a fifth) and the _octav_ (octave below or bass).
Assessment of the effect of the working of the Langdale patent.

Reproduced below is a table of other contemporary brass instrument makers and repairers. It appears firstly that there were very few, and prior to 1583 there were only three known to have existed in England, and they were George Langdale, who was practising his craft from around 1577, Peter Grinn, who was mentioned in the Langdale patent as having "heretofore only mended trumpetts", and Simon Brewer, who had petitioned Sir Francis Walsingham to be permitted to continue his craft of making trumpets and sackbuts. The only two known contemporary makers of trumpets and sackbuts were therefore Langdale and Brewer. Since the letter patent only gave a monopoly power in London and "within seven myles compass" it is clear that Grinn would have been established in or near to London.

Table of contemporary brass instrument makers.

<table>
<thead>
<tr>
<th>Period</th>
<th>Number of Makers in Europe</th>
<th>Number of Makers in England</th>
<th>Number of Makers in London</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-1582</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1583 - 1603</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1604 - 1623</td>
<td>7+?</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1623 - 1700</td>
<td>12</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

Fig. 2 sources:- Data: Lindsey G. Langwill; Compilation: T.G.Batchelar

The table shows however that there were seven contemporary makers of these instruments in Europe. At the end of the period of the patent, there were no known makers in England, and

59 p 13 ante
60 Langwill, ibid.
yet there were still at least seven in Europe, possibly more since it is impossible to say
whether makers whose rare instruments have been reliably authenticated to a particular year
which happens to have fallen outside the period of the patent are indicative of prolonged
activity during the duration of the patent. It would seem to be clear that during the working of
the patent there were no surviving Langdale apprentices that remained in the country, and that
far from leading to an improvement in the manufacture of these instruments, the working of
the patent effectively led to the demise of the craft. By contrast, the number of European
makers had increased a lot from seven to twelve.

It may appear then at first sight that any 'consideration' which might have led the Crown to
grant Langdale this monopoly was in the long term of no value. However, it should be noted
firstly that the grant does specify that the price of new instruments and repairs, which though
it has been shown was admittedly high, was at least fixed, thereby preventing excesses of the
patent system at its worst, e.g. the grant of 1594 to Richard Drake to make vinegar etc. which
gave him a monopoly in the sale and manufacture in this important commodity, save for
exemptions introduced by Lord Burghley61. It has been shown that by and large the motive of
the Crown in granting these early patents was to secure the benefits of inventions for the
realm and in return to recompense the inventor for his labour and charges. The 'consideration'
was the putting into practice of the invention. The question therefore arises as to whether
there was a sufficiency of a necessary product of better quality and at a reasonable price
within the realm as a result of the grant of this monopoly to Langdale?

It has been shown that the Italian trumpet with its claret-piece had been developed in Europe,

61 Hulme, (1900) LXI LQR 50 ibid.
and was almost certainly available in England during the period immediately preceding the grant to Langdale. The slide trumpet had not been developed until after 1650. The sackbutt or early trombone developed in Europe in the second half of the sixteenth century, and there are no records or illustrations of this instrument in England before 1583, yet there are known examples from Germany dating from 1555 and 1557. It seems likely therefore that there are two main purposes for which George Langdale petitioned the Crown for his monopoly grant - to consolidate and control the already established manufacture of trumpets of the relatively new Italian type as well as those of the older S-shaped pattern, and also to 'bring in' the newly invented sackbutt from Europe. The references in the text of the letter patent to the masters and wardens of the 'mysterye of gold smythes' illustrate the derogation from the older craft guilds local monopoly which would have helped the grantee not only to consolidate this sector of the embryonic musical instrument industry, but also to improve the quality of the instruments. This would have added power to the grantee and value to the letter patent, since the exception of Peter Grinn (mentioned in the text) and the subsequent petition by Simon Brewer considered above, would not have relieved them of the necessity to work subject to the monopoly exercised by the craft guild at that time.

The reference to Peter Grinn is also an important example of a caveat presumably entered by the interested party prior to the sealing of the patent. Though it has not been possible to find the actual caveat, it would have been usual for him to enter a caveat with the Law Officer's Clerk, which would have had the effect of staying the progress of the petition until the Law Officer had heard each party in turn\(^2\). The Law Officer must have decided to issue a favourable report on the petition, ordering the inclusion of the clause permitting Peter Grinn

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\(^2\) for a detailed description of the procedure for entering a caveat, see A.A.Gomme ibid.
to continue his work, though at the considerable cost of paying ten shillings per instrument repaired.

The Langdale patent is then a mixture of benefits to himself and to the realm, with both control over a previously settled trade being handed to him, but also the bringing in of a new invention from abroad, which was apparently known to the grantee but not to the trade at that time. In this sense it spreads itself across several of the Lipson and Davies categories referred to earlier, though it must be remembered that these categories, rather like art period labels such as 'impressionist' or 'romantic', were applied after the event and are themselves merely attempts to group disparate letters patent into fairly arbitrary groups. Nevertheless they are useful in enabling a comparison with a theoretical norm for contemporary letters patent, and also with what is now understood to be a patent.

The Langdale grant does not appear to disclose a new 'invention' in the 1977 Patents Act sense, but it must be recalled that the geographical limitation was only completely removed with the coming into force of that Act. The grant has been distinguished from other monopoly rights of its time such as the Guilds and the Hanseatic League. The main elements - restriction of price, monopoly over the whole trade within a geographical limitation and the duration of twenty years may be seen as typical constituents of a contemporary grant which was intended at least to introduce a new invention into the realm, rather than a simple abuse intended to simply control something as basic and necessary to diet as vinegar. The grant seen in this light must be viewed as broadly favourable.

63 see chapter III below
However, the effect of the grant appears to have been that no new makers of trumpets or sackbutts were working at the end of the period of grant, nor are any others known during the period of grant. This highlights a significant *lacuna* in the grant, that is to say that it does not require any apprentices, English or otherwise, to be trained. The duration of the grant is also noteworthy in this respect - twenty years is an arbitrary number of years. The letters patent which require apprenticeships are generally of fourteen years duration, i.e. two times seven year apprenticeships.
III

DEVELOPMENT OF PATENTS IN THE EIGHTEENTH, NINETEENTH AND TWENTIETH CENTURIES

It has been shown above by Hulme and others that there were no new letters patent granted after 1601 during the reign of Queen Elizabeth I. Since there were in fact no letters patent granted for a musical instrument after Langdale’s until 1694, i.e. the reign of William III and Mary II, this section should merely provide an historical and legal context against which the Langdale patent may be compared with those of William and Mary’s reign and beyond. It is nevertheless of the utmost importance to outline the main developments in patent law during the seventeenth century. The foundations of modern patent law throughout the world find their roots in the Statute of Monopolies of 1623, which declared void monopolies and grants under s.1, save those made "of the sole working or makinge of any manner of new manufactures within this realme" under s. 6. This provision remained the basis for U.K. patent law until 1 June 1978, when the Patents Act of 1977 came into force. There remain "existing" patents that are still in force at the time of writing which were granted on the basis of the Act of 1624, in respect of which section 6 remains on the Statute book to this day.

It is the aim of this introductory section to identify the roots of the Act of 1623 in the common law which preceded it, together with the Book of Bounty of James I, with the object of trying to link the Langdale patent with those that have been granted subsequently. It is necessary to make a comparison between the important sixteenth century grant and those of

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1 Patent No. 337 for a chiming instrument to be applied to organs &c, George Joyce and Peter East
the late seventeenth and eighteenth centuries in order to analyse the history of change and development affecting both the law of patents and music technology. For ease of reference, a short table of statutes has been included here:

TABLE OF STATUTES AND OTHER IMPORTANT PATENT DATES

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1601</td>
<td>Queen's Last Parliament. Proclamation. The Golden Speech</td>
</tr>
<tr>
<td>1602</td>
<td>Darcy v Allin², the 'Case of Monopolies'</td>
</tr>
<tr>
<td>1610</td>
<td>Petition to James I calling starch monopoly into question</td>
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<td></td>
<td>Book of Bounty</td>
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<tr>
<td>1615</td>
<td>Clothworkers of Ipswich case</td>
</tr>
<tr>
<td>1621</td>
<td>Proclamation of James I</td>
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<tr>
<td></td>
<td>Monopolies Bill (unsuccessful)</td>
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<tr>
<td>1624</td>
<td>Statute of Monopolies receives royal assent</td>
</tr>
<tr>
<td>1639</td>
<td>Proclamation of Charles I</td>
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<tr>
<td>1641</td>
<td>Abolition of Court of Star Chamber by the Long Parliament¹</td>
</tr>
<tr>
<td>1760-1815</td>
<td>Industrial Revolution</td>
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<tr>
<td>1785</td>
<td>R v Arkwright⁴</td>
</tr>
<tr>
<td>1815-1850</td>
<td>rapid economic expansion</td>
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<tr>
<td>1689</td>
<td>Bill of Rights</td>
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<td>Patents Act</td>
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<td>1851</td>
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<td></td>
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<td>1852</td>
<td>Patents Act - Reform of the patent system - rapid growth</td>
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<td>Select Committee of House of Lords</td>
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<td>1883</td>
<td>Patents, Designs and Trade Marks Act - further reform of patent</td>
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<td>system</td>
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<td>Paris Industrial Property Convention</td>
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<td>1919</td>
<td>Patents and Designs Act</td>
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<td>1949</td>
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<tr>
<td>1977</td>
<td>Patents Act - came into force from 1 June 1978</td>
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¹ The Long Parliament abolished the Court of Star Chamber.
² 317 Car. 1, c. 10
³ 21 WPC 1
⁴ 41 WPC 64
Historical development of the patent system from its early history, through the reforms of the nineteenth century to the modern patent.

Introduction.

The medieval origins of the Tudor patent system have been analysed in some detail in the preceding chapter. The purpose of this section is to trace in outline the development of the modern patent system from those early patents, in order to prepare the ground for investigation into the corresponding development of the musical instrument industry, analysing the use of the patent system by the musical instrument industry by focusing on particular aspects of technological development and commercial use. The approach taken will not be - cannot indeed properly be in the context of this research thesis - a complete history of the musical instrument industry nor of the patent system. There will inevitably be a degree of subjectivity in selecting areas for detailed analysis. The object of this section is to provide an historical and legal context for later chapters concerning current and future use of industrial property rights indicated by empirical research.

Since, as has already been mentioned, there were no grants to manufacturers of musical instruments after the Langwill grant until 1694 during the reign of William III and Mary II\(^1\), a brief outline of the development of the patent system between the eras of the two grants will suffice. No work dealing with patents would be complete without a review of the Statute of Monopolies 1624, and it is particularly important to trace the development of the requirements of novelty, inventive step, utility and of a specification of the invention. The

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5 Number 337 to George Joyce and Peter East, grant for an instrument to be applied to organs, clocks, harpsichords, virginals or similar instruments, to cause the same to play tunes, which may be altered without changing the instrument.
far-reaching reforms of patent law during the nineteenth century had, it will be shown, dramatic effect on the use of patents not only as a device for protecting inventions, but also as an engine for technological development. The particular task of this work will be to investigate how, if at all, this is true of the musical instrument industry, and also to look at whether such use had a consequential effect on the development of the law in this area.

The subject of monopolies at the end of the fifteenth century was a thorn in the side of the Queen and her Parliament. It has been noted above that there were no patents granted for any inventions from 1601 to the end of the reign of Elizabeth I in 1603. The refusal of the Crown to grant letters patent in respect of certain meritorious inventions whilst at the same time granting them to court favourites built up resistance in Parliament to the royal prerogative which vested in the monarch the sole and unassailable right to grant such licences. The Queen retained to the end of her reign her absolute right of jurisdiction in all cases of dispute arising out of these grants, in spite of the fact that gradually throughout her reign there had been a shift of responsibility for these grants away from the Crown to the individual grantee. However, to dispute the Queen's licences before the Council or the Courts of Star Chamber or Exchequer was to run the risk of "evincing a want of respect for the Queen's authority".

The common law was basically hostile to monopolies in general, but the common law courts had no jurisdiction to determine matters of royal prerogative without permission of the Crown. Similarly the process could not be controlled by statute, since the Crown could dispense with a penal statute by including in the grant a non obstantibus clause, as found in, for example, the grant to Jacobus Acontius of 1565. Such clauses survived in one form or another.

6 see e.g. Boehm ibid.
7 E.W.Hulme ibid.
another until the reign of William III and Mary II.

The pressure against patent monopolies grew to such an extent, however, that the Queen found it to be to a degree irresistible, and in her last parliament of 1601 issued a proclamation against the principal monopolies complained of to the Committee of Grievances which sat in that year. A declaratory Bill was brought to Parliament on November 20th 1601 entitled "An Act for the explanation of the Common Law in certain cases of Letters Patent" by Mr Lawrence Hide, and it was this step which wrung the concession from the Queen, and permitted the common law courts to determine the validity of those that remained.

This development is significant to constitutional lawyers, and led directly to the test case of Darcy v Allin in 1602, considered below. Fox pointed out that it was a feature of Tudor government (though already suspect by the reign of Eliz I in the sense that it relied upon general acceptance for its force) that the Crown had an initiatory power with respect to legislation. This gave the Crown the right effectively to deny the House of Commons the right to interfere in Crown patent policy thereby allowing the Crown to regulate trade and commerce. The right to challenge the validity of the royal grants in the common law courts was therefore the first opportunity for the grant of a patent to be challenged, and also, with very important implications for the development of patent law in the U.K., commenced the development of the English common law patent system. It will be seen that the subsequent passing of the Statute of Monopolies in 1624 under James I was in fact merely declaratory of the common law.

8 see e.g. Seabome Davies and Boehm ibid.
9 see e.g. Boehm p 151
Edward C. Walterscheid has commented that the Queen's Proclamation was both brilliant and decisive in the sense that Parliament accepted that the errors that had led to the granting of odious patents were not *malum in se*, but rather due to abuses of the system, and that, citing Holdsworth "by abandoning her claim to settle by the prerogative all questions relating to these grants, she shifted the odium which arose from their abuse from the prerogative to the patentees; and, at the same time, as the discussions in the law courts must turn to a large extent on the facts of the individual cases, far-reaching parliamentary discussions of the nature of and the limitations on the royal prerogative were avoided." The parliamentary bill was withdrawn, and the royal prerogative remained with no statutory limitation placed upon it. By allowing the common law courts to determine the validity of a particular grant, the odium of the abuse of a monopoly right was removed from the responsibility of the prince through her prerogative, and in fact the royal displeasure at any future challenges to the prerogative was made explicit. At one decisive stroke the power of the Crown and the freedom of the Englishman to subject an abuse of privilege by a patentee to the judgement of the common law courts was reconciled. The common law courts were then able to develop the principle of the patent system that became enshrined in the Statute of 1624.

The "Case of Monopolies"

*Darcy v Allin (1602)* did not actually concern a patent of invention, rather the grant of a monopoly for the sale or uttering of playing cards to Ralph Bowers, the Queen "intending that

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11 a wrong in itself
12 A History of England
13 Coke, Sir Edward, Third part of the institutes of the laws of England, cited by e.g. Boehm, Davies etc.
14 11 Co. Rep. 84b, 1 W.P.C., Moore K.B. 671, Noy 173 (judgement delivered in 1603 after death of Eliz. I)
her subjects, being men able to exercise husbandry, should apply themselves thereunto and should not employ themselves in making playing cards". The grant gave Bowers the monopoly right to sell, utter, make, provide, import and so on all playing cards within this our realme etc. By a subsequent grant made in 1600 when the grant to Boweres came to an end, the same privileges were granted to the plaintiff, Darcy, a groom of the Privy Chamber.

The action was brought by Darcy against T. Allin, a haberdasher, declaring that he had, knowing of the grant and without the Queen's licence, made and sold a quantity of playing cards to persons unknown, whereby the plaintiff could not utter his playing cards and was disabled from paying his farm, i.e. 100 marks per annum to the Queen.

Two general questions were raised: whether the grant of the sole making of playing cards within the realm was good or not, and whether the dispositions or licences to have the sole importation of foreign goods was available or not in law. Popham J held that this was a plain monopoly right granted to one person and was as such objectionable, and that the dispositions or licences were utterly against the law. The importance of the judgement lies however not in the judgement itself, but rather in what was said about the monopoly right, novelty and invention, by counsel for the defence, which submission has come to embody the modern principles of patent law:

"...I will shew you how the Judges have heretofore allowed of monopoly patents which is that any man by his own charge and industry or by his own wit or invention doth bring any new trade into the Realm or any Engine tending to the furtherance of a trade that never was used before and that for the good of the Realm; that in such cases the King may grant to him a
monopoly patent for some reasonable time, until the subjects may learn the same, in consideration of the good that he doth bring by his Invention to the Commonwealth; otherwise not."

The essential elements that can now be recognised as forming the basis of a modern patent are here clearly stated - the requirement of novelty, invention in the sense of non-obviousness, benefit to the realm in the sense of utility, monopoly protection for a limited time in consideration for the training of apprentices which was effectively disclosure of the invention. These formed the basis of the King James I Book of Bounty of 1610, which prohibited monopolies as being "things contrary to our lawes", but intending "to be excepted the Particulars in the Schedule next ensuing...", item 9 of which were "Projects of new invention, so they be not contrary to Law, nor mischievous to the State, by raising prices of commodities at home, or hurt of trade, or otherwise inconuenient."  

Early statement of the principles attaching to monopolies

The other important authority to which reference needs to be made is the Cloth workers of Ipswich case of 1615, cited by Fox and many others. This concerned an action for a penalty against the defendant who had exercised the art or trade of clothe trader or worker in violation of the plaintiffs' charter, which prevented any person from so doing unless they had first served an apprenticeship. The ordinance of the corporation which forbade this was held to be unlawful, since the corporation could not make a monopoly and thereby take away free

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15 Noy at 182, cited by Fox, makes this clear, though Webster's Patent Cases published in 1844 when extracting this passage from Noy does not indicate to whom the quotation is to be attributed.

16 The Book of Bounties may be found as Appendix seven in Fox [ibid.]

17 (1615) Godb. R. 252
trade. The importance of the decision for the development of patent law is that the court enunciated the principles attaching to monopolies:

"But if a man brought in a new invention and a new trade within the kingdom, in peril of his life ..... or if a man hath made a new discovery of anything, in such cases the King, of his grace and favour, in recompense of his costs and travail, may grant by charter unto him, that he only shall use such a trade or traffic for a certain time, because at first the people are ignorant, and have not the knowledge or skill to use it; but when that patent is expired, the King cannot make a new grant thereof, for when the trade has become common, and others have been bound apprentices in the same trade, there is no reason why such should be forbidden to use it."

The requirement of novelty is therefore clearly stated in this early judicial authority, together with the familiar contract between state and grantee with which readers of the early letters patent are so familiar. Also the reference to the expiry of the patent, to the limitation placed on the power of the monarch to extend the duration of the patent, and to the binding of apprentices.

Most commentators agree that the common law and proclamations referred to above led directly to the Statute of Monopolies 1624, which is of course the basis for U.K. patent law up until the reforms introduced by the Patents Act of 1977, which arguably still reflects the basic principles of the old law*. For existing patents, s. 6 of the 1624 Act is of course still in force by virtue of the Patents Act of 1949. Section I of the 1624 Act declares that "...all

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18 see, for example, Batchelar, "Fujitsu: technically, an advance of a backward step?" IRLCT Vol. 11 Number 2 (1997) at 165
monopolies ... and letters patents heretofore made or granted, or hereafter to be made or
granted ... are altogether contrary to the lawes of this realm, and so are and shall be utterlie
void and of none effect, and in noe wise to be putte in ure or execucion." Section VI contains
the basis of modern patent law under the 1949 Act, by providing for the grant of letters patent
"for the tearme of fowerteen yeares or under, hereafter to be made for the sole workinge or
making of any new manner of manufactures within this Realme, to the true and first inventor
... soe as also they be not contrary to the lawe nor mischievous to the State, by raisinge prices
of commodities at home, or hurt of trade, or generallie inconvenient ...." Section V provides
for existing letters patent which fulfilled the same requirements and which had been granted
for periods of twenty-one years and under. Section II provided that the force and validity of
all monopolies and letters patent should be "examyned heard tryed and determined by and
acordinge to the common law of this Realme & not otherwise." Constitutional lawyers
recognise this as a landmark in the long struggle between Parliament and the Crown to curb
the exercise of the royal prerogative.

It should however be noted that the Statute of 1624 makes no mention of a property right,
rather it refers to a grant of privilege. Waltershield19 points out that the issuance of a letter
patent remained solely at the discretion of the Crown for the next two centuries, and could
not be obtained as of right. It did not come to be recognised as a chose in action until the end
of the eighteenth century20. Nor does section VI mention "invention", merely "true and first
inventor and inventors". This is important, since the Tudor meaning of the word "invention"
has been explored earlier in this work and found to be broader that the current meaning, in

19 ibid. at 879
20 but note that under the reforms of 1977 by s.30(1) Patents Act 1977 a patent "...is personal property (without being a
thing in action)...."
the sense that it included the "bringer-in". Fox had a good look at this point and compiled a useful list of authorities which developed the meaning of this phrase. For present purposes it is sufficient to note that the term manufacture was developed by judicial authority to include a product or process, which of course are the two types of invention which may be infringed in s. 60 of the Patents Act 1977. The Phrase "any new manner of manufacture" remained until the Act of 1977, and of course is still valid law for existing patents under the Act of 1949. In the words of Lord Westbury LC the word manufacture "not only comprehends production, but it also comprehends the means of producing them. Therefore, in addition to the thing produced, it will comprehend a new machine, or a new combination of machinery; it will comprehend a new process, or an improvement of an old process."

The concept of novelty and anticipation, the distinction between infringement of a patent and a new improvement on that patented invention which would justify the grant of a patent in its own right, whether that improvement was obvious, will form an important part of the perspective from which early patents of invention and decided cases concerning musical instruments will be examined in this part of the research.

There was no further major legislation relating to patents until the Patent Law Amendment Act of 1852, which introduced far-reaching reforms. It is useful to outline the procedure prior to 1852 since the impact of those reforms on the nature and number of grants made for musical instrument inventions will be closely analysed in this work.

21 chapter XVII
22 Ralston v Smith (1865) 11 H.L.C. 223 at 243 cited by Fox
Gomme\textsuperscript{23} has given a detailed description of the actual procedure for obtaining patents of invention up to 1852, which need not be rehearsed in full in this work, and which is apparently the source for all other commentators that the writer has seen to date. It is sufficient to note the complexity of the procedure, requiring the personal signature of the Sovereign on two separate occasions! The petition had to follow a protracted route through the various offices of state during which it developed from a Petition to a Patent Bill, then King's or Queen's Bill, Signet Bill and eventually received the Great Seal and was enrolled on the Patent Rolls of the particular regnal year, where it may be viewed to this day in the Public Records Office, at the time of writing located in Chancery Lane. The initial cost up to sealing would have amounted to approximately £300. It is not trite to observe that was an awful lot of money, and resulted from the immense complexity and duplication that dogged the applicant at his every turn. It is also to be observed that the result of the outrageous cost was to deter all but the most determined or wealthy of applicants.

\textbf{Specification}

The early requirement of disclosure of the invention has been dealt with in some depth in the first section of this work, where it was established that the practice of describing the invention dates from, at the earliest, the beginning of the seventeenth century. Gomme\textsuperscript{24} states that Nasmith's patent of October 3, 1711 is the first time that the specification proper was enrolled, and that the full procedure is on record, though, as Seaborne Davies\textsuperscript{25} had pointed out, there are instances of clauses being inserted into patents requiring the patentee to

\textsuperscript{23} ibid. at p. 16
\textsuperscript{24} ibid.
\textsuperscript{25} ibid.
bring a model of the invention to be approved by the Chancellor of the Exchequer "once these
presents have been granted unto him" and so forth. This form of disclosure displaced the
Tudor requirement that the invention be taught to mere English apprentices, and was a
requirement of the Law Officer before he could issue a favourable report on the invention.
The petitioner, Nasmith, was obviously reluctant to divulge his invention before having the
patent granted, and the Law Officer required the description to be "inrolled in Our High Court
of Chancery within six kalender months after the date of these presents". The original Bill
apparently required one month, but Nasmith requested that this be changed to six. However,
Gomme states that one month became the norm.

The insertion of a clause requiring a description of the invention to be inrolled within one
month after granting of the patent did not become standardised until 1734, and Gomme
points out that of the 158 patents granted between 1711 and 1734, only 29 had specifications
enrolled. However, Champion's patent of April 20, 1723 contained a new wording of the
specification clause which voided the grant if a specification was not enrolled within one
month. From 1734 to 1883 a specification always appears in patents\(^\text{26}\).

The specification in the sense of a document which contained a sufficiently detailed
description to enable a person skilled in the particular art to put the invention into practice
without further experiment was an essential and separate part of the patent which was
provided \textit{after} the patent was granted. This seems very strange to readers of modern patents,
but it should be recalled that the patent monopoly rights ran only from the date of grant,
rather than from the date of petitioning. One of the most important reforms introduced by the

\(^{26}\) see Gomme at 34
Patent Law Amendment Act of 1852 was that patent rights should run not from the date of sealing, i.e. grant, but rather from the date of application. Up until 1852 it had been of the utmost importance not to disclose the nature of the invention until sealing because such a disclosure would have enabled competitors to use the invention at a time when it would not have been protected. However, the Act of 1852 protected the applicants priority rights, and permitted, though it did not require, inventors to lodge "Complete" specifications with their applications. The old specification clause was altered in these cases to provide that if the specification filed with the patent application did not fully disclose the invention, then it would be voided. The Act did retain the old form of post-seal specification, however, though in this case a "Provisional" specification describing the nature of the invention had to be filed with the application. A complete specification would have had to be filed after sealing. This remained the procedure until the Patents and Designs Act of 1883, when a Complete specification following a Provisional specification had to be filed before sealing. This remained the procedure until the Patents and Designs Act 1949, s. 4(3) of which required the applicant to include in his application both a description of his invention and the monopoly claims.

THE 1852 REFORM OF THE PATENT SYSTEM

Gomme and others have observed that the Patent Law Amendment Act of 1852 was introduced because of the drastic need for reform of the Patent system. This was to an extent brought to a head by the opening of the Great Exhibition of 1852. The most important reforms introduced by the Act of 1852 were that:
• for the first time, a single patent covered the whole of the U.K.

• patents of invention were placed under the direct control of a Commissioner for Patents, and no longer that of the monarch or the Law Officer.

• the dating of patents was to run from the date of petition rather than the date of sealing, which was effectively to establish the modern "date of filing" system under the 1977 Act.

• a graduated system of patent fees which increased at intervals was established, which resembles that under the modern system. Prior to 1852, there was an initial fee of £300. Under the Act of 1852, this was reduced to £25 for the initial fee, which increased to £50 in the third year and £100 in the seventh year.

• A completely new specification procedure was introduced. A "provisional" specification had to be filed with the petition, and a "complete" specification had to be filed after grant. A "complete" specification could be filed with the petition. More importantly, the specification was to be written on paper rather than parchment, and was to be printed and published by the Patent Office Library, established by Bennet Woodcroft in 1855 at Southampton Buildings, London, which site it continues to occupy at the time of writing. Bennet Woodcroft also established a classification system, and classified all patents from 1617 to 1852. Musical instruments were class 88. Volume two classifies patent applications between 1853 and 1908, and volume three from 1909 to 1930. This single step has led to the world's greatest single collection of records of nineteenth century technological development, and provides an unrivalled catalogue of musical instrument inventions.

• The terms "Letter Patent" and "Petition" were given statutory effect, and patents of

invention were separated from other patents, e.g. those in respect of appointments.

It should, however, be noted that the Act of 1852 did not provide for an examination of patent applications for novelty, inventive step or utility.

The combined effect of these changes was to dramatically increase the number of patents granted, from an average of 468 per year between 1842 and 1851, to 2187 in 1853. This level continued, there being an average of 2047 per year during the period 1853 to 1883. The aim of this part of the research project will be to investigate what, if any, use musical instrument manufacturers made of the new provisions, and whether they gave any impetus to the industry.

PATENTS, DESIGNS AND TRADE MARKS ACT 1883

There were further innovations under the Act of 1883. Perhaps the most significant was the deliberate decision to reduce the level of fees, which though reduced under the Act of 1852 were nevertheless set at a discouragingly high level. The initial filing fee of £25 was reduced to £4, which kept the patent in force for four years. Renewal fees were set at £5 in the fifth year, and increased by £1 each year until the expiry of the patent after fourteen years. There was an immediate increase in the number of patent applications and grants. In 1884 there were 17,100 applications, and 2,345 grants, though this figure should be combined with that for 1885 when there were 9,308 grants, since it was in that year that most of the applications under the new Act were sealed. Gomme [ibid.] says that of the 17,110 applications

28 source is ultimately the Reports of Commissioners and Abstracts of Patent Applications, though see Gomme [ibid.].
29 Also note that in 1883, there was a change in the collection of statistics by the Patent Office in so far as under the Act of that year the number of patents sealed was given, instead of as, under the 1852 Act, the number sealed in respect of applications during that year.
(discrepancy of 10 ?) there were 9,118 grants issued in respect of them. These figures should be compared with 1853, when there were 3,045 applications and 2,113 sealings.

There was also a new requirement that a Complete Specification had to be filed before the patent was issued instead of after sealing, as had been the case under the Act of 1852. Up until 1883, Provisional Specifications had been printed and made available to the public. However, since 1883 the Provisional Specification has not been available for inspection, and was not printed. The Act of 1883 initiated a limited search, in that the Complete Specification had to be examined by the patent office before it was accepted. Section 6 required the Comptroller to refer every application to "an examiner who shall ascertain and report to the comptroller whether the nature of the invention has been fairly described, and application, specification and drawings (if any) have been prepared in the prescribed manner..." This was carried out by scientifically trained examiners whose purpose was to ensure that all new inventions were properly described in the specifications, and who prepared the indexes and abridgements which make research so straight forward to this day. However there was still no official examination for novelty, inventive step or utility.

An examination for novelty was first introduced by section 1(1) of the Patents Act of 1902, which required the Examiner, in addition to the enquiries he was directed to make under the Act of 1883, to "make further investigation the purpose of ascertaining whether the invention claimed has been wholly or in part claimed or described in any specification..." other than a provisional specification. It should be noted that section 2 of the Act of 1902 limited the search to specifications in the United Kingdom made not less than fifty years before the date of the application. (The time and country limitation survived until the reforms introduced by
the Patents Act of 1977). The introduction of an official search by the patent office led
directly to a fivefold increase in the number of staff employed for that purpose. The Statute of
Monopolies continued to be the main substantive patent legislation until 1977, section 6 of
course providing for the grant of a patent for the sole working or makinge of any new manner
of manufactures. There was no requirement of inventive step as would be understood in the
modern law of patents, rather the validity of the patent once granted could be challenged
because it was obvious. Nor could the application be opposed under section 10 of the Act of
1907, which provided only for the want of novelty or insufficiencies in the specification.
Similarly, sections 6, 7 and 8 of the 1949 Act effectively provided for the Examiner to search
for anticipation, and of course to check the sufficiency of the specification. By section
50(1)(a) anticipation by previous publication was limited to not more than fifty years, as
under the 1883 Act. This remained the U.K. law until the enactment of section 2 of the 1977
Act.

THE ORIGINS OF OBVIOUSNESS / INVENTIVE STEP

The requirement of inventive step is a relatively new one, having been introduced to the
Patents Act of 1977 chiefly as a result of the need to implement Article 52 of the European
Patent Convention by section 86 of the 1977 Act. Prior to that, it was a ground for revocation
of the patent that it was obvious under section 32(f) of the Patents Act 1949 on the ground
that it was obvious and did not involve any inventive step "having regard to what was known
or used ... in the United Kingdom." This was an innovation, the Patents Act 1907 merely
providing by section 14(1) for the power of the comptroller to revoke patents "on one or more

30 Although the Patents Act 1949 did in fact define the word "invention" in section 101(1), but only to repeat section 6 of
the Act of 1623, see note 132 below.
grounds on which the grant of the patent might have been opposed" under section 10, which largely referred to novelty and a sufficient specification. The preceding statutes did not provide for the requirement or revocation of patents on the ground of obviousness.

However, want of inventive step had historically been a ground for invalidity in the courts. The Tudor meaning of the word "invent" has been discussed in depth earlier in this work, and in addition to recalling that the word embodied the concept of novelty and to "bring in" [from without the realm], it should be emphasised that novelty and inventive step were part and parcel of the same requirement. Section 6 of the Statute of Monopolies extends "letters patents and grants of privilege ... to the true and first inventor and inventors of such manufactures ..." The word invention was not defined, has in fact never been defined except for the duration of the 1949 Act which refers one back to the terms of section 6 of the 1623 Act", that is to say essentially the word "manufacture".

There is, not surprisingly, much confusion between the words "manufacture" and "invention" right up to the beginning of this century. Fox\textsuperscript{34} traces the origins of judicial interpretation of the word manufacture back to \textit{Boulton v Bull}\textsuperscript{3}, when it "applied not only to things made, but to the practice of making..." In \textit{Ralston v Smith}\textsuperscript{4} it comprehended not only productions and the means of producing them, but also any improvement of an old process. Fox argues that the word invent included accidental discovery, and cites as authority Bramwell CJ in \textit{Hayward v Hamilton}\textsuperscript{35}, "... found it out, which I take to be the equivalent of invention".

\textsuperscript{31} Patents Act 1949 s.10: "invention" means any manner of new manufacture the subject of letters patent and grant of privilege within section six of the Statute of Monopolies ...
\textsuperscript{32} ibid.
\textsuperscript{33} (1795) 2 H BL 463
\textsuperscript{34}11 ILL 223
\textsuperscript{35} (1879-81) Griff PC 115
Webster defined "invent" as being synonymous with "discover" or "find out". Lord Mansfield\footnote{36} said that "water tabbies" were discovered by a man spitting on the floor.\footnote{[11]}

The purpose of this brief discussion is to draw attention to the obscurity of the concept of novelty, which included, as has been shown, obviousness and inventive step, during the earlier period of musical instrument invention which will be considered in this section of the research project. One of, if not the, earliest judicial expressions of what Fox\footnote{37} called the "new theory of inventive ingenuity" comes from Lord Brougham in Soames's Patent\footnote{39} where he talks of "... the small amount of any step made in improvement ... however small it may be in advance of the state of science or of art previous to the period of that step being made".

An early occasion when obviousness was contrasted with novelty was Edison Bell Phonograph Co v Smith & Young\footnote{40}, a case to which extensive reference will be made in due course. In dismissing an appeal against the judgement of Wright J in the Queen's Bench Divisional Court, Lord Esher MR held that a claim for an improvement of the phonograph by the use of a single floating weight applied both to the recording and reproducing points, thus allowing the use of a single diaphragm with both points on it rather than two diaphragms as had hitherto been the case was both novel and valid. In defending the earlier action for infringement, the defendants had, whilst accepting the general utility and infringement of the invention, argued that the claim was for a principle, was too wide, and was not novel. The judge held that the claim was for a particular arrangement, was novel and was valid. The Court of Appeal agreed with the judge. The Master of the Rolls had contempt for this type of

\footnotesize{36} Llardet v Johnson (1778) 1 WPC 53
\footnotesize{37} waved or watered taffeta
\footnotesize{38} ibid.
\footnotesize{39} 1 WPC 79
\footnotesize{40} (1894) 11 RPC 398
"... whenever I hear the objection taken to a patent which has been used, which has been bought and sold, which has been therefore treated by men of business, as a useful thing, that it is wanting in subject matter, I look upon it, I confess, with an amused contempt. What is the meaning of want of subject matter? It is not the same thing as want of invention, or rather I should say want of novelty; it is not the same thing as want of utility, but, where you cannot maintain any of these propositions which would be sufficient to destroy the patent, it is something else which someone or other at some time has invented as an idea for destroying patents. And what is it? It really comes to this, that, although the invention is new - that is, that nobody else has thought of it before - although it is useful, yet when you consider it you come to the conclusion that it is so easy, so palpable that everybody who thought for a moment would come to the same conclusion; ... it comes to this, it is so easy that any fool could do it." Lord Esher MR felt that such a defence to an action for infringement could hardly ever be made out. There was no authority for it in the Statute of James I, and the Master of the Rolls evinced direct ridicule of it, yet by degrees the test of inventive step has become the second hurdle which any patentee must overcome.

Fox, writing as he was in 1947, likewise shared Lord Esher MR's antipathy for the "theory of inventive ingenuity", as he called it. He notes" that it was solely a product of the common law, and the judicial interpretation of the word invention, and he was surprised that the various statutory amendments of the Statute of Monopolies nevertheless preserved the basis of grant under section 6. Looked at with the benefit of hindsight, this viewpoint seems

41 ibid.
difficult to comprehend. It has already been shown that the Statute of 1623 was itself merely declaratory of the common law that had preceded it, and to rely upon the courts continuing to identify the law of patents from the ether seems reasonable enough in the absence of codifying legislation.

Be that as it may, the rising tide that Lord Esher MR was fighting proved irresistible, and the legislature eventually "caught up with judge-made law" in 1932 when section 25(3) of the Patents Act of that date first provided for obviousness and want of inventive step as one of sixteen grounds for revocation of a patent. Fox certainly saw this as a backward step: "The doctrine of 'obviousness,' however, now had full statutory authority in Great Britain and, like a willing horse, it has been flogged well-nigh to death in the decisions."

The period leading up to and during the second World War saw much pressure for reform of the patent system, which led to the Patents Act of 1949. However, Parliament decided against codification of the meaning of "patentable invention", except in as far as to refer back to the "manner of manufacture" in the 1623 Statute. The Departmental Committee on the Patents and Designs Acts Report to Parliament in 1931 preferred to rely on the general principles "arrived at in a series of judicial decisions which have extended over two or three centuries, and with which there is no quarrel." They felt that it would have been a retrograde step to stereotype the law. To this day the word "invention" remains undefined in the statute book, those who drafted the European Patent Convention 1977 (which the 1977 Patent Act puts into effect) being unable to reach agreement on what the definition was.

42 Fox, ibid.
43 see later in this work
'Licences of Right'

The Patents Act 1919 introduced 'Licences of Right', and section 40 of the 1949 Act provided for any government Department to apply for an application to be endorsed with the words "licences of right" if the patentee charged an excessive price for his patented article, or if he failed to work it "...without undue delay and to the fullest extent that is reasonably practicable." The 1919 Act had merely required that it be worked on a commercial scale. These provisions were aimed at preventing abuses of the patent system. The roots of this system may again be found in letter patents like Langdale's, which it will be recalled contains the statement:

...that our servant George Langdale hath no meaninge

hereby to raise the prices of these instruments before mentioned he is content to set them

more reasonably then heretofore they have been sold That is to say the best trumpett not

above forty shillings the single sackbutt fyve pounds ...

If Langdale did over charge for his products, then his monopoly could be challenged in the courts without questioning the Royal prerogative, and in that sense the document prepares the way for licences of right. Further,

and also that none within our city of London nor within seven miles compass

of the same shall mende either sackbutt or trumpett except Peter Grinn who heretofore xx

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44 it will be recalled that the Langdale patent, amongst others, regulated prices of the patented trumpets and sackbutts, and that the statutory provision therefore merely enshrined the common law principle.

45 s.3 Patents act 1949.
only mended trumpets upon paine of tenne shillings for every one so mended and repaired

This early licence of right is contained in line twenty-four of the text. Note also the petition mentioned in chapter II in the state papers domestic in the Public Records Office dates from April 1584 of one Simon Brewer to Sir Francis Walsingham.

"That he may be permitted to exercise his trade of making trumpets and sackbutts, not withstanding the privilege granted to Geo. Langdale: having no other trade to maintain himself, his wife, and nine poor children."

Meinhardt gives as an example of the sort of abuse that was prevented by the 1919 Act the case of a patent covering radio valves suitable for all British made radio sets. The patentees refused to supply competitors who were using an American-type base, leading to an allegation of abuse of the patent. The court held that it was not an abuse of the patent to prevent competitors from using it for their American-type basse, since the invention was being commercially exploited by supplying the principal demand by British manufacturers.

The 1949 Act addressed that problem, and section 37 of the Act did in the opinion of Meinhardt, re-enact and strengthen section 6 of the Statute of Monopolies in that respect.

INDUSTRIAL APPLICATION

Tudor patents often have clauses which purport to prevent abuse of the monopoly which they grant, e.g. in Langdale's patent the reference that "because he hath no meaninge to raise

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46 Vol. CLXXV entry number 109, available on microfiche in the Rolls Chapel Eliz SP 12
47 op cit., at p 241
48 (1934) 51 RPC 75, cited by Meinhardt.
49 op cit. at 252
prices" and so on, which were regulated to "fower pounds per sackbutt and twenty shillinges per trumpett". As is well known, this system fell into abuse during the latter part of the reign of Queen Elizabeth I and James I, e.g. Darcy v Allin 1602.

As with novelty and inventive step, the roots of the present day requirement that patents of invention be capable of industrial application may be traced to section 6 of the Statute of James I and the voluminous case law on "new manner of manufactures". Also the direction in the section that such inventions shall not be used "... soe as also they be not contrary to the lawe nor mischievous to the State, by raising prices of commodities at home, or hurt of trade or generallie inconvenient..." The common law has historically required a patent to be useful, particularly when considering whether to extend the term of the patent in situations where the working of the patent proved to be less than profitable. A case to which extensive reference will in due course be made concerned an action for a grand pianoforte: Erard's Patent⁹. In granting an extension of one of the patents for seven years, Lord Lyndhurst said "... we expect a strong case upon the utility of the invention." If an invention simply would not work, then the court would hold the patent invalid. For example, where railway signals gave conflicting signals and caused danger to passengers⁹. By section 25 of the 1907 Act, an invention which was not useful could be revoked, and this ground for revocation was continued in the 1949 Act, where section 32(1)(g) provided "that the invention, so far as claimed in any claim of the complete specification, is not useful."

The Act of 1977 changed the emphasis from being a ground for revocation or extension, to

⁵⁰ (1835) 1 WPC 559 PC
⁵¹ (1885) RPC 201
being a *requirement* for grant of the patent. In order to give effect to Art. 52(1) EPC, the invention must be *capable of industrial application*. This phrase is defined in section 4 of the 1977 Act as being an invention which "can be made in any kind of industry, including agriculture." This subject will be dealt with more extensively in the later chapter on European harmonisation of intellectual property rights, but for present purposes it should be noted that it has been argued that the inclusion of this definition is at least partly declaratory of the common law that preceded it.

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52 s. 1(1)(c) Patents Act 1977
53 see e.g. Batchelor, "Fujitsu..." IRLCT Vol. 11 Number 2 (1997) *ibid.*
INTRODUCTION

The first part of the section of the thesis devoted to patents has largely been concerned with analysing and chronicling the development of the law of patents in England. The writer has been careful to create a selective, discerning and above all contemporary backdrop, albeit fairly detailed, against which the actual use of the patent monopoly can be viewed in its legal and historical context. The role of the researcher is, after all, clearly not to produce a text book. The first part of the section on Patents that dealt with their development up to 1601 was in a sense completely self-contained, in that ultimately it was devoted to the analysis of one letter patent, that is to say that of 1583 granted to George Langdale. It was established in that section that most of the elements of the modern patent, that is to say a monopoly right granted for a limited period to one individual, subject to the limitation that the invention be worked, were present in that letter patent. The requirement of disclosure was traced in considerable detail in the sections dealing with the period after 1601, and of course the gradual evolution of the requirements of novelty and inventive step have been analysed in considerable detail.

This later period, that is to say 1601 onwards, is structured differently in that the actual use of patents by manufacturers and others is being treated separately in this section. The purpose of doing this is that it is more practical, in that the statistics, specifications, law reports and so
on that have been selected to provide the empirical evidence for the historical part of this research may be more clearly viewed and analysed against a solid body of legal research. The alternative, that is to say adopting a piecemeal approach dealing with one particular legal development section to be followed or combined with a technological development in the industry, would have required that a conclusion be reached before the research which supports it had been carried out.

The reasons for the massive growth in patent applications in 1852 have been investigated in some detail earlier in this work. In 1851 there were 455 English Patents sealed¹ compared with 2187 sealings in 1853, and 3045 applications². The establishment of the Patent Office and the collation of all English patents from 1617 under the direction of Bennet Woodcroft at that time, which coincided with the reforms of the patent system in 1852, have provided the single greatest collection of technical drawings and descriptions in the world. From the researcher's point of view, this is a mixed blessing - it means that he has to familiarise himself with the systems that have evolved from that time up to the present day, with their somewhat fuliginous cataloguing systems and obscure locations within the SRIS. The American system is far more straight forward, in the sense that each time their patent system has been reformed, the whole collection has been completed updated so that there is only one system in operation, and that is always the present one. However, it can be strongly argued that the English approach gives the researcher more insight into the nature of the patent when it was applied for and (possibly) granted, since he has to go through a similar search process.

Undeniably, there is a real sense of identity with the patentee and his invention when one is in

¹ source: Titles of Patents of Invention, SRIS. Cited in e.g. Mitchell & Deane, Abstract of British Historical statistics, CUP 1971, Gomme (op cit.), Boehm (op cit.), etc. etc.
² source: Report of the Commissioners of Patents for Inventions (S.P. 1876, XXVII), cited in Mitchell & Deane, Gomme, etc. etc. op cit.
the same vault doing the same search that thousands of other hopeful inventors have previously done!

Joyce and East's patent 1694

The Subject Matter Index was searched methodically for all musical instrument patents, and the results have been collated and classified by the writer in Appendix B. Looking at the Totals By Decade at the end of the appendix, it will be noted that there was only one musical instrument patent sealed between 1617 and 1694, that being No. 337 granted by William and Mary to George Joyce and Peter East on 20th October. The grantee claims to

'have found out and discovered "A certain Instrument, which being applied to clocks, Organs or any other Key Instruments, as Harpsichords, virginalls, or the like, will cause the same to Chime or Play any Manner of Tune, Air, or Notes Plain, or performe a Consort, and is alterable to any Tune or Air in Half and Hour by any Person (tho noe Master of Musicke) without Changing the Instrument;" which Invencon is new and has not heretofore been vsed in England, and prayed vs to grant them our Letters Patent for the sole vse and benefitt thereof for the terme of fourteen years.'

The grant is for the invention of an automatic device for playing a keyboard or similar instrument, and is of enormous technical interest in that respect, though, in keeping with other letters patent of the period, the document does not expand further with a detailed description of the invention. The terme of fourteen years was required by section 6 of the Statute of Monopolies, as has been described elsewhere in this work, and it is interesting to note that on page 2 the grantees are required to '...teach, excise and putt in practice the said
new Invencon...'. This reference clearly illustrates the theories of Seaborne Davies that the
term related to two sets of apprentices, and this is a good example of the early requirement
that the invention be incorporated into the common wealth by that method so that the State
benefited in due course from the monopoly right that it had granted to the patentee for a
limited period. Also, the patentee was require to work the invention, which would prevent
abuse of the patent by non-use. It is interesting to compare patent no. granted to Aron
Rathbone and Roger Burgess in 1617 by James I, which is granted for twenty-one years for
the engraving and printing of maps and plans of the major cities of England, to be made in
copper, brass or other metal and printed on paper, parchment, cloth or other materials. This
letter patent is really no more than the granting of a royal licence and privileged to carry out
this work, which had been neglected for the want of such a monopoly. Within the
contemporary meaning of the word "invention" it was an idea brought in from "amongst
forraine nations", and is clearly not in that sense new. However, the 1694 Joyce and East's
patent is of a completely different order. While much of page one of the letter patent uses the
same language as the 1583 letter patent to George Langdale, for example:

'... of our especial grace, certaine knowledge, and meer mocon, wee have given and granted, and by
theses presents do give and grant unto the said George Joyce and Peter East, their executors,
administrators, and assignes, especial lycence, power, priviledg, and authority, that they, by themselves
and by their deputies, servants, agents, ...'

The grantees have "invented and found out" the new invention, rather than it having merely
been "brought in". The similarities to the langdale patent should be noted.
THE PERIOD 1730 TO 1774

Use of Patents of invention to protect innovation in musical instrument technology.

In 1730 there were two grants in respect of Harpsichords, numbers 521 to John Harris and 525 to William Barton. Number 521 was granted on October 22nd for

"A new invented Harpsichord, upon which (having only two sets of Strings) may be performed either one or two Unisons, or two Unisons and one Octave together, or the Forts and Pianos, or Loud and Soft, and the contrary may be executed as quick as Thought, and also Double Basses, by touching only single keys, whereby hard Divisions on the Bass Part may be well played in a double manner without the Thumb and Finger together, which could not be well executed otherwise; ... that besides ... a great deal of time and trouble will be saved in Quilling and Tuning the said Harpsichord, and it will keep much longer in tune than any Harpsichords that have Octave Stops, and consequently will not be so expensive to keep the same in good order as those Instruments made in the Common Way, neither can any double-key'd Harpsichord be so serviceable and useful as the Peticoner's new-invented Harpsichord, although the Expence is vastly greater."

The invention appears to have been a new octave coupler, combined with a string shortening device which stopped some or all of the strings at the centre and thereby raised the pitch one octave. John Harris is not, however, a name that figures in the records of harpsichord makers, and it is doubtful therefore whether the patent brought him much commercial success.

Number 525 of December 17th 1730 to Wm. Barton for "Pens of Silver, Brass, Steel, and

3 extracted from the specification.
other sorts of Metall, which will improve the tone of the said Instruments, and last many Yeares without Amendment; Crow and Raven Quills, of which they are now made, requiring frequent Charge and Trouble." concerned the invention of using metal plectrums in harpsichords to replace crow-quill for agitating the string, which did not meet with success in the market place, though demonstrated the technological advance of using different materials. Given the primitive development of strings at the time, any perceived advantage in the durability of the plectrum and sound of the instrument must have been far outweighed by the reduced life of the strings. Certainly if this invention were applied to the next harpsichord patent, number 581 of December 30th 1741 to Roger Plenius for "Lyrachords which are harpsichords string with gut", the result would have been strings with a very short life span, though of course the monopoly rights granted by the patent would have prevented this. In fact Plenius had devoted his inventive mind to this particular aspect of the problem that formed his goal, and provided in the claim for a "set of plectrums, wherewith to strike the keys of the said instrument instead of quills, which plectrums, being made of ivory, tortoiseshell or other materials ... with regulating screws behind the said tongues." Given that quill has survived to the present day as the favoured material of the harpsichord maker, it is doubtful whether these two patents had any real success commercially. It is however interesting to note that neither of these two grants mentions sole leather, which had been used in Italy up to 1697 by such makers as Zenti, Perticis, Deqvoco and Gregori. This suggests that the English makers were doing some sort of search as to novelty, since Plenius avoided claiming Barton's new ideas. However, neither claimed what had been commonplace in Italy during the preceding century, yet either could have done, since the early requirement of novelty under s.6, 21 Jac.1 c.3 provided, as has earlier been shown in this work, for the bringing in of inventions from

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4 see also patent number 613 of 1745 below.
abroad. It must be assumed that the idea was already commonplace in the industry at this
time. It was certainly known in London by 1768, since Jacob Kirkman equipped a
harpsichord with leather plectra made in that year⁴.

All but one of the thirteen patents granted between 1730 and 1774 related to harpsichords,
indicating that the new distinctive style of English harpsichord building in the second half of
the eighteenth century (as distinct from those of France, Germany and Italy) and the
developments in musical instrument technology that occurred at the same time figured in the
growing use of patent protection. Number 613 of 1745 to Roger Plenius was for meliorating⁶
harpsichords, and included a "Stop which imitates the Welsh harp.", whilst number 947 of
1769 to Burkhat Shudi was for machinery to improve harpsichords, in particular the invention
of the well known [to harpsichord makers !] "Venetian swell", which having been invented in
Germany and used on pianos was applied to harpsichords by him. It consisted of a
mechanism resembling a Venetian blind lying over the strings which enabled the sound to be
gradually increased or diminished in much the same way as that of an organ. It will be
recalled that at that time there was a geographical limitation to section 6 of the Statute of
Monopolies, so that an invention brought over from abroad did constitute a new manner of
manufacture. Shudi employed Johannes Zumpe⁷, one of twelve members of the Silbermann
workshop in Saxony where the Seven Year's War had put an end to piano building and caused
them to arrive in England in 1760⁸. John Broadwood arrived from the North of England in
1761 when he also attached himself to the Shudi workshop as a harpsichord maker. In 1770
Broadwood married Shudi's daughter Barbara and became his partner, and effectively the

⁴ see e.g. Raymond Russell, *The Harpsichord and Clavichord*, London 1959.
⁶ making better, i.e. improving
⁷ according to Harding, op cit., though note that David S Grover writing in *A History of the Piano*, Omnicorn 1980 states
that Zumpe in fact set up his own workshop in 1766.
⁸ See "The Piano-Forte", its history traced to The Great Exhibition of 1851 chap V by Rosamund E.M. Harding, CUP 1933.
celebrated house of John Broadwood & Sons was founded.

Number 977 of 1770 to Thomas Haxby was for the invention of "A new single harpsichord containing all the stops of a double one, which by the use of one pedal only, produces every increase, diminution, and variation of tone that a double one is capable of performing ... A single harpsichord of two unisons, octave, lute and harp, which by the use of one pedal only (which pedal has a connection with several sliding tumblers, springs &c.) produces ten variations of stops, also an increase and diminution of tone (either gradually or instantaneously) from the softest stop to the full harpsichord, or from the full harpsichord to the softest stop." Number 1020 of August 29th 1772 to Adam Walker concerned a new method for producing continued tones from the wire strings of a harpsichord "Coelestina". This was an early mechanically assisted instrument, being "a keyed instrument, shaped like a harpsichord, with one, two or more wire or cat-gut strings to a note. The tone is produced from those strings by one or more threads or bands of silk, flax, wire, gut, hair, leather ... and the said threads or bands are kept circulating above or under the strings by means of the keys ... the said thread or threads produce tones from strings as the bow of a violin ...[it] is also made to be played by a pricked barrel ..." Number 1081 of September 12th 1774 to Joseph Merlin related to the new idea of combining the action of the harpsichord with that of a pianoforte by compounding harpsichords with a set of hammers similar to those in a pianoforte in addition to quills, a highly original idea, and one which may be found in actual use on a harpsichord of Merlin's manufacture dating from 1780 in the Deutsches Museum in Munich, Germany. Merlin was, of course, a formidable inventor of such utilitarian devices as

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9 from the patent abridgement.
10 note that a harpsichord string is sounded by being plucked with a section of goose-quill or similar material called a plectrum which is set in a small piece of wood called a jack, whilst a pianoforte string is sounded by being struck with a hammer, which in turn is situated at the end of a repetition mechanism.
the wheel chair and the roller skate. However, it is interesting to note that the harpsichord to which his combination piano-harpsichord invention is attached in the museum does itself demonstrate many other technical innovations for which he did not receive letters patent.

There is a *Celestial Harpe* which undamps a choir of eight-foot strings, which allows them to vibrate sympathetically with those that are actually agitated by the plectra. A *Welsh Harp* device buffs the sixteen foot strings. On top of all this, however, is a continuous belt of paper which is slowly advanced by a clockwork mechanism, which activates sixty-one small pencils through a mechanism of cranks and trackers. This enabled the performer to have the duration and sequence of each note played to be recorded, and was the precursor to the later *player-piano*. The question arises as to why Merlin did not seek to protect these by means of the same monopoly he had for the combination attachment, and the answer is that he was not solely responsible for the other inventions\(^1\), there being several other claimants to that particular throne. This demonstrates that the question of novelty, at least as far as section 6 of the Statute of Monopolies required that the granting of letters patent be confined to 'the true and first inventor', was being taken very seriously at the end of the eighteenth century by musical instrument manufacturers. The instrument is inscribed *Josephus Merlin Privilegiarius Novi Forte Piano No. 80 Londini 1780*, and the use of the word *Privilegiarius* indicates that the patentee took his letter patent seriously, since the use of this word would have signified that he was exerting his rights under the grant and was prepared to take action against anybody infringing those rights. Unfortunately, it appears that his main competitor at the time, Robert Stodart (see below), appears to have used a similar combination device on a harpsichord made in 1777 which is in the Smithsonian Institution in Washington. However, this instrument is essentially a piano, with added jacks for obtaining a harpsichord sound, and

\(^1\) See e.g. Fetis, F J, *Biographie universelle des musiciens*, Brussels, 1835-44, cited by e.g. Hubbard, Grove etc.
may therefore be described (in modern patent parlance) as a new use for an existing invention.

The problem of being unable to control the volume and tone of the sound due to the plucking mechanism remaining constant regardless of the keystroke, and therefore limiting the range of expression of the player, which historically has both characterised and limited the instrument, was the subject of patent number 1092 of 1774 to Samuel Gillespy, for the construction of harpsichords using a new mode of putting on the quills to strike the strings, and also the attachment of a pedal to raise the top of the instrument, thereby to release the sound more efficiently without having to stop playing to do it.

It can therefore be seen that these developments in music technology were at the same time inventions in the modern sense of the word, being genuinely new ideas or at least new uses for ideas that appear not to have been overtly obvious, and also beginning to be described in some detail. What is however perhaps most noteworthy is the dramatic change that had taken place between the earlier Stuart patents and these later Georgian ones and which is demonstrated by their genuine novelty and the fact that the importation of the Cristofori piano-forte action developed by Silverman in Saxony did not give rise to patent sealings for its mere "bringing in" from abroad. Earlier practice would have undoubtedly led to an attempt to protect the many new facets of this new technology by means of letters patent of invention, but the only sealings for keyboard instruments related, as has been shown, to improvements in harpsichord design, and in one instance, the application of the new piano-forte technology to the harpsichord. **12**

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12 Number 1081 of 1774.
Relationship between use of patents and successful commercial exploitation of the invention

Throughout this chapter this will be a recurring theme, and in searching for evidence of any relationship that may have existed between the use of letters patent and successful commercial exploitation of the inventions in favour of which monopolies had been granted, it is useful to examine the success or otherwise of these inventors in comparison with their competitors. Burkat Shudi had initially worked for a shadowy figure called Hermann Table, himself also an immigrant from Europe, who had settled in London around 1700. He was joined there also by Jacob Kirkman. These two men were to achieve what Hubbard refers to as "the near monopoly by Kirkman and Shudi" of the harpsichord trade in England during the middle of the eighteenth century. Kirkman eventually became Table's successor by marrying his widow in 1738. Shudi had established his workshops in 1729, and between them, he and Kirkman developed the larger harpsichord, which is characterised by having one or two five octave keyboards, two eight foot sets of strings and one four foot set. These instruments were developed in response to the changes in musical taste that have been referred to above, and the technological inventions made by Shudi have been referred to in considerable detail in extracts from his claims in preceding pages of this work. Shudi's instruments were so successful and famous that Handel used them, amongst others. He is known to have made at least one thousand one hundred and fifty-five instruments, due to his practice of dating and

14 according to David S Grover, in A History of the Piano from 1709-1980" Omnicrom, Macclesfield 1980, less than a month after the master's death I see also David S Grover: The Piano, its story, from zither to grand, Robert Hale, London 1976. Apparently Tabel had felt it necessary in 1733 to insert an advertisement in the St. James's Evening Post denying rumours of his death I see No. 2774, Feb. 22-24, 1733. quoted by Hubbard, amongst others.
numbering them. Boalch\textsuperscript{15} has calculated that Shudi produced thirteen instruments per annum during the period 1740-1749, fifteen per annum from 1750 to 1769, and twenty-three per annum from 1770 to 1779. It can be seen therefore that his output rose significantly and steadily in 1769, when he would have been exploiting the monopoly granted to him under his letter patent. However, his competitor Jacob Kirkman, as far as the writer can deduce from the patent rolls, neither applied for nor was granted a single letter patent. In response to the famous "Venetian Swell" invention of Shudi's, introduced his "Nag's Head", which consisted of a hinged section of the casework lid which could be opened and closed at the discretion of the player, and which produced a comparable, and much cheaper to produce, effect to Shudi's invention\textsuperscript{16}. Boalch has calculated that Kirkman produced twice as many instruments as Shudi, thought James\textsuperscript{17} gives Shudi's price as being higher - thirty-five guineas for the 2x8' single, forty guineas for the single with four foot, fifty guineas for a single with swell, and eighty guineas for a double with swell. It is clear, therefore, that the addition of the Venetian swell to an instrument raised its price by anything up to double. It is reasonable to assume that the patent he had been granted enabled him to do this. Kirckman could only retaliate by making more instruments for less money. The other harpsichord patentees that were not connected with Shudi do not appear to have had anything like the commercial success of these two.

The only other musical instrument patents during this period was number 527 granted to Justinian Morse for the invention of an organ with open diapason in the front, with one or more sets of keys, and the bellows to be worked either with the feet or the hands, number

\begin{itemize}
\item \textsuperscript{15} Donald Boalch, Makers of the Harpsichord and Clavichord, London 1955
\item \textsuperscript{16} though note that Hubbard observes that Kirkman first used this device on an instrument dated 1754.
\item \textsuperscript{17} Philip James, Early Keyboard Instruments, London 1930.
\end{itemize}
1062 of 1774 to Peter Nouaille for making silk strings for musical instruments, and number
1001 of 1772 to William Lovelace for making gut-string for violins and other musical
instruments. This last frankly would have failed any test of novelty had there been one at the
time, such string having been used since biblical times! There was one other: number 1065
of the 1774 to Joseph Jacob for ornamenting musical instruments, which would now be
considered more properly a subject for design, but which at the time, when the distinctions
between patentable subject matter and other areas of intellectual property protection were not
clearly defined was granted a patent.

During this period there were a total of 580 sealings, which indicates that musical
instruments accounted for 2.24% of all applications. Bearing in mind that the harpsichord
was at the cutting edge of contemporary technology, that is indicative of the importance of
the industry and its attraction for the developing monopoly protection that letters patent
offered. Whilst that percentage may not sound significant, it compares very favourably indeed
with more recent statistics. For example, the Industrial Property Statistics published by WIPO
for 1991 show that out of a total of 27 587 U.K. patent applications filed under the PCT and
grants made on the basis of those applications, there were 134 under IPC Class 28, that is to
say 0.0048%, and probably up to half of them did not include musical instruments. London
Patent Office statistics for 1993 show that the equivalent class G5 saw 150 grants out of a
total of 8,330, which is 0.018%. Looked at from this perspective, it can be seen that letters
patent was a very important means of protecting inventions, in spite of the huge expense that

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18 The first statute in the field of industrial design was the Designing and Printing of Linens &etc. Act 1787. The first
legislation that could be considered to be the forerunner of the modern registered system was the Copyright of Designs
Act 1839.
19 which includes Classes: G 09 - Educating; cryptography; display; advertising; seals. G 10 - Musical Instruments;
Intellectual Property Statistics, Geneva 1993. These statistics are looked at in more detail later in this section.
it entailed.

THE PERIOD 1775 TO 1790 - a large increase in sealings.

Reference to the Totals by Decade in Appendix B reveals a large increase in the number of musical instrument sealings, the decade 1770 to 1779 totalling ten. There was only one further keyboard patent during that decade, which was number 1172 of 1777 to Robert Stodart for the invention of a grand piano with an octave swell, but this one patent is of the utmost importance, both for its technological importance and for its detailed drawing which is the earliest surviving example of an English Grand Action. This was a modification of the Cristofori piano-forte action imported from the Silverman workshop in Saxony, and was therefore new. It was an interesting combination of the two instruments, harpsichord and piano-forte, since it retained the ruler or rail to regulate the action of the dampers, whilst omitting the intermediate lever that had been characteristic of the earlier actions. At the same time the invention provided for a "check" to catch and hold the hammer after it had fallen from the strings, to prevent it from rebounding against them, and which acted only so long as the key remained pressed down. This was a major step forward in the then new technology of piano-forte design and manufacture, and was a significant departure from the designs that had been brought over from Saxony in 1760. It also marks a change in the disclosure of the invention, since the drawing made it clear for anyone having sight of the letter patent exactly how to make the invention. This indicates both faith in the protection offered by the patent system of the time, and a more rigorous approach taken by the Law Officer of the time. It is
also interesting to note that the letter patent is sealed in the name of one of John Broadwood's apprentices, Robert Stoddart, rather than Broadwood himself. Research by Harding\(^{21}\) indicates that the invention was known as early as 1772 or 1776, and that there is doubt about who exactly invented it, though it was invented in London and was first made by Mssrs. Broadwood. There is no record of any dispute as to whom the grant related\(^{22}\).

The importance of patent protection for new musical instrument technology was therefore well established in 1777, and this process continued. It is not the purpose of this work to analyse in detail the technical improvements and development of the pianoforte, and therefore only a few more patents relating to it will be mentioned here. English piano makers were at the end of the eighteenth century beginning to discover the importance of the player's sense of "touch", which of course is a highly subjective factor for a manufacturer to have to take into account. John Broadwood patented a sustaining pedal which replaced the previous knee-lever for holding the dampers above the strings in 1783 with letter patent number 1379, which also provided for the construction of a piano with two sound-boards, the upper one connected to the lower by a wooden post about one inch from the bottom of the instrument. These improvements enabled Broadwood to get a superior tone from his instruments, and they were apparently preferred by Beethoven to those that he met with in Vienna, and in 1787 at the age of seventeen received the gift of a Broadwood grand\(^{23}\). Of course from the age of twenty-one he became increasingly deaf, and presumably his preference for the Broadwood was to some extent because he could hear it better, though the deeper "touch" that was required by the intermediate lever that enabled the hammer to be driven against the string more forcefully made it more difficult to play rapid passages. It has been said\(^{24}\) that

\(^{21}\) op cit.
\(^{22}\) It could not be properly described as "owned" by anyone, since at that time it was not an item of property, rather a letter patent was still granted under the royal prerogative.
\(^{23}\) see Harding op cit., Mann op cit.
\(^{24}\) see Grover, op cit.
Broadwood's instruments "became the most sonorous anywhere at the time, giving England world leadership in quality and quantity of production [of pianos]."

Patent number 1379 also provided for the "Sordino" or lute stop, which consisted of a piece of wood curved in order to lie along the sound-board bridge, and lined with "soft leather, hair or silk shagg", and which was hinged to the case and raised or lowered onto the strings by means of a pedal provided for the purpose. It has been noted that many of these patents related to instruments which were a combination of both harpsichord and pianoforte, and this device was primarily directed at harpsichordists who had not yet grasped the possibilities of the newly invented pianoforte, that is to say that it was capable of playing both softly and loudly. One can imagine them banging away at the keyboard with little or no sensitivity to the image of dynamics and tone that was available to them. The sordine pedal was therefore an artificial aid for muting the tone and for the production of the pianissimo tone that a pianist would obtain by sensitivity alone. Such was the success of the invention that it became customary to fit one on good pianos.25

Humphrey Walton was granted letter patent number 1607 in respect of an adjustable screw to regulate the touch of grand and square pianofortes with his tangent action in 1787, James Ball had number 1784 sealed in 1784 in respect of a damper "under the string on a lever placed under or over the key which ever is convenient by which means the weight of the key presses it to the string". The patent also included a music desk. Finally, John Crang Hancock patented his grand pianoforte with a spring key action with number 1743 on 13th April 1790.

25 see e.g. Harding, Grover etc.
Reference to Appendix B indicates that there were a total of 14 sealings relating to keyboard instruments between 1770 and 1790 inclusive, an increase of 40% per annum over the immediately preceding three decades. There were 29 sealings in respect of musical instruments as a whole, out of a total of 839 sealings in England during 1770 to 1790. Therefore musical instruments represented 0.035%, a relative increase in a period of overall expansion when compared to the period 1730 to 1774 of 0.0302%. This demonstrates the relationship between the developing commercial and economic importance of the music industry, and the patent monopoly system. The "English action" was developing at the same time as the modern law of patents, and it is at least arguable that without patent protection, the emergence of London as the centre of this lucrative and technologically revolutionary industry rather than, for example, Paris or Rome, would not have taken place.

THE PERIOD 1791 TO 1799 - a time of transition and revolution in musical instrument technology.

By the end of the nineteenth century the piano had replaced the harpsichord in the public's affections, and the commercially successful working of the patents outlined above had led to the replacement of workshop manufacturing by factory manufacturing in much larger quantities. However, the composers of the time were increasingly looking for more and more power, brilliancy and responsiveness, not least because of the importance of the new style of opera that swept Europe at the turn of the century, which employed male castrati for that purpose. The eighteenth century had seen the operatic reforms of Gluck\textsuperscript{26} who had trained in Paris and returned to Vienna in 1780 and had made opera much more exciting by restoring

\textsuperscript{26} Christoph Willibald Gluck 1714-1787, Bohemia (then part of the Holy Roman Empire)
dramatic characterisation and dispensing with Italian conventions. His operas became ever
grander, *Orfeo* (1762), *Alceste* (1767)\(^27\) and *Iphigenia in Taurus* (1769) being models for the
high Viennese "classical" era of the eighteenth century exemplified by such composers as
Mozart, for example in the opera *Idomeneo* (1781), and Haydn\(^28\), who wrote nineteen operas.
However, it was the development of the *Sonata* form that was perhaps the two composers' greatest contribution to the classical style, consisting of a piece of music with four
movements, with development from the major or tonic key to the contrasting dominant key,
with changes in tempi and new themes. This form was applied to all kinds of ensembles and
works, from trios to orchestras, and divertimenti to symphonies and concerti.

This period also saw a major change in the way that composers such as Mozart earned a
living. Whilst this thesis is not the proper place for a detailed consideration of the lives and
work of eighteenth century composers, it is important to create a backcloth against which the
technical developments in the musical instrument industry and their protection by means of
patents may be viewed. Mozart was in 1781 hugely successful as a composer, not least
because of the opera *Idomeneo*. However, he was essentially a servant of the Archbishop of
Salzburg, being employed as concertmaster, that is to say leader of the orchestra, or first violin. He had to fit all his other work in with this overriding appointment, which did not pay
very well. His success elsewhere did not endear him to his employer. In 1777 he left his
employer's successor\(^29\), and essentially became a freelance professional musician, since the
other courts of Europe ignored him. He did this by giving public subscription concerts, for
which he wrote new works, for example no less than twenty-seven piano concertos. He even

\(^{27}\) revised for a Paris production in 1777 with improvements [see e.g. *Mann op cit.*]
\(^{28}\) Mozart (1756-1791) and the much older Haydn (1732-1809) had met in Vienna in 1785
\(^{29}\) Hieronymus, Count von Colloredo
engaged in a celebrated "dual" at the piano with his gifted contemporary Muzio Clementi (1752-1832) before the Austrian Emperor\(^\text{30}\). Clementi went on to concentrate on the commercial publishing of music, itself a new profession that was of course to develop into the massive industry that it is today. It was the new improved *fortepiano* that enabled him to raise the piano concerto to the level of perfection that many still consider Mozart to have achieved to this very day. The classicism of the eighteenth century gave way to the romanticism of the nineteenth century, when Beethoven's (1770-1827) piano sonatas drove music away from the elegance of Haydn and Mozart, and into new spheres of drama, philosophy and unconventional form. Schubert (1797-1828) wrote a great deal of solo music for the *pianoforte*. With the benefit of hindsight, the writer can see the new age of Romanticism appearing over the horizon, which swept away the classical concept that the most direct and aesthetically true method of expressing music was principally through the medium of the human voice, and that attempts to make music solely on musical instruments were not as spiritually fulfilling. This was all to change in the nineteenth century, when the sound of a full symphony orchestra, as well as that of smaller ensembles, was seen not only to be an alternative medium of musical expression, but in fact the only means of expressing music that could not be expressed in or with the human voice. Composers such as Mozart and Beethoven, and in England Samuel Wesley, represent the beginning of this new musical dawn. To do this sort of job, a revolution in musical instrument technology was needed.

Looked at from another perspective, it was this demand for a new type of sonority and flexibility to which piano manufacturers were quick to respond with new developments in technology, and equally quick to make full use of letters patent in order to protect their new

\(^{30}\) For a detailed account of this event, see e.g. Grove's Dictionary of Music *op cit.*
inventions. In 1792 there were four\(^1\) patent sealings in respect of pianos. Number 1887 to James Davis for a combined instrument with two keyboards, the *upper* one for the *pianoforte* and the other for the *harpsichord*. Compare another from the same year: number 1866 to John Geib for a similar instrument, but the *upper* keyboard for the *clavichord* and the *lower* keyboard for the *pianoforte*. Patent number 1849 to George Buttery was granted for the invention of springs attached to each foot of the frame of a pianoforte in order to remove the deadening effect of a carpet. Number 1849 of the same year was granted to George Garcka for the invention of a new arrangement of wrest pins.

There were two piano patents on 1794, the first being number 2016 to Sebastian Erard for a mechanism which enabled more strings to be struck by the hammer by the movement of a pedal. The other was to William Southwell number 2017 for the invention of the "Irish damper", which consisted of a damper stick which was hinged directly to the key itself, therefore lifting the damper up and way from the string when the key is depressed. When the key is released, the damper falls with it and is pressed by the weight of the key upon the string. Unfortunately, this inhibited the *forte* stop of the pianoforte\(^2\). 1795 saw one sealing for "an upright pianoforte in the form of a bookcase", number 2028 to William Stoddart, which also provided for the arrangement of additional hammers to the treble of the instrument, "both the hammers and dampers are returned by weight". This invention not only had the advantage that it saved considerably on space, but it also provided storage space in the space on the right, above the treble strings\(^3\) !!. Quite how successful Stodart was in enforcing his patent was another matter, since Broadwood, to take but one example, produced nine hundred

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\(^1\) note that the Subject Matter Index only lists three.
\(^2\) see Harding *op cit*.
\(^3\) see e.g. an example by Clementi of London *circa* 1815 in the Colt Klavier Collection.
and forty pianos between 1799 and 1831. 1797 saw the invention of the *drum* in patent number 2160, a mechanism invented by William Rolfe and Samuel Davies which could be fitted to harpsichords, grand pianofortes and square pianofortes, and which consisted of a hammer which could be made to strike against the soundboard of the instrument and produce the sound of a drum. An escapement action was fitted and the hammer was worked by a foot pedal. In number 2264 of 1798 William Southwell again patented an invention, this time for downstriking additional hammers for upright pianos with additional keys. Basically, he placed a square piano upright on a stand, and since he placed the hammers close to the instrument's highest point, he needed to connect them to the keys using rods or "stickers". The invention was not a success. In 1799 Joseph Smith was granted patent number 2345 for the invention of new internal bracings of pianofortes, to actually admit the introduction of a drum, tabor or tambourine into the internal parts of the instrument!

It can be seen, therefore, that this decade of the eighteenth century saw the continuing attempts of harpsichord makers to combine their instruments with pianofortes in one instrument, in order to satisfy the growing demand for music to be played on both instruments, and thereafter improved technology to facilitate more expressive sensitive playing, with the addition of special effects. Advances in musical instrument technology were made, and responded directly to the needs of a new form of music. By obtaining and working patents, English keyboard manufacturers were able to exploit the commercial potential of their inventions, and continue the successful development of their industry. The pattern of development in France was similar, although it is not felt necessary to recount it in the same detail for the purposes of this thesis. However, one French maker must be referred to, since

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he figure so prominently in English patents. This was Sebastien Erard, who constructed his first pianoforte whilst employed by the Duchess de Villeri\textsuperscript{9}. A patent was conferred upon him by Luis XVI, but in 1792 he came to London to open his first factory in Great Marlborough Street, and in 1794 obtained English patent number 2016 (referred to above).

\textsuperscript{35} see Harding p 75 \textit{op cit.}
Referring again to Appendix B, there were a total of 14 patents sealed in respect of musical instrument inventions, the great majority of which were for keyboard instruments. There were a total of 579 sealings in the period, indicating that musical instruments accounted for 2.42% of the total. This was a massive increase compared to the period 1770-1790, when the proportion was 0.035%, and also compares incredibly well with the figure for 1991 of 0.0048%, as mentioned above. It appears then that the white heat of late eighteenth century technology was being generated by the musical instrument industry, and that it was the patent system that was relied upon heavily to protect its new inventions.

THE PERIOD 1800 - 1840

The early nineteenth century saw the continuing development of the pianoforte and other musical instruments, and inventors of the new technology continued to rely upon patents to protect their inventions. It has been both useful and academically justifiable to give detailed consideration to many piano patents in the time leading up to 1799, in order to look closely at the development of both the patent system and the new technology, and their relationship with each other. However, this process cannot continue, for it would very rapidly outgrow the spacial and temporal confines of this work, not to say to deviate from its purpose.

Consequently, the object of this section will be to identify and analyse some of the most important patents and technological developments, and also to look at litigation that involved them. This will fulfil the aims of, on the one hand, continuing to observe the development of the new technology and of patent law, and on the other to analyse closely the way in which the law of patents changed, and how this effected, or was affected by, changes in the commercial exploitation of changes in technology.
DIFFICULTIES IN ENFORCEMENT OF EARLY MUSICAL INSTRUMENT PATENTS

BAINBRIDGE'S SPECIFICATION - the crucial importance of a detailed description

An important patent infringement trial took place in the Court of King's Bench in December 1810 between two musical instrument maker's. The Plaintiff William Bainbridge had been granted patent No. 2693 on 2nd April 1803 for "Certain Improvements on the Flageolet or English Flute, whereby the Fingering will be rendered more Easy, and Notes produced that were never before Produced". Following grant of the letter patent Bainbridge was obliged to and did cause a description of the instrument to be inrolled in the Court of Chancery, in accordance with the required procedure of the time. The original drawing and specification has of course been destroyed by the Patent Office, but the Eyre and Spottiswoode print remains in the G.B. vault of Southampton Buildings. It has to be said that, unfortunately, there is a discrepancy between the specification as found in the old GB vaults of the Patent Office and Carmel's report, which is the one reproduced by Hayward. The specification in the report describes a flute or flageolet where "an upper joint or mouth joint shall be the same or nearly the same as in other English flutes or flageolets, as far as relates to the several parts by which the sound of the instrument is produced, and that the other joints upon which the fingering is performed shall be either the same or nearly the same as those of the German flute, in order and to the effect that the English flute or flageolet so altered and improved, may and shall require the same fingering as is required to be used in performing on the German flute." Bainbridge's first object is therefore to make an English flute playable with

1 Bainbridge v Wigley (1810) 1 CPC 270, HPC 551
2 see the role of the Law Officer noted in the section of this work dealing with the early development of the specification [above]
the same fingering system as that of a German flute, and he goes on to describe in
considerable detail exactly how this is to be achieved, with changes of bore, extra keys and
external dimensions which make it clear how to work the invention. He goes on to describe
what appears to the writer to be an extra hole which enables the note to be overblown one
octave, which may be covered using an extra key. Thirdly, he gives details as to how flutes of
varying sizes, and therefore pitches, may be constructed so that they may be fingered in the
same way, and describes how to ensure that they remain in tune with each other, giving
precise measurements. For example, "I...let the upper joint be bored about the thickness of a
piece of paper wider than the German flute of that size, and from the top finger hole to the
sound hole or centre of plug hole, when turned the same as an octave German flute, the
distance must be about four inches and a half ... 2. For the C flute or one size larger than the
octave, the distance from plug hole to finger hole must be five inches ... 3. For the B flute,
from plug hole to finger hole five inches and seven eighths ... " and so on.

However, the report goes on "Fourthly and lastly, I do apply to English flutes or flageolets ...
a key for producing the half-tones for which His Majesty was pleased to grant unto me the
sole privilege and use, by certain letters patent, bearing date on or about the 14th day of May,
in the forty-seventh year of his reign." This clearly refers to Bainbridge's later patent No.
3043 of 1807, the specification of which was inrolled on 13th June of that year. The writer
feels compelled to comment that the Specification as filed in the vault is rather broad in its
claim, there being several improvements claimed with precious little in terms of detailed
instruction of how to achieve them. for example, "I do make in one side of the cap or piece
immediately above the whistle piece ... an hole or perforation, and do insert therein a mouth-
piece or tube, or other suitable piece ...". Compared, say, to Erard's specification [above], this
is vague in the extreme, and does not support the claims. The version in Carmael's report has been tidied up a bit, and is signed by the patentee on 26th April 1810. From this, it may be deduced that the court had before it a version of the letter patent, rather than a completely authentic version. Be that as it may, this last claim was essentially for several holes, which could be covered or indeed made smaller or larger, either with the thumb or the mouth [!!!] in order the better to alter intonation, strength of sound and facility of fingering.

To summarise the patent, there would appear to have been genuine improvements in the flute whereby the player could transpose into any key rather than being limited to the tonic key of a particular instrument, intonation was improved, and a consistent fingering system was effected so that players changing from higher pitched instruments to lower ones, or indeed from the English to the German and vice versa This was achieved by alteration to the number, location and size of holes, changes to the bore, and attachment of a mouth-piece or pipe.

The trial judge was Lord Ellenborough, who considered that the specification was only the modus operandi, and called competent workmen in order to ask them whether they could make the instrument by the mode therein specified. Two witnesses were called, Mr. Sharpe, the flageolet player from the Opera house, and another player from the lyceum Theatre, who both described the instrument as "a great improvement". C natural was so much improved that they no longer had to transpose music which required that note into another key so as to avoid having to play it, which hitherto they had to do. Further, the new flageolet could go as high as the note double F, which was "a note beyond the compass of the old instrument. It did not appear that it produced any other new note." His Lordship held that the addition of but one new note to the compass of the instrument was fatal to the patent, since "...the ground on
which it was granted having failed, the consideration on which His Majesty was induced to
grant his patent not being truly stated; it was granted on the faith that the patentee had truly
stated the grounds on which he claimed that exclusive privilege". Bainbridge had claimed
new notes, whereas "...in fact, he has produced but one new note." Following consultation
with counsel, a compromise was reached, whereby one juror would withdraw, each side paid
their own costs, and the patentee undertook to bring no new action.

This case, therefore, demonstrates clearly that the court was inclined to take a tough line
against what would now be classed over-broad patent claims, considering that the claim was
not supported by the Specification, though not using that from of language. This case
occupies an important place in the legal history of the development of the Specification, and
of distinction between what became the claim form the specification.

COLLARD v ALLISON HPC 3 (1839) 352 - the complexity of early enforcement
procedures.

The suit was brought by the patentee to restrain infringement of his patent for an
improvement in the manufacture of pianofortes, and is particularly interesting, since it brings

3 Presumably No. 4542 of 8th March 1821 to William Frederick Collard, since this is the only patent on the Rolls relating
to musical instruments, and was granted in respect of an additional bridge and a moveable damper. There is no other
entry on the rolls for William Collard, who founded the firm of Longman & Broderip in 1767. This firm was perhaps
better known to later generations as a manufacturer of instruments of the violin family, many of which the writer has
encountered in daily use by professional musicians. The firm was associated with Clementi, and eventually on the
death of Clementi in 1832, the firm became Collard & Collard, remaining prominent in the piano industry until
absorbed by Chappell in the present century. However, searches for neither Longman & Broderip, nor Clementi have
shown up a patent during the period in question. It is therefore to be presumed that either the 1821 patent must have
been extended for a period, or that the missing 1827 patent had been lost prior to Bennet Woodcroft's collation and
printing of the patents which the writer now has to rely on, since the original patent rolls from this period appear to
have been taken to a rubbish tip by the British Library during the 1960s, regrettably and most surely one of the most
unforgivable and foolish actions of any library this century, or indeed in any other.
to light for modern eyes, the contemporary legal problems faced by a patentee in the first half of the nineteenth century in preventing infringement of his patent. It was accepted by the court that the patent was of long standing, though it will be recalled that at that time there was no formal search procedure as to novelty, nor what would now be termed inventive step. It was therefore incumbent upon the plaintiff in an infringement action to satisfy the court as to the validity of the patent, before he could proceed in the matter of infringement. The trial preceded the reforms of the court system brought about by the Judicature Acts of 1876, and the Courts of Equity and Law were then quite separate. The Plaintiff filed a bill for an injunction in equity to restrain the alleged infringement of his patent, but since the Defendants responded by challenging the validity of the patent in opposition to the motion, the Plaintiffs were directed to bring an action in the Court of Queen's Bench to try the validity of the patent [i.e. at law], the Master of the Rolls refusing the injunction. The Plaintiffs therefore renewed the motion for a temporary injunction in equity, and this matter was brought before the Lord Chancellor, who observed that "... possession of a patent for a certain length of time gives such a title as the court will protect until a trial at law be had". However, he required "very satisfactory evidence of exclusive possession". On the facts, the Lord Chancellor found that though certain pianoforte manufacturers had abstained from making them in the manner described in the patent specification, other manufacturers said that they had always manufactured the pianofortes in that manner. While not deciding which of those two statements were true, the Lord Chancellor said that "... the discrepancy does throw sufficient doubt on the cause to prevent my interfering by injunction."

This evidence led the Lord Chancellor to decide that the Plaintiff's want of exclusive possession, combined with considerable doubt as to the novelty of what was claimed and
therefore the validity of the patent, saying that he did "not feel that I ought to interfere." The Defendants were put upon short notice of a trial, and keeping an account. The matter was tried on April 15 of the following year, and a verdict found for the Plaintiffs in favour of the patent. However, the Defendants moved for a new trial following the tendering of a bill of exceptions, and a rule nisi for a new trial at law was arranged. The Plaintiff's motion for the injunction was brought on again, but on May 14th of that year Cottenham LC refused the application, the legal title of the parties being still undecided.

What happened after that is not known, but the case serves to highlight the problems faced by the proprietor of an apparently valid patent of long standing when he sought to prevent infringement of it by competitors. The validity of the patent being challenged in what could now loosely be described as the Gillette defence, the Patentee had an uphill struggle to prove that his patent should have been granted in the first place. Since there had been no search nor substantive examination of the specification when granted, it was relatively easy for evidence to be adduced that competitors had anticipated that invention twelve years earlier or more. The onus fell upon the patentee to show evidence to the contrary. This same problem presented him with a "double whammy", in the sense that the same evidence that before the grant of the patent served to show that the invention had wanted novelty, also served after the grant to show that the patentee had not enjoyed quiet possession of his patent, and this undermined his motion for an injunction to prevent unauthorised use whilst waiting for the trial. Add to this the problem that the plaintiff faced in being caught between the two courts of Equity and Law, the first concerning the injunction and the second concerning the validity of the patent, and a picture emerges of a very frustrated pianoforte manufacturer. Further compounding the patentee's vicissitudes was the fact that the firm was facing stiff
competition from the then dominant firm of Broadwoods⁴, making the need for reform of the patent system clear.

The early nineteenth saw the continuing development of the pianoforte and other musical instruments which accompanied the new age of Romanticism, and inventors of the new technology continued to rely upon patents to protect their inventions. It has been both useful and academically justifiable to give detailed consideration to many piano patents in the time leading up to 1839, in order to look closely at the development of both the patent system and the new technology, and their relationship with each other. However, this process cannot continue, for it would very rapidly outgrow the spacial and temporal confines of this work, not to say to deviate from its purpose. Consequently, the object of this section will be to identify and analyse some of the most important patents and technological developments, and also to look at litigation that involved them. This will fulfil the aims of, on the one hand, continuing to observe the development of the new technology and of patent law, and on the other to analyse closely the way in which the law of patents changed, and how this effected, or was affected by, changes in the commercial exploitation of changes in technology. Themes that will direct the selection of patents are invention, improvements to existing inventions, novelty and obviousness, utility, technological progress and commercial success.

The new century anticipates romanticism and technological development

The arrival of the nineteenth century brought with it a new age. On the one hand, it brought the peak of classicism, which had been developing from the middle of the previous century,

⁴ see e.g. Grover and Closson op cit.
in music no less than in other arts such as architecture, painting and sculpture. This was eventually to give way to romanticism from, say, the 1820s to the end of the nineteenth century. However, music's drive at the turn of the century into new spheres of drama and philosophy anticipated the new age of romanticism, and brought with it the need for improved technology to provide the means with which musicians could express their new music. For example, Beethoven's later piano sonatas developed a slow theme into variations which were dramatic, unconventional by contemporary standards, and culminated in Opus 26 with a whirlwind finale. The last four of his piano sonatas called for a hitherto unprecedented and formidable technique from the player, which could not be produced on seventeenth century instruments. At the same time, his orchestral symphonies developed majestic themes into dynamic and explosive variations. Rhythm became much more complicated, and of course the pianoforte was expected to be able to perform not only music specifically written for it, but also reductions of orchestral scores for rehearsal and entertainment purposes. The music of this period therefore presented a huge challenge to the piano manufacturers of the day, for they had to come up with an instrument that was capable of more sustaining power, speed, and quick, flexible repetitive notes. This was necessary in order for the piano to imitate both the sounds of the orchestra - for example, the violin tremolo - and also of the vocal recitative. But more than this, the emotional range of the music had been expanded, and the late eighteenth century instruments were simply not capable of enabling the player to employ the composer's phrasing. Sudden changes in the complexity of a rhythmic phrase necessitated a piano action that could return the key to its level quickly, but that could also sound the note at different levels. The texture of Mozart and Haydn had changed with Beethoven's music.
Important pianoforte patents

There were several patents relating to pianofortes at the beginning of the nineteenth century, but not all of these will be exhaustively listed here, merely the more important ones to this research. Number 2502 of 16 May 1801 to Sebastian Erard is the first of several to makers of that name. It was this maker who set himself the task of building a piano action that was to be capable of fulfilling the requirements of the new century’s music. This patent merely provided for the modification of the "touch" of the pianoforte by means of a screw which limited the space through which the hammer had to pass in order to strike the string. The young Erard [he apparently dropped the 'h' when he applied for the patent] had come to London from Strasbourg in 1768 aged sixteen, and was initially a harp-maker. Having established a shop in Great Marlborough street, he actually returned to France in 1796 but his family retained the premises and business, and as has been shown, applied for this patent in 1801. There was another patent for a screw adjustment in pianos in the same year, but this was directed at another purpose, that is to say retuning the instrument by passing a screw "through the small end of a lever, so as to carry up or down the wire secured to it". This was number 1054 to Smith and Todd. this was clearly a distinctly different invention from that of Erard. Examples of other include number 2562 of 1801 to Edward Ryley consisting of movable keys for pianofortes, organs and other keyboard instruments, and number 2591 of 1802 to Thomas Loud was for fixing the strings diagonally across the soundboard of an upright pianoforte in order to reduce the space required by the instrument when the string were placed at right angles to the soundboard. This made the instrument more portable, and only applied to the longer or bass strings. The rest of the strings were still parallel to the soundboard.
In 1810 Sebastian Erard was granted a letter patent for inserting the wrest pin into a collar and socket, though throughout this time he had been working on what was to be his famous repetition action. Surprisingly, he had originally brought out his first repetition action in 1808 but had not applied for letters patent in respect of it. It should be borne in mind though that since he was working on it in France, it remained novel under the statute of Monopolies as far as England was concerned. Erard would have been aware of the limited duration of an English letter patent - only fourteen years under the Act of 1623 - and consequently it can safely be presumed that he was keeping his powder dry until he had perfected the invention. This can be seen from the fact that he had applied for and been granted the other two patents of 1801 and 1808, which were for much simpler inventions, but did not apply for a letter patent in respect of his repetition action. This was also partly due to the fact that the action was not, at least in its earlier "prototype" stages, durable, becoming noisy and faulty after much use. However, the invention had reached its ultimate perfection by 1821, and Sebastian Erard's nephew Pierre patented it in England in that year. Harding says of Erard's repetition action that, though later simplified by the piano maker and player Henri Heinz, "This great invention forms the working basis of nearly all modern double escapement actions of the present day; that is, of nearly all the grand pianofortes that are now made." She was writing in 1933, some one hundred and twelve years after the patent was granted, and the same still holds true. The importance of the invention was immediately recognised by contemporary players, for example the pianist Moscheles wrote in his diary having just been to inspect the newly patented invention in 1821 that "The quicker action of the hammer seems to me so important that I prophesy a new era in the manufacture of pianofortes." However, he was not entirely satisfied, and urged Erard to make improvements. This he did, and a further entry in Moscheles' diary on June 1st 1825 refers to Pierre's explanation of "...his Uncle Sebastian's
now completed invention, for which the firm has taken out a patent ... It consists in the key, when only sunk half way, again rising and repeating the note. I ... found it of priceless value in the repetition of notes ..." However, further entries in the diary demonstrate that Moscheles still found fault with the new invention, complaining of a heaviness of tone that was the only bar to complete satisfaction, though still expressing preference over Erard's competitors for the purchase of this pianos, in the early 1830s. Eventually, the pianists of the day recognised that Erard's instruments had a power of "singing" which is said to have inspired Mendlesohn, who, being in possession of an Erard, was inspired to write his E Minor Prelude on the instrument.

Erard's 1821 & 1825 patents

Patent number 4631 of 22 December 1821 contains an extremely detailed drawing and description of Erard's escapement action, which it is beyond the scope of this work to include. However, it is important to note that the patent begins with a clear statement of what is new about the invention, and which distinguishes it from the prior art. This section therefore closely corresponds with what a modern patent agent would consider to be the claim. Pierre Erard claimed in the Specification to

*Improvements in Pianofortes and other Keyed Musical Instruments ... consist in several points: among the most important of which is a new and improved application of mechanism ... of the escapement. Common pianofortes without an escapement in their action ... possess the advantage of a great flexibility in the touch; but on the other hand they are defective on account of the liability of the hammer to rebound or fly up to the string after it has

5 see Harding op cit. pp 156 - 180 generally.
6 extracted from the Specification, No. 4631
struck it, which prevents its free vibration, and is often destructive of its tone. In order to remedy such defect an
escapement has been contrived ... but the [advantage also ] ... renders the performer subject to a very great
inconvenience, namely, that of being always obliged to raise up the finger so that the key may rise up to the level
of the other keys before it will speak or repeat its note again ... These difficulties are met and obviated by the
present Invention and improvements, which require the combination of four points connected with one action,
namely, that of simply depressing the key. The first is the application of a spring ... to support the weight of the
hammer after it has made its blow ... The second is a contact which is brought about between the hammer ... and
the spring or lever connected and supported by such spring ... the third is a lever which by moving on its centre
effects the escapement of the sticker or riser from the hammer ... The mechanism is so contrived as to catch the
hammer in its fall, and to stop or hold it as long as the key is kept entirely down, so as to prevent the possibility
of its rebounding to the wires again, while it releases it again with the smallest rise of the finger end of the key..."

Of course, the complete specification would not have been provided by Erard until after the
patent had been granted, since at that time the patentee was only obliged by a proviso,
contained in the original petition, to "inroll" by an instrument in writing, a detailed
description of the invention at the High Court of Chancery7 within six months of receiving
the Privy Seal writ. This practice had become standard in 1734. However, it should be noted
that there is no formal separation of this part of the specification, describing what is new
about the invention, from the detailed description which followed. The two-dimensional
drawing is of the utmost precision, and the text of the specification describes in enormous
detail exactly how to construct the invention. There are four figures, figure one "exhibits the
above new mechanism for the pianoforte as it stands when the key is up or at rest; Fig. 2

7 see the earlier section of this work which deals with the procedure for patents of invention up to 1852.
represents the same when the key is pressed quite down. These two Figures will shew the effect produced ... ". Figure three shows "the section of such hammer tail, auxiliary lever, and staple, ..." Figure four shows another section of the mechanism. The specification, taken as a whole, instructs the reader in the clearest terms exactly how to work the invention. From that viewpoint, it may usefully be compared with Joyce and East's patent No. 337 of 1694*, which did little more than refer to the invention in terms of what it did, viz. when attached to clocks or keyboard instruments, cause them to play any manner of tune. The rest of that letter patent was, in the style going back virtually unaltered to patent No. 1 to Rathburne and Burge of 1617 for the engraving and printing of maps, given over to the formal wording required by the Law Officer of the time and prescribed by what had become long tradition even then. The formality was essential, since it should not be forgotten that, up until the reforms of 1852, once a patent had been passed, its terms could only be changed or avoided by a special Act of Parliament°. Erard's patent retains the formality, but the detailed description of such a complex invention had come a long way since Joyce and East's patent of 1694. Erard also patented this invention for Scotland on 6th April 1822, and for Ireland on 14th December of that year."10

Pierre's Uncle Sebastian continued to develop the new invention of a repetition action, and his nephew Pierre was granted further letters patent No. 5065 on 5th July 1825 for "certain Improvements on Pianofortes" (communicated to me by a certain Foreigner residing abroad).

The description is again very detailed, extending for some seven pages, with drawings

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8 see detailed analysis of this patent earlier in this section.
9 see Fox op cit.
10 the Statute of Monopolies did not recognise the Act of Union, and an English patent extended only to England, Wales and the town of Berwick-upon-Tweed.
annexed comprising of four sheets and ten figures. Every aspect of the invention is described and justified, but it would not be to the furtherance of this work to reproduce them here. The Patentee refers to his earlier patent of 1821, and claims in the new Specification of 1825 "several useful improvements in sundry parts of the mechanism, new in themselves, or such as may have suggested themselves from the application of my new system of action to the different species of pianofortes, grand, square, upright or any other description of pianofortes ... The defect inherent to the grand pianoforte in general is the want of stability in the wrest pin plank ... To remedy the above-mentioned defect a new mode of construction has been invented, and I will describe it as follows ...

Erard is then claiming an invention which is new in the sense that it has been brought in to the Realm by him from without, in keeping with the geographical limitations of the Statute of Monopolies. He has then referred to mechanisms which are either "new in themselves", or which "have suggested themselves" from the application of the 1821 system to the other various types of piano being produced at the time. It will be recalled that at that time, there was no formal distinction between 'novelty' and 'obviousness', and it is clear from these successful letters patent that novelty itself was alone the test applied, since from a modern viewpoint it would unquestionably have been obvious to a person even vaguely skilled in the art that a mechanism developed for a grand piano could, with some pertinacity, be applied to smaller pianos. It is also clear that the new use of a known invention could be, and was patented at that time. Whilst it may be objected that this specification is merely one example that may be of little significance, it will become clear in due course that this objection is without foundation, since both the 1821 and 1825 letters patent came before the Privy
Council in an important decision concerning the Patents Act 1835\textsuperscript{11}. Pierre Erard was granted further letters patent No. 5468 on 20th February 1827 for the construction of pianofortes, again concerning the repetition action, though it is not proposed to consider this specification in detail.

\textbf{Privy Council Decision 1835}

It has been made clear from these accounts of the Erard's inventions that the development process was fraught with difficulty, a problem not unfamiliar to modern inventors! However, the monopoly given to the patentee is of limited duration - under the Statute of Monopolies, only fourteen years. The Erards found that, though apparently successful in enforcing their letters patent, they were unable to derive any profit from their invention within the term of the patent. The Patents Act 1835\textsuperscript{12} provided for an extension of the term, and Erard made the first application under that Act. The case came before the Privy Council on December 15th, 1835, and was reported by both Webster and Carmael, Hayward reproducing both. Webster's report is slightly confusing, in that he refers to Erard's patents of 1821 and 1826, even though there was no patent granted to Erard in 1826. From Cresswell's statement to the court, appearing for Erard the petitioner, it is clear that the second patent referred to is in fact number 5065 of 1825, there being some mistake as to the date in the footnote to the report.

The text of the report refers to "another patent, taken out by the petitioner in 1825 ...".

Cresswell (Peel with him) describes the new technical advance made by the first patented invention of 1821, which united "power and precision with pliability of playing" greatly adding to the "beauty of the notes and the brilliancy of the execution". The invention

\textsuperscript{11} Erard's Patent, 1 WPC 658, 2 HPC 662, 2 CPC 112
\textsuperscript{12} 5 & 6 W.4, c. 83
"required much genius to conceive and ingenuity to construct", and "five years were expended in the instruction of workmen, and before a single instrument was ready for sale; and after a further consumption of many years in making the instrument known ... it is only within the last few years that the instrument has become generally known and appreciated."

Cresswell then goes on to refer to the improvements claimed in the second patent of 1825, where the invention was "rendered applicable to every form of piano, instead of being confined to the grand piano". The petition was based not only on the number of years spent in developing the invention, but also on the outlay of £15,000 over and above the returns from the patented invention.

The petitioner claimed that there had been reluctance to purchase his instruments owing to initial objections that there was no actual improvement over other existing instruments, and that once it could no longer be disputed that the new invention "was good", there was objection "that a mechanism to produce such beautiful effects could not but be too refined to last." These and other disadvantages had prevented Erard from turning his invention to account. The first patent was due to expire on 22nd December 1835, and the case was due to be heard on the 15th December. Lord Lyndhurst had expected the Attorney-General to be present, but was reminded that the Act of 1835 had done away with the formality requiring his notification, causing his Lordship to observe that "great responsibility was thrown on their Lordships by adjudicating on the case in his absence."

Though the validity of the patent was not in suit, and in spite of objection by counsel for the petitioner that they would be immaterial to the proceedings and would not affect the extension of the patent in any way, Lord Lyndhurst required that the specification, drawings
and models be produced to show the petitioner's compliance with the statutes relating to patents. It will be recalled that at that time there was no search and inspections as to whether the claimed invention was new or obvious, and that consequently the first time that validity would be put in question, apart from having had to satisfy the Law Officer, would have been when the patent was put at issue, whether for infringement or some other cause. The reference to models is of particular interest, since the models were an important representation of the invention. It will be recalled that Bennet Woodcroft had proposed in the 1850s that the Patent Office in Holborn should house not only the specifications, but also the models of each invention, though of course due largely to the influence of the Prince of Wales on the development of Kensington, these eventually became housed in the Science Museum, Woodcroft's collection forming the basis of the inventory of the new museum.

Even proof of the notices required at that time to have been published was required, in the form of newspapers. Evidence of the amount expended in working the patent was required, and the petitioner's bookkeeper was called to produce a cash account of the disbursements and receipts for every year from 22nd December 1821 to 31st August 1835. The first return was not apparently received until 1826, and Erard had already spent "3,000l." before that. Lords Lyndhurst and Brougham closely examined the witness in order to ascertain whether the amount had been expended on preliminary preparation, or in working the patent. The value of the stock seems to have aroused their Lordship's interest, which was so strict that the witness was sent to the factory to fetch "his own and the foreman's rough memoranda of the stock". The foreman confirmed the value of the stock in hand to be 3,000l., and another witness confirmed that a ten year old instrument had recently been sold at auction for 95l., which supported the witnesses' valuation of stock. His Lordship was satisfied as to this part.

13 i.e. pounds sterling
of the case. For the purposes of this research the report provides a rare insight into the practical risk implications for an early eighteenth century inventor/manufacturer under the contemporary patent system. They would appear to be risks that are not unfamiliar to modern inventors. When it is born in mind that the invention had been in development for at least a decade before the grant of the 1821 patent, it becomes very clear that the invention had required a huge investment in what would now be called research and development. This case revolves around the essential principal and function of the patent system, that of a contract between the inventor and the state, which is, as has been stated many times both in this work and elsewhere, to provide a system of reward of limited duration by granting a monopoly to the inventor, during which time he can freely exploit the invention. After that it reverts to the common wealth and contributes to the prosperity of the nation. Here, their Lordships were being invited to extend the duration of the monopoly, because the system had not worked in the inventor's favour in this particular case, and statute specifically provided a remedy.

It was demonstrated to Lord Lyndhurst by means of models that the new instruments were two-thirds more expensive to produce, and yet sold for the same price as other pianos of inferior quality, though his lordship enquired as to whether all of the outlay had been expended in actually working the patent, or whether some of it "had not been occasioned by experiments and improvements on the original invention."

In order to demonstrate the advantages of the new invention, a list of performers was produced who had testified as to the quality of the instruments which incorporated it into their actions. This included "Mendelsohn" and "Listz". The celebrated pianist Madame 14 Felix Mendelsohn (1809-1847) and Franz Liszt (1811-1886)

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14 Felix Mendelsohn (1809-1847) and Franz Liszt (1811-1886)
Dulcken "had her pianoforte in court, and played on it by direction of their Lordships." It seems probable to the writer that this was the one and only time that members of the Privy Council have been played to on a concert grand pianoforte by a soloist in open court! The witness testified to the "lightness of touch, power and expression" of Erard's instruments, and to the superior durability of the same. "She stated that, she had taken one of these instruments to St. Petersburgh: that it was constantly removed from house to house, from hot rooms through intense cold, and sustained no injury, either in the mechanism or in the tuning."

Many other notable contemporary performers were called upon to testify as to the merits of Erard's instruments, and did so in similarly glowing terms, as well as to "the unfounded statements circulated by interested or ignorant persons, to the disadvantage of the instrument, and one of them mentioned an instance, within his own experience, where a performer, who had provided himself with one of Erard's instruments, was not suffered to play on it in public."

Their Lordships having closely questioned the witnesses as to the merits and utility of the invention, questioned a Civil Engineer, Mr. John Farey, who had accurately compared the specification with the model. He confirmed the ingenuity and merit of the invention, and that it would carry into effect a great refinement in art which it would take several years to become fully appreciated. However, Farey considered "the objects specified in the second patent of 1825 to consist in a new application of the mechanism comprised in the original patent ...", which had been covered by the original patent. The 1825 patent also contained "the addition of a system of bracing to the pianoforte independent of any other improvement."

Lord Brougham called back the foreman "to ascertain what proportion the expense of the bracing
bore to the whole outlay; and was informed that it was very trifling." Clearly the witness considered the 1825 patent to be on the one hand, a claim for the new use of an existing invention, and on the other a newly invented improvement to the original invention. That being the case, the court was hostile to the new use, and not prepared to grant an extension in respect of the improvement, which was not yet due to expire.

The judgement of the court was delivered by Lord Lyndhurst, who said that their Lordships thought that a sufficiently strong case had been made out, "both on the score of hardship of the case and the merit of the invention, to justify their Lordships in recommending to His Majesty to extend the first patents for the term of seven years", but that no case had been made out as to the second patent of 1825. In all such cases, "their Lordships would require a strong case of hardship to be made out, as well as a strong case upon the utility of the invention."

Grover\textsuperscript{15} says that the principle of Erard's double escapement action "was seized upon by other constructors who sought to improve it", but it is intriguing to note that improved actions by Kriegelstein and Antoine Bord did not gravitate to England until 1844 and 1846 respectively, which suggests that Erard's monopoly, gained through the granting of letters patent and the extension of one of them, was effective in stifling competition. The action was incorporated into all Erard grand pianos from the 1830s onwards, and Grover says that "... by 1860 virtually all makers were using it in the horizontal grand, although often in one of its modified forms." That is to say, well after the expiry of Erard's letters patent. This invention, and the case brought in respect of it, in many ways sum up the rationale behind, and

\textsuperscript{15} op cit.
justification for, the patent system. Here was a truly great invention, so great that modern piano actions ultimately derive their mechanical principles from it, which might well not have been developed without the incentive of a patent monopoly to provide the opportunity to exploit it commercially. Evidence has been produced to demonstrate that the patent was worked effectively, in that there appears to have been no unauthorised use of the invention during the period of its validity, yet as soon as the extension of the patent expired, virtually all of Erard's competitors began to use it. There can be no greater single illustration of the value to an industrial society of that contract between the inventor and the state that rewards him for his efforts in return for an absolute monopoly of limited duration that has become known as the patent system. In 1835, the musical instrument industry was at the forefront of what Harold Wilson called in the 1960s the "white heat of technology", and it relied upon the patent system to commercially exploit its new technology. It should be emphasised that this was before the reforms brought about by the 1852 Act.

The period 1840 to 1849

In the period 1840 to 1849 there were nine patents granted for stringed, wind, keyed and other instruments; thirty-three for pianofortes, organs, and similar instruments; one for a harp; none for flutes etc.; and seven for performance on musical instruments. There were a total of fifty-three English patents granted for musical instrument inventions during this period. Moving down the ladder of abstraction into a little more detail, the most prolific section was for keyboard instruments, and of the thirty-three patents granted five were for piano actions,

16 see Appendix B Table of patents of Invention of Musical instruments 1717 - 1852, Batchelar compilation
which clearly reflects the fact that Erard's patents had expired and piano manufacturers were once again turning their minds to developing that aspect of piano technology. It is not therefore surprising to note that Number 8643 to Pierre Erard is for a new action for upright, grand or square pianos; a coiled spring is attached to the simplified action between the striker (escapement) and the intermediate lever. Compare, for example, number 11,242 in 1846 to Burkinyoung for a piano action incorporating two springs to facilitate constant repetition. The theme running through these patents is therefore the continuous improvement of an existing invention by the development of new musical instrument technology. Also, since Erard continued to obtain new patents, he found them to be commercially advantageous in spite of his earlier experiences in the courts.

As musical pitch rose, so the structural strength of the piano became more and more important. Pierre Erard's patent of 1825 had also dealt with this issue, but the decade being studied here brought improvements that were patented. Number 11,285 of 1846 to Thomas Woolley for tubular metal bars improved upon an earlier patent number 5085 of 1825 to Francis Melville for two tubular bars. There is simply not the space to dwell on the technical content of the specifications, the emphasis on the text here is on patents granted for improvement of existing inventions.

A new method of controlling the effect of increased tension on the sound board of the pianoforte was patented by William Hattersley in 1845 Number 10,592 for "metallic elastic trusses", which were essentially metal rod passing through metal plates which could be tightened or loosened to counteract the strain of the strings on the sound board. From where the writer sits, this would seem to be pretty obvious, but it should be born in mind that
generally speaking there was not a great deal of metal involved in the construction of the main structure of the piano at this time, and also of course the concept of obviousness as distinct from novelty had not been developed at that time.

In the performance section of the subject matter index, the emphasis was on developing new means and apparatus for assisting players, for example Number 10,719 of 1845 to Robert Brooks junior for an apparatus for facilitating the playing on stringed musical instruments, and Number 11,681 of 1847 to John Spear for an apparatus to facilitate the action of the fingers on the keys of pianofortes.

The period 1850 to 1852

In the period 1850-52 there were three patents granted for stringed, wind, keyed and other instruments, ten for pianofortes, organs, and similar instruments, one for flutes, clarinets, hautbois and bassoons, and none for trumpets drums, nor performance etc. Broadly speaking the trends indicated above continued during this period, with for example Number 13252 of 1852 to Pierre Erard for yet another repetition action for a piano, though the patent claims also a new system of metal braces. Erard patented a new type of hammer butt Number 13,816 in 1851. This was a time of increasing sophistication in piano technology, when manufacturers were looking for ways of creating new sounds, and using new materials to do this. For example, John Hopkinson Number 13652 of 1851 for the use of sponge as a covering for hammer heads to produce a softer tone. Note the geographical limitation of the

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17For detailed analysis of the development of obviousness as a requirement for patentability, see earlier in this work.
18See Appendix B Table of patents of Invention of Musical instruments 1717 - 1852, Batchelor compilation
patent, since the same invention was patented in the same year in France\. To get more volume, Number 13,601 to Joseph Clinton Robertson for a new system of two hammers striking two sets of strings. In the violin world, Number 13,926 in 1852 to Helson Smith for a new method of construction of violins and other similar stringed instruments.

Conclusion

It is therefore clear that patents, though expensive, unpredictable and difficult to maintain in the face of determined opposition, were being widely used by a rapidly developing and technologically sophisticated industry, both by individual manufacturers and the successful firms that came to dominate the nineteenth century. It has been shown that commercial success could reward the determined inventor who patented his ideas, though the evolving requirements of the unreformed patent system led to some unfortunate results, a good example being Bainbridge and his English flute. Undoubtedly the standard and range of musical instruments during this period rose to unprecedented levels for many musical instruments, chiefly of the keyboard family, as has been shown. Violins of course have not, as has been universally agreed, ever surpassed the mastery of the great Cremonese makers of the seventeenth and eighteenth centuries, either then or for that matter now\textsuperscript{20}.

In terms of commercial success, the origins of many of the great piano manufacturers of the nineteenth century can be linked to the names that appear in the patent rolls, and which have been mentioned above. The development of the technical specification has been detailed in

\textsuperscript{19}Number 6145 to Mata for sponges covering for piano hammer heads.
\textsuperscript{20}for example, Antonius Stradivari, Joseph Garner Del Gesu, etc. See any modern West End auction catalogue for confirmation.
the preceding chapter on patent law development, and some of the detailed analysis of technical innovation above, for example Erard's specification and of course Bainbridge's, has illustrated the link that clearly exists between law and technology. The increasing sophistication of the specification enabled musical instrument inventors to distinguish much more clearly what it was that was new about their invention, and of course the requirement of novelty was becoming more clear as the system of petitions working their way up through the various offices of state to becoming patent bills and then enrolment and sealing meant that the patent was certainly rigorously inspected. However, the shear inertia of the system, combined with its enormous expense cried out for reform, and the effects of reform on the industry will be looked at in the next chapter.
Since this thesis started with a letter patent for the sole manufacturer of trumpets and sackbutts, it was deemed appropriate to look at the use of patents by brass instrument manufacturers under the system reformed in 1852. Reference has already been made\(^1\) to the massive increase in the number of patent applications following the reduction in costs from £300 to £25. There were no patent applications for Trumpets, Drums and Tambourines between 1840 and 1852\(^2\). The acid test will, therefore, be whether the new system encourage a significant number of applications in this field.

The establishment of the Patent Office Library at 25 Southampton Buildings by Bennet Woodcroft coincided with his cataloguing and abridgement of all English patents of invention since 1617, which are still\(^3\) available for public scrutiny at the Science and Reference Information Service. Unfortunately, this is the only set the writer has found. All other sets appear to have been destroyed. The abridgements cover the period 1854 to 1908, and under the new system, music and musical instruments were entered under Class 88. The writer has compiled a complete table of brass instrument patents for that period which is contained in Appendix B. This was done completely by hand and eye, there being no other

\(^1\) see chapter III of this work, _ante_.
\(^2\) see Appendix B Subject Matter Index Batchelor Compilation
\(^3\) or at least were when the writer last visited the Old GB Vaults in 1998
method available.

The themes outlined above will be continued here, that is to say volume of applications, novelty / obviousness, specification, industrial utility and technological development. Having looked at brass instruments in terms of numbers of applications and therefore used them to test the actual use of the system by volume, a sample of all types of musical instrument patents will be looked at in more detail to follow through the themes in some depth. The numbers of applications simply become too huge to permit a more detailed approach.  

Brass instruments by volume

In the period 1854 to 1864 there were a total of thirty-nine applications for brass instruments and the like in England, with between two and seven each year, giving an average of four per year. The average drops in the following decade 1855 to 1864 to about one and one half. The next decade is the same, and then there is a significant increase in the period 1885 to 1894 to two and one half or twenty-six for the period. The volume increases by about one third to thirty four or three and one half for the period 1885 to 1904, and up to forty for the period 1905 to 1914, which is four per year or the same amount as the period 1855 to 1864. Overall therefore there is significant use of the patent system to protect brass instrument inventions by means of patents of invention following the reforms of 1852, out of all proportion to use under the old system. The numbers then drop down a lot during the war years, climbing back up during 1921 to 1924 to two and one half per year. The numbers then drop for the period 1925 to 1930 to about one per year.

4 Note that the abridgements do not necessarily distinguish between applications and grants, though all had been examined.  
5 see Appendix B for confirmation of the increasing numbers of applications and grants.
Specification

The 1852 reforms introduced a new requirement of a Complete specification, though applicants could file a "Provisional" specification with their application and amend it after sealing if they chose. However, the grant could be voided if the specification did not fully disclose the invention. Thus the formal requirement of a complete specification was now on the statute book. For an example of a musical instrument patent that was void for want of a final specification, see Number 3932 of 1873 to H. Herbert for a sliding piano keyboard in order to enable the player to transpose music into any key. This would have made the piano about a foot wider than before!! Combined with the publication of the Woodcroft abridgements which were distributed throughout the countries libraries free of charge, it was now possible for budding musical instrument inventors to search the prior art and to register their own inventions. The requirement of novelty was not however introduce until 1902, and the onus was to some extent on other parties to object to the grant if the invention was not new, though the examiner had up until that time a significant role in examining patents for novelty. The new Act required the Examiner to make further investigation for the purpose of ascertaining "whether the invention claimed has been wholly or in part claimed or described in any other specification ..."6 The result of this was that specifications were all extremely detailed and accompanied by diagrams. Unfortunately, the originals in the SRIS have all been destroyed in the 1960s, and the only other set remaining in the world in Manchester has now been auctioned to private collectors etc. The bound copies are however still available for inspection, and the writer has viewed many. That said, the abridgements are in the main

6 Patents Act 1902 s1(1)
accompanied by drawings in quite sufficient detail for the purposes of this research.

For the purposes of clarification, an example of a provisional specification may be found in application number 2373 from 1857 by Nicolas Gustave Imbert de Laphaleque for applying

"... instead of the said sound-pin', a small frame, in which are inserted one or more vanes or diaphragms fixed to a spindle, which may be removed from the outside of the instrument, and thus cause the said vanes to take any required position, in order to modify thereby the sound of the said instrument."

As far as the writer can tell, a complete specification was never filed. This specification would not have sufficiently enabled a skilled violin maker to work the invention.

Novelty / obviousness and industrial utility

A selection of patents has been made to illustrate aspects of novelty and obviousness in these old patents of invention.

Number 3076 of 1866 to M. Marks for a digitorium consists chiefly of two pieces of wood covered in velvet which were place between the fingers and "used to stretch the hand" as part of an "exercising apparatus" consisting of a keyed mechanism with wrist wrist. The keyed apparatus was clearly not remotely new, and the wedges of wood do not seem to contribute anything new. However, it will be recalled that the Examiner was not required yet to make further investigation for novelty. The mind boggles as to how much harm would have been done to keyboard players using this invention.

7 i.e. a sound-post
Number 3134 of 1866 to G Heseltine for an arrangement for adjusting and indicating the
tension of piano strings appears to be very novel, though to the writer it wanted utility, since
there was no means to indicate pitch. Not only that, but to anyone who has actually seen a
piano tuner at work, the thought of rigging this system up for each of the several strings that
may make up just one note of a piano, would make the system completely unworkable. It
would take a week to tune one piano. Compare Number 3169 of 1866 to M.A.F.Mennons for
an electric apparatus for playing pianos, organs, or other keyboard instruments using
electromagnets and springs appears to be completely new, and an ingenious application of
new technology to a new use, which looks to the writer as if it had great potential.

A much more sophisticated digitorium was claimed by H.P.Armstrong in 1871, consisting of
essentially a leather or vulcanised india-rubber gauntlet secured upon the wrist with straps
and buckles. A strip of metal in the back of the gauntlet is provided with slits or openings
through which india-rubber strips or other springs which are secured to thimbles or sockets,
which are to be attached to a heavy metal bar! The apparatus to be used in conjunction with a
dumb piano keyboard mechanism. This invention has the appearance of a medieval torture
apparatus, and one can only marvel at the fortitude of piano students made to wear such a
contraption. These digitoria inventions were the result of the huge popularity of the
pianoforte at that time, which remained expensive and outside the purchasing power of many
players who wanted some sort of apparatus on which to practice between lessons on the real
thing. This invention appears to be new in the light of contemporary piano technology, and is
certainly not obvious to a person skilled in the art.
One application that illustrates nicely the overlap between novelty and obviousness that rendered unnecessary the distinction between the two for so long is Number 3861 of 1873 to D. Semple for wire frets fitted to a violin fingerboard. Since at least the sixteenth century, guitars and viols had been fitted with gut frets, and of course guitars had gone on to be fitted with metal frets. The application of known technology to the violin is certainly obvious, if undesirable, to a skilled violin maker, even if, for example, the application of it to say viols had passed the temporal limitation of fifty years in force at the time.

**Technological development.**

Radical changes to the design and structure of existing musical instruments characterise many musical instrument patents. A good example is number 3828 of 1879 to W. H. Percival for a box violin, with optional keyboard attachment, that essentially simplifies the manufacture of the instrument whilst also providing an alternative means of playing it. This is a theme that recurs over and over again in the abridgements, for example the keyboard attachment is claimed in number 20,961 of 1892 to Luis Jean Marie Duvivier, though this time in much more detail with a Complete Specification, and optional means for the attachment of vibrating reeds which may be powered by an assistant⁸. Another example would be number 17,645 of 1900 to M. Mitchell, which provides for the attachment of a keyboard mechanism to a violin fingerboard, the instrument strung with only two strings, and a lever formed on the bridge to guide the player's bow and keep it in contact with the strings. Quite how the player was supposed to hold the thing and make music is not clear! The box theme recurs in, for example, number 7961 of 1909 to J. M. Gray, which looks pretty much like a violin made by a

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⁸ For an interesting article on Victorian musical instrument patents, see Batchelor, MIT April 1997 Vol. 2 at p. 3 *ibid.*
school carpentry student, i.e. all angles and flat surfaces. The elements of a violin are there though, so what is new is the brutish shape. The writer has in his collection many, many such patents, but it would defeat the object of this thesis to list them all here. The point to be made is that musical instrument technologists were obviously trying to cross pollinate ideas from different families of instruments, and having come up with what seemed to them to be a good idea, wanted to protect it by means of what was a fairly cheap system in terms of up front official charges. Since there was not yet a formal search for novelty, the great majority seemed to get on to the roll, as long as there was a complete specification.

Accessories for musical instruments were frequently patented, for example violin bridges are a recurring theme. Again, just one or two to illustrate the point. Number 3915 of 1881 to E. Edwards for a skeleton violin bridge with optional mute attachment. Quite how such an incredibly spindly structure was supposed to carry the tension of four violin strings is not clear to the writer. A more practical mute for a bridge is number 3581 of 1909 granted to Thomas Earle Hesketh, the celebrated English violin maker. This is actually quite a good idea, being a spring loaded clip that clamps onto the bridge from the side, though the writer has never actually seen one. A far more complicated mute that looks like causing serious damage to the belly of the violin is the subject of number 239,493 of 1926 to J.F. Welter. The claimed advantage is that the amount of tension that can be applied to the bridge is adjustable, though why anyone would want to do this is beyond the grasp of the writer. A mute relies for its effect on its mass. The device can be folded back when the instrument is put in its case, though how serious damage would be avoided once the case is closed is not made clear. Certainly in the 1920s violin cases were not as sophisticated as they are now, and

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9 The writer has, however, had several fine examples of the maker's instruments through his hands.
certainly not flexible, being made of wood and often closely matching the contours of the individual instrument. In these three therefore are represented the sublime, the effective and the plainly ridiculous, from different decades, all of which were new and not obvious, though none of which were commercially significant.

Different methods of construction were patented, sometimes for efficiency of production and cost, sometimes for improvements to tone. P. H. Zeidler applied on Jan 8 1887 number 288 to make the belly of a violin out of two pieces of wood placed laterally on top of each other. What possible advantage this provided entirely eludes the writer. There are many novel materials for making violins, for example number 12119 of 1891 to Herman Gluer for the use of vellum instead of wood for making the belly of a violin instead of pine, which was in short supply.

Novel improvements to tone were constantly sought after by Victorian musical instrument inventors, and many patented new violins with internal means for achieving this purpose. Again, there are simply thousands, and just a few will be used to make the point. Number 276,396 of 1926 to A.M. Germunder for "Violins &c. with internal resonating plates, tongues &c.", which essentially involved the insertion of a fan-like arrangement of sympathetically vibrating strips mounted on the bottom block of the violin. Another example would be number 1930 of 1862 by G. H. Hulskamp for an enormously complicated system of posts or oblique braces mounted on a tripod with screw adjusting means. Quite what this would have weighed is not mentioned. The violin maker George Hudson invented a system of five bass bars mounted diagonally on the interior of the belly. New Instruments were also patented,

10 The orthodox violin has only one longitudinally mounted bass bar under the "G" foot of the bridge, and approximately seven ninths of the belly length.
for example Number 2118 of 1877 for an "echolin", similar to a violin but with the back
turned on a lathe like a wooden bowl. Henry Bell of Belfast received provisional protection
only for his improvements to violins by the introduction into the instrument of a "bell
harmonica", a system of glass tube and shell inserted inside the instrument to give "a very
superior tone", number 2823 in 1858.

More Modern Patents

Moving on to look at patents granted under the 1949 Act, just two have been selected.
Novelty had been required since 1902, but still obviousness was merely a ground for
revocation of a patent rather than a requirement11. Both patents are for pick-ups for musical
instruments, which provide an electronic signal that can then be amplified in a separate
amplifier and loudspeaker system. Number 1 542 894 was filed on 18 June 1976, the
Complete Specification being published on 28 March 1979. The Specification has the
International Class G10C 5/00, and the GB index G5J 2B5. Straight away, therefore, the
effect of the Patent Co-operation Treaty of 1970 and the adoption of the WIPO system of
classification by the European Patent Convention in 1973 can be seen. That is to say, the
importance of the file date and ease of international searching for novelty by a common
classification system. The patentee J.Izdebski claims:

1. An acoustic pick-up comprising a piezo-electric crystal mounted in a housing, coupling means arranged to
couple acoustically one face of the crystal to a part of a musical instrument ...

11 see chapter III above
There is a drawing that illustrates the invention, very similar to those of many of the Victorian patents mentioned above.

Compare an earlier patent Number 1 1514 719 filed on 5 October 1974 for another pick-up for musical instruments. Again the file date and international classification that need not be rehearsed. This one precedes number 1 542 894, so what was new about that one? Well, this patent is for a stereophonic electromagnetic pickup device for stringed musical instruments, comprising six coil and magnetic assemblies corresponding to six steel strings tuned E, A, D, G, B, E, together with a support for securing the pickup device to the guitar. The claims are for the coil/magnet device, and for the means of securing the device to a guitar. What is therefore new about number 105420894 is therefore that it is not electromagnetic. This claim is also much wider, in that "The pickup may be used with other musical instruments such as violins for example." On the other hand number 1 514 719 is much more limited, the stereo component being emphasised, and fitting the device to guitars only. Both inventions show new technology being used to dramatically change the way in which the instruments produce the final sound heard by the listener, and in the case of 1 514 719 could be said to have changed the sound of modern guitar music for a generation or more.

The reforms of the 1977 Patents Act completely changed the patent registration system, as has been described in chapter III above. The requirement of inventive step put the onus on the applicant to show that the claimed invention was not obvious to a person skilled in the art, and the patent application procedure was made more efficient, with a publication followed by B publication and grant of the patent. The introduction of computer technology in the 1980s with "Cassis", "Access" and "Espace" databases made searching much easier, and in
the late 1990s the Espace system has been made available on line free of charge from the patent office\textsuperscript{12}. Prior to that, these systems could be searched and can still be searched by subscribing to receive the CD-ROM, or alternatively using the one in the SRIS. The writer did this in 1997 and, searching by classification, got 14 "hits" under "violin", 23 under "saxophone", and 756 under "wind AND music", 3 under "clarinet. There were 267 under "musical" and 142 under "musical AND music". There were 4 under "chinrest". Listing the hundreds of patents looked at then is not justifiable here since it would not enhance the project, however these figures do show that the system was being well used by musical instrument manufacturers, and paves the way for the current use of patents in chapter VIII (post). It will suffice to look at just a few, all for violins, is an invention looked at again in Part Two.

Looking in EP Access database 1978-89, application number EP 88110112 880624 by Eugene A Wahl claims a violin finish and finishing method consisting of a plurality of coats of white shellac\textsuperscript{13} interspersed with at least one colour coat. Chapter VIII (post) has many criticisms of similar violin varnish patents which are not at all novel. Application number GB 8800160 880303 by Joseph Harold Stevens claims a violin made of sheet materials, for example carbon or boron, substantially unidirectionally oriented. Violins have always been manufactured from unidirectionally oriented materials (wood), and without detailed claims as to precisely what man-made materials should be used, the specification does not adequately teach the person skilled in the art of violin making how to work the invention, always assuming that it is not obvious and has not been tried before. This is from 1988, and the writer can recall experiments carried out at the London College of Furniture during 1973 to

\textsuperscript{12} see chapter VIII post
\textsuperscript{13} i.e. white French polish
1976 when carbon fibre was used. These patents were never granted, only reaching a publication.

Moving on to one that was granted, looking in Derwent World Patent Abstracts EP 633558 for the "Wolf" shoulder rest from 1993 is what became marketed as the "Forte Secondo", which has been enormously successful. The means of adjustment for height from the shoulder and grip on the instrument, means for protecting the instrument from damage and arrangement of bearing blocks being completely new to the industry, and ingenious. It is protected in seven European countries.

Conclusion

The new system has therefore been used extensively by musical instrument manufacturers, though applicants continue to try and patent inventions that are not remotely new, either from not searching the prior art properly, not understanding the system, or simply trying to obtain a monopoly over what other firms are already doing. The increased search facilities have made it much easier to pick out the old and obvious from the new and inventive, and recent on-line databases have radically improved the situation. Whether the system is seen to be beneficial to the industry will be assessed in Part Two. Technology development continues to change the design and structure of musical instruments, and inventors have continued in ever increasing numbers to rely on patents to protect them. The patent numbers alone demonstrate that, there being well over two million in the GB Patent Office alone in 199814. In terms of utility, the inventions looked at are far more realistic than many of the Victorian

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14 see the Annual Report and Accounts.
VI

REFORMS UNDER THE PATENTS ACT 1977

INTRODUCTION

Any recent text book on intellectual property will contain a reasonably comprehensive summary of modern patent law in the United Kingdom. However, the influence of the European Patent Convention 1973 [EPC] on U.K. patent law at that time will not be dealt with by anything more than a cursory blow. Since a not inconsiderable part of this research has traced and analysed the development of patent law from medieval times, with a study of the development of musical instrument technology and a detailed analysis of the way in which the two have been inextricably linked with and have in many ways contributed to the evolution of each other, it is essential to provide a detailed analysis of the reforms of 1977. This serves two main purposes. Firstly, it informs the detailed empirical research which is to form the essence of the research degree. Secondly, it illustrates the way in which Europe has effectively chosen to harmonise its patent rights at a time when, due to the somewhat late arrival of the U.K. on the European Community scene, it was not possible to do so by means of the Treaty of Rome. The result is that patents have their own European system that co-exists independent of, and completely outside, the European Union. The approach of the U.K. Parliament and judiciary, and also the European Patent Convention institutions, has been inserted into the questionnaire and musical instrument manufacturers have been why they do or do not make use of the EPC, as opposed, for example, to the national systems or the world
system. This project comes at a particularly interesting time for it has been useful to compare manufacturers responses to the section on patents with that on Trade Marks, which of course have been harmonised by the European Union. This was dealt with more fully in the section devoted to trade marks, but here it should be pointed out that by adopting the Trade Marks Directive¹ which has been implemented by the Trade Marks Act 1994, the process has been carried out by and within the European Union. The adoption of the Council Regulation for the Community Trade Mark² has led to the establishment of the Community Trade Mark Office³ in Alicante, Spain. In contrast, plans for a Community-wide patent have been tabled since the 1970s, the Community Patent Convention dating from 1975. This would provide a single Community-wide patent, in contrast to a European Patent Convention patent, which of course has a different membership. Though the Community Patent Convention has been revised in 1985 and 1989⁴, it remains unadopted at the time of writing. Again, whether manufacturers intend to use the CPC as well as or instead of the EPC is an important question for empirical research. It has been proposed that the CPC will be administered by the European Patent Office.

It is noteworthy that the decision making process by which the substantive provisions of the Patents Act 1977 have been construed is by no means judicial in its entirety. The Patents County Court has of course been established in Lower Edmonton, and decisions from that can be (invariably have been, to date !!) appealed against to superior courts. However, many decisions are made by the Comptroller-General in the [national] Patent Office, and the European Patent Office has Boards of Appeal, both technical and legal, in Munich, where the

¹ 89/104/EEC
² No 40/94 EEC
³ more properly called the Office for the Harmonisation of the International Market (Trade Marks and Designs)
Principal Examiner undertakes substantive examination. Decisions of the Boards of Appeal in Munich though not binding on U.K. courts, are of persuasive authority.

The varying success and procedures which have or have not been adopted with regarding the different intellectual property rights will be dealt with more fully in a section devoted to the harmonisation of European intellectual property rights in general. What follows is a brief account of the main substantive provisions of the U.K. Patents Act 1977 together with an analysis of the main EPC requirements which it implements and the changes that were made to the system that operated under the 1949 Act.

By section 130(7), the main substantive provisions of the Patents Act 1977 were framed so as to give effect to the European Patent Convention, the Community Patent Convention, and the Patent Co-operation Treaty. However, since the CPC has not been brought into force at the time of writing and seems likely so to remain, and the PCT is largely concerned with international search facilities and initial examination procedures, it is the substantive law of the EPC to which the U.K. Act has been framed so as to correspond as nearly as practicable. The structure and workings of the EPC itself has been dealt with more fully in the chapter on European harmonisation of I.P. rights.

The main requirements for registration of a U.K. patent are contained in sections 1 to 4 of the Act of 1977. By section 1(1) (a) to (d), a U.K. patent will only be granted if it is new, involves an inventive step, is capable of industrial application and is not excluded by the Act. Sub-section 2 excludes anything which consists of (a) a discovery, scientific theory or mathematical method; (b) covers matter which is more properly covered by copyright; (c)
refers to a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer; and (d) the presentation of information. However, the provision only prevents anything from being treated as an invention to the extent that the application 'relates to that thing "as such"'. Reference may be made to numerous textbooks and commentators for further expansion on excluded items which is not appropriate in this work, however, it should be noted that this sub-section gives effect to Article 52 (1) and (2) EPC, though it has been argued that the subsection is at least partly declaratory of the common law that preceded it. Thus the U.K. authorities tend to talk in terms of the principle that an idea or mere discovery is not patentable, rather it is the practical application of an idea or discovery which leads to patentability. Computer programs were not patentable subject matter per se even before the Act of 1977 came into force, not because they were expressly excluded, but rather because they did not fall within the section 6 Statute of Monopolies "manner of manufactures". United States law, though of only persuasive authority has been very influential on the U.K. Courts' approach, is based on the same word "manufacture", which it still retains.

NOVELTY

By section 2 an invention is to be taken as new if it does not form part of the state of the art. This is defined within sub-section (2) as comprising "all matter which has at any time been made available to the public (whether in the U.K. or elsewhere) by written or oral description, by use or in any other way." This was a substantial departure from the Patents Act of 1949,
which by sections 7 and 50 limited the search for anticipation by previous publication or filing to fifty years, within the U.K. The 1977 Act therefore did away with both the temporal and spatial limitations that had applied in the U.K. since Tudor times. In implementing Articles 52 and 54 EPC, the Act is drafted in virtually identical terms. Again, this work is not the proper place for a detailed critique of the 1977 Act. It is worth observing that the U.K. courts are still coming to terms with the changes, and the questionnaire which will form the basis of empirical evidence for this research is intended to probe into actual or potential effects of these and other changes.

It may be useful to note that Lord Hoffmann sitting in the House of Lords recently held that prior uninformed secret use of an invention later patented which would have anticipated the patent application and provided a ground for revocation of the grant under s. 32(1) Patents Act 1949 was no longer good law under the Patents Act 1977 s 2(2). The patentee was right to argue that a claim could not be dismissed simply on the ground that making the product was something that had been done before. Construing this sub-section in light of Art. 54 EPC required that "... the invention must have been available to the public. An invention is a piece of information. Making matter available to the public within the meaning of s.2(2) therefore requires the communication of information." Therefore it followed that the intuitive response that the claim for an acid metabolite produced unknowingly in the liver of persons who took the patented anti-histamine drug could be dismissed "simply on the ground that making the acid metabolite is something which has been done before" was wrong. Lord Hoffmann held that the claim was not anticipated by use. However, he did hold that it had

8 Merrell Dow Pharmaceuticals Inc. and Others v IN Norton & Co Ltd, 33 IPR 1, judgement June and October 1995.
9 at page 7 line 42 ibid.
10 at page 9 line 30 ibid.
11 at page 8 line 43 ibid., emphasis is that of Lord Hoffmann and not of the writer.
12 at page 9 line 32 ibid.
13 The Court of Appeal in Merrell Dow v Norton and Penn [1995] RPC 233 had held that the patented invention had been
been anticipated by prior disclosure, which relied "not upon the mere use of the product by members of the public but upon the communication of information."\textsuperscript{\(14\)} This information did not have to be the precise chemical composition. It was "... the invention which must be new and which must not be part of the state of the art. It is therefore part of the state of the art if the information which has been disclosed enables the public to know the product under a description sufficient to work the invention."\textsuperscript{\(15\)} Lord Hoffmann derived support from decisions of the EPO, for example \textit{Bayer/Diasteromers}\textsuperscript{\(16\)} where there were "many ways of describing a substance in chemistry" and it was the practice of patent offices to accept the "process parameter, in the form of a product by process claim". In this case, knowledge of the acid metabolite was made available to the public by the terfenadine description "a part of the chemical reaction in the human body produced by the ingestion of terfenadine and having a anti-histamine effect".\textsuperscript{\(17\)} For the purpose of working the invention, which was a question of objective fact independent of what a person knows or thinks about what he is doing, this description was sufficient to make the product (the acid metabolite) part of the state of the art.\textsuperscript{\(18\)} Lord Hoffmann therefore dismissed the appeal of the patent owner and held the patent for the acid metabolite had been anticipated.

\textbf{INVENTIVE STEP / OBVIOUSNESS}

It has been shown above that origins of the requirement of inventive step can be traced back to the nineteenth century "theory of inventive ingenuity" and beyond. Section 3 of the Act

\textsuperscript{\(13\)} made available to the public by prior use.
\textsuperscript{\(14\)} page 9 line 37 \textit{ibid}.
\textsuperscript{\(15\)} page 11 line 8 \textit{ibid.}, Lord Hoffmann's emphasis.
\textsuperscript{\(16\)} \textit{Decision T1 2/81 Bayer/Diasteromers [1979-85] EPOR Vol. B 308 at 312}
\textsuperscript{\(17\)} at page 12 line 25 \textit{ibid}.
\textsuperscript{\(18\)} at page 12 \textit{ibid}.

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states that an invention shall be considered as involving an inventive step if it is not obvious to a person skilled in the art, the state of the art being defined in section 2(2). Though the style of drafting varies somewhat, this is virtually the same as Article 56 EPC. There has therefore been a significant shift in U.K. patent law from section 32(2)(f) of the 1949 Act which provided that obviousness and want of inventive step were grounds for revocation of patent, to express requirement that the claim must show inventive step in order to satisfy the Comptroller of patents. This is an issue that was probed in the questionnaire, since it is a direction which has not, for example, been taken by the Trade Marks Directive and subsequent enabling legislation\(^\text{19}\) or the Trade Marks Regulation which has created the Community Trade Mark. There, the old U.K. approach which required a strict examination procedure under the Trade Marks Act 1938 that made it relatively difficult to obtain registration of a mark in Part A of the register has been swept away with the Trade marks Act 1994, which presumes that the applicant's mark is capable of registration unless grounds can be shown to justify refusal of registration, which has broadly always been, for example, the German approach. The U.K. approach, which broadly mirrors that of the EPO, is then to put the onus on to the applicant to demonstrate the necessary inventive step before the Comptroller (in the EPO, the Principal Examiner in Munich) of Patents, and he can then proceed on the basis that, all other requirements being satisfied, he has a reasonably strong patent. It is then much less likely to be successfully challenged on the grounds of validity. This contrasts sharply with the new trade marks procedure, where it is likely that the new requirement that a trade mark be merely "capable" of distinguishing, similar to Part B under the 1938 Act, is likely to lead to registration of many more marks, the validity of which will subsequently be successfully challenged in the courts.

Neither the Act nor Article 52 EPC define "invention", and in that sense follow in the steps of the Statute of Monopolies. It has therefore continued to be defined by judicial and other decisions. Any textbook on intellectual property rights will give the reader a sound guide to the modern test of obviousness, and consequently an extensive critique is not going to be given here. The aim is to provide a context against which the responses to the empirical research can be assessed. However, the lack of a statutory definition of "invention" continues to cause difficulty in the courts, as for example in the recent House of Lords decision in Biogen v Medeva, where it was held by Lord Hoffman that it was necessary to identify the "inventive concept", a proper statement of which needed to include some express or implied reference to the problem which it required invention to overcome.

The approach taken by the courts under s. 32(2)(f) of the 1949 Act was to ask, when considering whether to revoke a patent, whether what had to be done in order to achieve the step was truly a matter of inventive experiment, or was merely a matter of that type of trial and error which forms part of the normal industrial function of a person skilled in the relevant art. There had to be more than a scintilla of invention in the process, and this was a question for the court, which though it would consider the evidence of expert witnesses, would reach its own conclusion. The leading case on the Patents Act 1977 is Windsurfing International Inc. v Tabur Marine GB Ltd where Oliver LJ gave the well-known four stage test: first, to identify the inventive concept embodied in the patent suit; second to identify the person skilled in the art; third to ask what, if any, differences exist between the matter cited as being

20 Biogen Inc. v Medeva plc, ibid. discussed in [1997] EIPR 21 by Ian Karet
21 see for example the judgement of Sachs LJ in General Tyre and Rubber Co v Firestone Tyre and Rubber Co [1972] RPC 457 CA
22 [1985] RPC 59
'known or [already] used' and the alleged invention; and fourth, whether, without any knowledge of the alleged invention, those differences would have been obvious to a person skilled in the art? He cautioned against the "ex-post facto" approach, noting that it is always easy to postulate the obvious route to an invention once the solution is known.

This test was not explicitly approved by the House of Lords in *Biogen v Medeva*, though Ian Karet has argued that its tacit approval there combined with its adoption and elaboration by the Court of Appeal in *Molnycke AB v Proctor & Gamble Ltd* and its regular use by the Patents Court means that it has implicitly been approved by U.K. courts at all levels. Lord Hoffman effectively stressed the *Windsurfing* test number one when he said that much turned on identifying the inventive concept in *Biogen v Medeva*. To Lord Hoffmann, it was not enough to have the idea of doing something, which in *Biogen* was the idea of making Hepatitis B Virus antigens using recombinant DNA technology, that was too broad. The problem which required invention was to find a way of doing it.

The "characteristics of a person skilled in the art" have been the subject of much judicial comment. It will suffice here to recall that Lord Reid said in *Technograph v Mills & Rockley (1969)* that the person skilled in the art would be a skilled technician well acquainted with workshop techniques though not highly qualified, and would have read all the relevant literature and assimilated it, though lacking the "merest scintilla of invention". Mustill LJ elaborated on these characteristics in *Genentech v Wellcome Foundation (1989)*, referring to the hypothetical man as being a team of persons, each member of which has the

23 ibid.
24 [1994] RPC 49
25 *Technograph v Mills & Rockley (Electronics) Ltd. (1969) RPC*
26 [1989] RPC CA
appropriate degree of skill appropriate for the art in which they are skilled, practising a
variety of arts and with the best available equipment of the day.

It is perhaps worth noting that in Molnycke AB v Proctor and Gamble Ltd.\textsuperscript{27}, when applying
the four stage test in the Windsurfer case, Nicholls VC distinguished between primary
evidence of qualified witnesses as to what would have been obvious to a person skilled in the
art, and secondary evidence, which is all other evidence, e.g. of commercial success, and
must be "kept firmly in its place". In Biogen, the House of Lords also stressed the importance
of almost always allowing a trial judge's findings of fact based on the evidence of expert
witness to stand, the proper task of an appellate court being to be ready to differ from the
judge's evaluation of those facts by reference to legal standards, such as obviousness.
Unfortunately, the House of Lords did not take the rare opportunity afford to it by the case to
give an explicit opinion on the correct approach to obviousness, and by dwelling on a phrase
which is itself not even part of section 1 of the Patents Act 1977, i.e. "inventive concept", it
may well be that the present requirement of "inventive step" is rendered even less clear than
hitherto it has been. Stressing a phrase that actually appears in the Act under section 14(5)(d),
which calls for "the claim or claims to relate to one invention or to a group of inventions as
being so linked as to form a single inventive concept" seems to fulgify rather than to
illuminate the problem. However, Lord Hoffman was arguably correct when he said that it
would caused unnecessary difficulty to ask first, whether the claimed invention could
properly be described as an invention, and then decide whether it was patentable, since it was
of only academic interest. Section 1 of the Act and Article 52 EPC, in providing requirements
for patentability, probably contained every element of the concept of an invention. In virtually

\textsuperscript{27} [1994] RPC 49 CA
every case, section 1(1) would be the end of the enquiry.

The concepts of invention and obviousness were given detailed consideration by the House of Lords in *Biogen Inc. v Medeva Plc* when genetic engineering came before it for the first time. This case also serves to draw together several important threads which run through this part of the black letter research into the law of patents, in particular the approach taken by the U.K. courts to the decisions of the European Patent Office Technical Boards of Appeal, findings of fact, and the concept of an enabling disclosure. In a unanimous decision, five members of the House of Lords dismissed an appeal by Biogen against the Court of Appeal decision that a claim for patent for a vaccine made by recombinant DNA (rDNA) technology did not support the claimed invention, though in upholding the decision of the appellate court Lord Hoffman disagreed with some of its reasoning. In an action for infringement at first instance, Aldous J (as he then was) had held the patent valid and infringed. Medeva had counter-claimed for revocation. The facts of the case are complex in two respects: firstly, the nature of genetic engineering itself is not readily grasped by those not familiar with the subject, and secondly because of the very long time which had elapsed since the priority date and the grant of the patent in suit, which themselves were based on separate claims, one U.K. and the other European Patent Office (EPO). Consequently, the state of the art at the priority date was difficult to establish.

Lord Hoffman, making the only substantive speech, presented the facts in detail. Essentially, the claim was to a product, an artificially constructed molecule of DNA which was identified partly by the way in which it had been made, and partly by what it did, which was to cause a
host cell into which it had been introduced to produce Hepatitis B Virus [HBV] antigens. The
claim in the patent in suit, which had been filed at the EPO on December 21 1979,
generalised what had been done, firstly because it was for any rDNA molecule that expressed
the genes of any HBV molecule in any host cell related to DNA coding for. Secondly, the
claim was for any method of making a DNA molecule which would achieve the desired
result. This patent claimed priority from a U.K. patent dated December 22 1978. The reason
for relying on the earlier priority date of the U.K. claim was that during the intervening year
that had elapsed between that claim and the EPO claim, the state of the art had moved on and
it was agreed by the parties to the action that the claimed invention was obvious to a person
skilled in the art by the time that the EPO application was made.

His Lordship addressed several important questions of broad application, and given the few
occasions when the House considers patent law they are worthy of close examination.
Hobhouse LJ had considered whether there was a requirement over and above section 1(1)
Patents Act 1977, which defines patentable inventions, that the thing claimed was an
"invention". Lord Hoffman noted that whilst section 1(1) laid down positive and negative
conditions, it did not define the word. However, he observed that this was because the Patents
Act had put the European Patents Convention 1973 [EPC] into effect by section 130(7), and
since the parties to the EPC were unable to agree on one, they had been content to do without
one, accepting that the question was merely academic. Section 1(5) powers to vary the list in
section 1(1)(a) to (d). Judges should put aside their intuitive sense of what constitutes an
invention and consider questions of novelty, obviousness, inventive step and unpatentable
subject matter. Lord Mustill, however, made it clear that he did not want to be taken as
accepting that the need for an invention "would always be academic". It will be recalled that
in *Genentec* Lord Mustill had been uncertain as to whether there could ever be a patent granted for an invention which found out previously unknown properties of a known substance.

**Findings of Fact**

Hobhouse LJ had decided in the appellate court that the claimed invention was obvious, and had overruled the trial judge's finding of fact that it was not obvious. Lord Hoffman approved of Aldous J's (as he then was) reasoning in following the well-known procedure suggested by Oliver LJ in *Windsurfing International* though Lord Hoffman said that Aldous J had not stated the inventive concept in a sufficiently specific way, having "put the matter far too wide". The idea of making HBV antigens by rDNA technology was known by everyone, just as the idea of flying in heavier than air machines had been before the Wright brothers took flight. "The problem which required invention was to find a way of doing it." The inventive concept was method of achieving the goal. There were two strategies, and having heard expert evidence, Aldous J accepted the submission that the second would not have been obvious at the time of the application.

In the Court of Appeal Hobhouse LJ had reversed this decision, holding that since the strategy was adopted as a "matter of business judgement" and was a "mere commercial decision", it was obvious. Lord Hoffman said that this was "an irrelevancy", and that Hobhouse LJ's gambling analogy of a bet was not helpful. Mustill LJ had been right when he said in *Genentec* that the question was not what the odds were, but whether there was an

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29 *Genentec's Patent* [1989] RPC 147, Court of Appeal
30 *Windsurfing International Inc. v Tabur Marine (GB) Ltd* [1985] RPC 59
inventive step. Lord Hoffman said that the question of whether an invention was obvious was "a kind of jury question", and should be treated with appropriate respect by the Court of Appeal. There was a need for caution in reversing the trial judge's evaluation of facts, since he, like the jury, would be surrounded by many factors which could not be expressed in expressed findings. The application of a legal standard such as obviousness was a matter of degree rather than a question of principle. Since no question of principle was involved, it was wrong to interfere with the judge's assessment of the facts.

**Enabling disclosure**

Though the patent in suit was an EPO patent, it has been explained above that the claim to priority was based on the earlier U.K. claim. Two questions therefore arose for the House to consider: whether the earlier claim contained an "enabling disclosure" within the meaning of section 5(2)(a) Patents Act, and whether the priority date was the date of filing, or the date of "A" publication by the U.K. Patent Office. On the latter point, Lord Hoffman resolves a point of confusion as to the proper date for determining sufficiency by stating that it is the date of filing of the earlier claim rather than the date of publication. Regarding the former point, there had been some doubt as to the reconcilability of sections 14 and 72 of the Patents Act since the decision in Genentec. Section 14(3) provides that "The specification of an application shall disclose the invention in a manner which is clear and complete enough for the invention to be performed by a person skilled in the art." Subsection (5)(c) provides that the claim shall be "supported by the claim". The terminology is a reflection of section 5(2)(a), where if an application in suit relates to an earlier claim in order to establish the earlier priority date, the invention must be "supported by matter disclosed in the earlier relevant
application ..." Section 72(1)(c) provides for the revocation of a patent if "the specification does not disclose the invention clearly enough and completely enough for it to be performed by a person skilled in the art". The word support is not present. Article 83 EPC requires that the application "must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art." Article 84 EPC requires the claims to be "clear and concise and supported by the description."

This may well appear to be a distinction without a difference, but Dillon LJ in Genentec had seen no escape from concluding that a patent could not be revoked, nor its validity disputed, on the grounds that the claims did not comply with section 14(5) of the 1977 Act, i.e. that the claim was not supported by the description. Since section 5(2)(a) uses the same terminology as section 14(5), and gives through U.K. law the opportunity to base the EPO claim on a prior U.K. claim, there arises the possibility of applying a different, narrower test for revocation to that earlier claim.

Lord Hoffman reviewed the U.K. and EPC provisions, and noticed the relationship between the requirement of "support" in section 5(2)(a) Patents Act and certain other provisions of the Act. He referred to the decision of the House in Asahi Kasei Kogyo KK's Application 31 where it was decided that, in the context of comparing two conflicting claims which could not both be granted the same monopoly twice, it was necessary in order to avoid "double patenting" to that matter disclosed in the claim should enable the person skilled in the art to make the invention. It was not enough for the earlier claim to simply disclose that the product existed. This did not satisfy the novelty provision of section 2 Patents act, which required an enabling

31 [1991] RPC 485
disclosure in order to anticipate the application in suit.

Lord Hoffman noted that the concept of enabling disclosure was central to the law of patents, and that it touched on the requirements for the priority date, valid application and grounds for revocation. This was a matter of substance and not form. He found support from the decision of the Technical Board of Appeal of the EPO in Genentec 32, which held that the examining division had taken too narrow a view of the requirement of enabling disclosure, though he criticised the "mechanistic and impoverished" approach taken by Aldous J in Chiron Corporation v Organon Teknika33 when he followed that decision. It is important to note that on appeal, the court overruled Aldous J and followed the Biogen decision in the Court of Appeal. However, the EPO Board had done no more than apply the long established U.K. principle that "the specification must enable the invention to be performed to the full extent of the monopoly claimed".

However, the EPO had allowed their attention to be diverted from the critical issue, which was, in relation to sufficiency, not whether the claimed invention could deliver the goods, but whether the claimed invention was too broad - a patent may claim every way of achieving a result, when it enables only one way. Samuel Morse's claim34 for any use of electricity for telegraphy was too broad. He had discovered one means, and attempted to claim all others. The technical contribution to the known art disclosed in Biogen's U.K. claim, though capable of working, did not justify a claim to a monopoly of any recombinant method of making antigens. Lord Hoffman was able to arrive at a contrary decision from the EPO, which he

32 Genentec I / Polypeptide expression (T292/85) [1989] OJEPO 275
33 [1994] FSR 202
34 O'Reilly v Morse (1854) 56 US (15 How) 62, Sup Ct of US
acknowledged to be of considerable persuasive authority, by saying that the Board had proceeded on a different principle from those which he had applied. He found support for his approach in such EPO decisions as *Genentec*.

**Conclusion**

This decision traces a precise and narrow path between the decisions of the EPO, which is based on the EPC and which the U.K. Patents Act was enacted in order to implement, and principles of U.K. patent law which underpin U.K. authorities and which arguably formed an important and influential contribution to the drafting of the EPC itself. Ambiguities in the Patents Act have been resolved, and the application of the "enabling disclosure" doctrine demonstrates a reluctance to allow unreasonably broad patent claims. However, the facts of this case do stand very much on their own - the time that elapsed between the applications and the suit makes it highly unusual. Though not cited in this case, the EPO has itself moved against claims which are not supported by the description in *AGREVO/Triazole sulphonamides*[^35], where the Board considered Article 84 EPC and though deciding that while a claim is not objectionable simply because it is unreasonably broad, the expression "support by the description" meant that the technical features stated in the description as being essential features of the invention must be the same as those used to describe the invention in the claims*. If the invention is not adequately described under Article 83, then it is not supported under Article 84. The Examining Board had rejected a claim for a group of chemical compounds possessing herbicidal activity because test results did not support the alleged herbicidal activity, and the Board was not satisfied that all of the compounds being claimed.

were likely to be herbicidally active. Unfortunately, the Board decided that an objection of lack of support by the description could not be validly raised in that particular case since the description did not mention technical features as being essential features of the claimed invention which were not part of the definition of the claim in suit. However, this did not mean that the properties or technical effect of the claimed subject matter was irrelevant, and since in the present case the applicant's test results provided in the description were inadequate, the appeal to the Board was dismissed.

As a footnote, it may be observed that the clarity with which Lord Hoffman has applied a clear principle of patent law going back at least to the eighteenth century is in marked contrast to the style of the Board's decisions, which are of course collective. Here the principle is that in order to provide consideration for the monopoly right conferred upon the patentee by the state, he must, in the words of Lord Ellenborough "Truly state the grounds on which he claimed that exclusive privilege." It will be recalled that there, it was agreed to withdraw a juror, by which both sides paid their own costs, confirming that ultimately it is a "jury" question of fact!

This brief discussion serves to illustrate that the definition of inventive step is far from decided, even at the highest level. It is therefore of the most fundamental importance to do empirical research on the question, and the section of the questionnaire which dealt with patents did exactly that.

INDUSTRIAL APPLICATION

36 Bainbridge v Wigley (1810) 1 CPC 270, HPC 550
Section 1(1)(c) of the 1977 Act requires that the invention be capable of industrial application, and by section 4 an invention is taken to be capable of industrial application of it can be made or used in any kind of industry, including agriculture. As has been shown above, section VI of the Statute of Monopolies only permitted patents for "any new manner of manufactures", provided that inventors "shall not use, so as they be not contrary to the lawe... or generallie inconvenient...", and it had been, and continued to be, grounds for revocation of a patent if it was not useful to the State. Erard's Patent demonstrated the expectation of the court in the early nineteenth century for "a strong case upon the utility of the invention" to be made out in order for the court to extend the term of the patent. The common law required that the invention must be useful, which essentially meant that it must work, for example railway signals that gave conflicting signals and therefore caused danger were held to be invalid. Section 25 of the 1907 Act, replaced by section 32(1)(g) of the 1949 Act, provided for the revocation of an invention that so far as claimed in any claim of the completed specification, was not useful.

Sections 1(1)(c) and 3 the 1977 Act were inserted in order to give effect to article 52(1) of the European Patent Convention, which requires that the inventions must be "susceptible of industrial application". Again, then, there is a change of emphasis in U.K. patent law, from a ground for revocation to a requirement, thus changing the onus from the challenger to the patent applicant. In practice, this requirement is unlikely to present much of a problem for musical instrument manufacturers, but nevertheless it is a question on which their views were sought in the empirical survey. The leading pre-1977 case was decided on the basis that the

37 ibid.

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invention did not constitute a "new manner of manufacture"38, but recently the European Patent Office Technical Board of Appeal 39 rejected a method for allowing bank or credit cards to be used by any card reading machine to carry out transactions on the ground that it was not capable of industrial application, being basically an application form and effectively part of a business operation. In C's Application40 an application for an invention of musical notation using different colours and signs to denote sharps and flats was refused.

EXCLUSIONS

It has been argued41 that the new codes adopted in section 1(1)(d) and (2) of the Patents Act 1977 to exclude certain things from patentability adopted a similar approach to the old pre-1977 case law, which was of course based on the Statute of Monopolies 1623. Essentially, the old law drew a distinction between, for example, a mere discovery, which was not patentable since it did not fall within the meaning of "any new manner of manufactures" under section 6, and the practical application of that discovery, which was prima facie patentable. This reflected the contractual nature of the granting of a patent, since to confer a monopoly right on an individual who had merely made a discovery but had not applied it to anything would not have resulted in any benefit to the realm and was therefore not capable of providing "consideration" in the "contract" between the patentee and the crown. The courts began to look for some technical advance deriving from the discovery.

Many authorities demonstrate the approach of the courts in construing exclusions from

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39 IBM/Card Reader [1994] EPOR 89
40 [1920] RPC 247
patentability under the Act of 1977. For example, Nicholls J referred in *Gale's Application*\(^2\) to some observations by Grove J in *Young v Rosenthal & Co*\(^3\) that "An invention of an idea or mathematical principle alone, mathematical formulae or anything of that sort, could not be the subject of a patent. For instance, supposing a person discovered that three angles of a triangle are equal to two right angles, that is an abstract discovery, and would not be the subject of a patent." Nicholls LJ went on the refer to Whitford J in *Genentech Inc.'s Patent*\(^4\), where he said that "It is trite law that you cannot patent a discovery, but if on the basis of that discovery you can tell people how it can be usefully employed, then a patentable invention may result." Nicholls LJ felt that the language of section 1(2), and of the corresponding article 52(2) and (3) of the EPC, did not depart from the established principle of the authorities he had cited.

Unpatentable inventions - The dichotomy of national and EPO approaches to interpretation of the EPC.

The drafting of section 1(1)(d) and (2) of the Act was intended to have the same effect as Art 52(2) of the European Patent Convention, and has presented significant difficulties in terms of interpretation. Subsection (2) gives a non-exhaustive list of things which, for the purposes of the Act are not inventions. Subsection (2)(a) excludes a discovery, scientific theory or mathematical method. Subsection (2)(b) excludes things which would more properly be protected by copyright or registered designs. Subsection (c) excludes a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a

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42 [1991] RPC 305
43 (1884) 1 RPC 29
44 [1987] RPC 553

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computer, the last of which is protected by copyright. Subsection (d) excludes the presentation of information, which again is more properly protected by copyright. However, subsection (2) expressly states that the following "(among other things)" are not inventions.

The courts have been reluctant to take notice of the non-exhaustive nature of the subsection and have tended to squeeze inventions which they have found to be unpatentable into the list as expressed in the Act. For example, in the recent *Fujitsu Ltd's Application*, Laddie J held that a software related invention which helped a chemist to design new chemicals consisted in substance of a scheme or method for performing a mental act, and was therefore unpatentable. The fact that the invention consisted solely of computer software, which is of course excluded, had presented difficulties which will be considered further below, however the point that needs to be made here is that rather than expand upon the non-exhaustive list contained in section 1(2), Laddie J turned to one of the other excluded things in the subsection. This subject forms a fairly large question in the questionnaire, and the manufacturers have been invited to add written comments as to how, if at all, they feel that the relevant parts of the Act could be improved.

It should also be emphasised that the list in subsection (2) is expressed as preventing anything from being treated as an invention "only to the extent that a patent or invention relates to that thing as such". The addition of those two words, "as such", has caused great difficulty and controversy, not least for the Principal Examiner of the Patent Office, since it has led to ingeniously drafted patent claims which seek, in essence, to protect excluded subject matter

46 my italics
47 see Batchelor, *ibid*.
48 *Fujitsu Ltd's Application [1996] RPC 511*
49 my italics.
such as computer programs by describing them as, for example, computer controlled methods for carrying out a given task. The Fujitsu case is a recent and important example. The case illustrates the influence of decisions of the European Patent Office Technical Board of Appeal in Munich when interpreting the European Patent Convention on the U.K. courts when interpreting the 1977 Act. This is likely to prove an area of considerable interest for musical instrument manufacturers as much as for anybody else, since computer technology forms a large part of most modern production methods, particularly for products which are capable of mass-production. It is also of particular importance and relevance to this research, since it is an area where several European Countries, including the U.K. which was not at the time a member of the then European Economic Community, formed an agreement to harmonise their patent rights. The situation that arises is that the U.K. courts have found themselves to be considering EPO decisions which, though only of persuasive authority, create precedents which are, by and large, followed by other member countries.

The European Patent Convention was signed in 1973 by Belgium, France, Italy, Luxembourg, Netherlands, West Germany and the U.K., which had belatedly joined the EEC, and from outside the EEC, Austria, Sweden, Switzerland and Liechtenstein. Portugal, Spain and Greece have subsequently joined, and of course Spain, Portugal, Austria and Finland have subsequently joined what is now the European Union. The EPC has therefore co-existed with the EEC/EU, operating a separate but in many ways effectively linked system. The relationship between the EPC and the EU, specifically the as yet ineffective Community Patent Convention[CPC] was dealt with in detail in the section of this work given over to European harmonisation of intellectual property rights collectively. However, it is germane to

50 ibid.
this section of the research to bear in mind that the EPC, though it grants the applicant, on successful prosecution of his application, a so-called "European Patent", subsequent enforcement and general administration of his patent in the national Patent Offices and courts of the European countries concerned. Therefore infringement will be dealt with in the country where it occurs, and of course it is up to the applicant to designate the country or countries in which he requires protection. In the case of a national application, the EPO is not applied to, and the application is considered in the light of national legislation by the national patent office, which has been drafted so as to give effect to the EPC.

In 1973 no agreement could be reached as to the use of national courts, nor on the setting up of an EPO court, which accounts for the situation in which EPC member countries now find themselves. It is an important aim of this research to compare and contrast the workings of, and inter-relationship between, the EPO and the U.K. national Patent Office and courts, with for example, the new Community Trade Mark and the national trade mark system which has been newly created with the passing of the Trade Marks Act 1994, which put into effect the EU Trade Marks Directive. The EPO technical Board of Appeal decisions are not binding on U.K. Courts, and where they give guidance on the interpretation of the EPC, this has led to difficulties, since the Principal Examiner of Patents does not know whose decisions to follow.

The *Fujitsu* case referred to above is a very good example of just such a situation. The Principal Examiner of the U.K. Patent Office had rejected an application to patent software which had been developed to assist a chemist in developing new chemicals, on the grounds
that section 1(1)(d) and (2)(c) excluded it as being a program for a computer or a scheme for performing a mental act. The Comptroller of Patents had found himself in some difficulty in applying the statute in recent years, since thought the authorities appeared to distinguish between inventions which provided a technical advance and were patentable form those which did not and were not, it was very difficult to determine what, as a matter of fact, involved the necessary technical contribution to the art. This difficulty had been compounded by recent decisions of the Technical Board of Appeal of the EPO, which seemed to have adopted an increasingly flexible approach to the matter. The Comptroller felt that on the other hand, the strict application of guidance in the U.K. authorities tended to lead to the exclusion of many inventions which did in reality appear to provide a substantial contribution to the sum of technical knowledge.

In the Patents Court, Laddie J said that the relevant parts of the 1977 Act were in all but inconsequential respects identical to the EPC, and also noted that the pre-1977 approach of distinguishing between for example a discovery itself and the practical application of it was to the found in the new code51. The applicant had based his appeal against the decision of the U.K. Principal Examiner on the EPO guidelines, E.P.O Rules, and in particular on the Technical Board of Appeal's decision in VICOM/Computer-related inventions52. a patent must be concerned with a technical problem, and if the subject matter claimed made a technical contribution to the known art, then patentability should not be denied. If the subject matter claimed concerned the treatment or manipulation of coded and stored representations of real physical entities like image processing, then the necessary technical contribution could be assumed. However, Laddie J felt that this interpretation was too wide. He felt that the

51 see generally Batchelar, ibid.
52 (Decision T 208/84) [1987] EPOR 74

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fundamental concept underlying Article 52 EPC and s.1(2) of the 1977 Act was that if a product, process or method qualified as patentable subject matter, it should be allowed to proceed even of a major ingredient was one of the excluded categories. Patent protection should only be denied where, as a matter of substance not form, the patent would have the effect of protecting what was merely excluded matter. Virtually all discoveries, scientific theories and mathematical methods and many methods of presenting information make a technical contribution, but he felt they were clearly to be excluded from patentability. *Vicom* said that what was decisive was what technical contribution the invention as defined in the claim when considered as a whole made to the known art, but Laddie J felt that ultimately, this was not helpful.

Laddie J concluded that the claims did not relate to programs as such, but said that the real issue was whether the application also avoided the other exclusions under s.1(2). He held that in substance, it was a scheme or method for performing a mental act, and was therefore unpatentable. What is interesting from the point of view of this research project is that, having reviewed and compared the leading U.K. and EPO authorities, Laddie J concluded that the use of the word "technical" in *VICOM* was apt to confuse, and drew from the U.K. authorities the emphasis on exaltation of form over substance, which is fatal to patentability. However, the judgement has been criticised in this respect³, not least because Nicholls LJ in the Court of Appeal, on whose judgement Laddie J relied for his "form over substance" test, has expressly approved the *VICOM* "technical contribution" test. Nicholls LJ had decided the case using both tests. This is not mere pedantry, but is crucial to the interpretation of the 1977 Act, since EPC Rule 29(1), which provides guidance on interpretation of Article 52 EPC on

³ see Batchelor, *ibid.*
which, as it has been pointed out, the 1977 Act is based, requires that claims be drafted in
terms of the technical features of the invention, and is satisfied if the features mentioned in
the claims will be understood by those skilled in the art as referring to technical means for
carrying out the functions so specified.

It is therefore suggested that, in expressly doubting the validity of an important aspect of the
VICOM decision, the U.K. Patents Court has at the least made the task of the Principal
Examiner more difficult and his decisions less certain, not only within the U.K., but also in as
much as it will affect EPO "European Patents", which are likely to be challenged with
different results in different member countries. How this situation compares to that of the
national and EU trade mark systems will be considered in the sections of this work devoted to
European harmonisation of IP rights, and trade marks respectively.

Moving away from the Fujitsu decision itself, it is worth noting here the decision of the EPO
Technical Board of Appeal in BEATTIE/Marker\(^4\), where it considered a mix of known
technical elements and novel non-technical elements in an application for a music technology
invention. The claim was for a marker for facilitating the reading and playing of music on a
keyboard instrument with a standard twelve note keyboard of five black notes and seven
white notes per octave. Essentially, the invention consisted of a marker to be made out of "a
thin material" which would sit upon the actual keys, and which would give those keys new
numerical designations. viz. the numbers one 1 to 11. The notes in the scale C major, i.e. the
white notes, were numbered 0,2,4,5,7,9,11, whilst the sharp/flat black notes were numbered
1,3,6,8,10. From a musical point of view it is perhaps worth pointing out that this scheme

\(^4\) [1992] EPO 221
presents a logical nightmare. For example, a major third based on the tonic note of C major would be read as "0 and 4", whilst a perfect fifth would be "0 and 5". A perfect fifth would be "0 and 7". In the key of D major, a major third would be "2 and 6", which could only confuse a budding music student, since 6 is a black note. It is difficult to identify any positive advantage that this system could offer, apart from enabling the student by a process of subtraction how many semi-tones there were in a given interval. That said, any student who relies upon counting semi-tones to work out an interval is not going to progress too fast! Such an invention would, in pre-1949 English terms, have failed for want of utility, having as it did the complete opposite effect to that claimed of "rendering both types of structure [the twelve and seven note white and black notes] easy to visualise". Besides which, the idea is far from new. Consequently, the invention failed partly for want of novelty. The claim was "dressed up" by the inclusion of the words "heptatonic" and "dodecatonic" with their Greek derivations.

However, besides its interest as an example of a completely impractical music technology invention, the case is useful as an illustration of the approach of the EPO to an important point of law concerning a "mix" claim comprising prima facie patentable technical elements, and non-technical elements which are excluded subject matter, in this case the presentation of information under Art 52(2)(d) EPC. The Board considered that "when there is an interaction between the technical and non-technical elements, and the mix as a whole solves a technical problem, it is not excluded from patentability ... In the absence of such an interaction - when the technical elements are only a support for the non-technical elements but do not otherwise cooperate therewith - the invention does not make use of technical means and cannot therefore be granted ... In other words, if the subject matter of a claim consists of a mix of
technical elements (in his case a marker) and non-technical elements (in the present case information relating to the tones of a keyboard instrument) the subject-matter as a whole is excluded from patentability ... if the mix does not make use of technical means in order to solve a technical problem." The patent in suit only formed a support for the information, presentation of which was excluded. The display of that information using the twelve numbers had no effect on the physical properties of the keyboard to which the marker might be attached, not did it have any effect on the mechanical functioning of the keyboard instrument. Due to the lack of any interaction within the claimed mix, the technical means were used.

Neither did the Board consider that the purported invention could be considered as a teaching apparatus which contributed to the realisation of the known apparatus, i.e. the keyboard, since it resided only in the displayed information and not in the apparatus itself, which belonged to the state of the art. Even worse for the applicant, the Board considered that "the intended improvement is an improvement of a method for performing a mental act", which of course is excluded by. Art 52(2)(c) EPC. It can be seen therefore that the concept of requiring some technical effect in a claim in order to disable the exclusion of unpatentable subject matter in what the Board calls a "mix" claim is clearly established. On this occasion the Board did not cite Vicom, presumably because the claim did not concern a computer related invention. However, it did cite other of its own authorities, e.g. KOCH v STERZELX-ray apparatus55.

The decision is also valuable because it clearly states that the Guidelines to the EPC do not have the binding authority of a legal text. For the ultimate authority on practice in the EPO, 55 [1988] EPOR 72.
the Board said that it was necessary to refer firstly to the EPC itself and secondly to the interpretation put upon the Convention by the Boards of Appeal and the Enlarged Board of Appeal. Here, the Guidelines said that if the contribution was not of a technical character, there was no invention within the meaning of Art 52. The applicant's appeal was therefore comprehensively dismissed.


A recent decision concerning music technology blazes a European trail?

It has been argued above that the supreme appellate court in England has been reluctant to slavishly follow the decisions of the EPO. However, the recent Pioneer case has shown that the Appeal court is not only far less reluctant to embrace European judgements, but has shown itself to be almost shameless in its desperation to adopt the shakiest of lines of European authority in order to construe the meaning of the Patents Act 1977 in line with a "European" approach.

The recent Court of Appeal decision to interpret the word "directly" in section 60(1)(c) of the Patents Act 1977 (U.K.) according to European, that is to say German, authorities of

56 Guidelines, General Introduction 1.2.
57 Guidelines, Part C-IV, 2.2.
58 Pioneer Electronics Capital Ltd. and Another (t/a Discovision Associates) v Warner Music Manufacturing Europe GMBH and Another, U.K. Court of Appeal - Civil Division, (1997) 37 IPR 585. See also Batchelor, IRCLT [1997] Vol. 11 No 2 which is largely based upon this section of this thesis.
59 Section 60 provides, so far as is here material, that
(1) Subject to the provisions of this section, a person infringes a patent for an invention if, but only if, while the patent is in force, he does any of the following things in the United Kingdom in relation to the invention without the consent of the proprietor of the patent, that is to say:
... (c) where the invention is a process, he disposes of, offers to dispose of, uses or imports any product obtained directly by means of that process or keeps any such product whether for disposal or otherwise.
somewhat tenuous provenance demonstrates a significant change of approach by the court, which may have much more far reaching consequences for the future interpretation of U.K. intellectual property statutes than this seldom visited subsection might otherwise have suggested.

The patent in suit.

In Pioneer, the Plaintiff held four patents relating to methods of manufacturing optical or compact discs [CDs] which have now largely replaced vinyl phonograph records as a medium for automatically reproducing music. The court focused on European Patent (UK) No 0081649 [649], which related to a method for producing the first step in producing a CD, called mastering. In essence, this involves producing a glass plate, or "father", from which a metal "mother" positive impression is produced at the second stage, followed by a negative impression or "son" is produced, in turn followed by a number of positive "stamping" are produced. These are then used to produce the finished CD in huge quantities in an injection moulding process called stamping or pressing, using a polycarbonate material to produce a plastic disc. These discs are then covered by a thin layer of metal, usually aluminium, silver or gold, and then covered with an acrylic layer. Three other claims in suit concerned the process only in so far as it involved the production process which ended with the production of the "mother". Claim 649 related to a method for forming "a stamper for use in moulding optical disc replicas" which process ended with the production of the "father". The question before the court concerned whether compact discs imported into the U.K. and then sold here were obtained "directly" by means of the patented process, or whether the claimed invention was confined to the process of producing "fathers", and therefore did not extend so far as the
finished product, which was removed in manufacturing terms by three further stages of production from the claimed invention.

**Immediate or direct?**

At first instance, Aldous J had concluded that there had been no infringement of the patented invention, even though it had been assumed that the defendants had used the claimed method for producing the intermediate stages necessary in order to produce the finished product. But since the finished discs were "not the immediate or direct product obtained by the claimed process", there had been no infringement. In construing section 60(1)(c) Patents Act the trial judge's general approach had been to refer to and follow European authorities, and Nourse LJ agreed with and adopted the judge's approach. It is perhaps interesting to recall the criticism by Lord Hoffman in *Biogen* of Aldous J's "mechanistic and impoverished" approach taken in *Chiron Corporation v Organon Teknika* when he followed the decision of the EPO Board in *Genentech*. Here, the Court of Appeal appears to have changed its views considerably.

Nourse LJ said that section 60 of the 1977 Act had, by section 130(7) been formed so as to have the same effect in the U.K. as the European Patent Convention [EPC] and the Community Patent Convention [CPC]. The CPC has not yet come into force and the difference in wording between the U.K. Patents Act and the EPC was accepted by both sides as being not material. Counsel for the patentee had argued that the trial judge was wrong in holding that the infringing product must be the *immediate* product of the patented process,

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60 ante
61 [1994] FSR 202 see ante
62 Genetec I/Polypeptide expression (T292/85) [1989] OJEPO 275

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which could only be used in the production of compact discs. Since the finished compact disc
was an identical copy of the master, the unauthorised production of the CDs was an
infringement of the patented process, since they were obtained directly by means of the
patented process. The defence argued that the process in the claim in suit ended with the
production of the "father", which alone was the product obtained directly by means of the
patented process. Thus the meaning of the word "directly" would decide the matter.

Nourse LJ found that, since the products of the claimed invention could not be put into a
compact disc player and played at home, then as a matter of fact, the finished discs were not
identical copies of the masters. He then considered the English authorities cited by the
plaintiff, but held that the 1977 Act had effectively altered the law in regard to products
"indirectly" obtained by the patented method by the insertion of the word directly into the
section. Consequently, the question was to be decided "not according to English law but to
European law...", adopting Aldous J's approach, which was to refer to the German text of the
EPC art 64(2), where the word "mittelbar" was used. This meant "directly or immediately",
and meant that there could be no intermediate two given points in a sequence of events. In
any case, he felt that the English law had not survived the enactment of the 1977 Act. This
effectively decided the issue, since Nourse LJ had already found that the finished CD was not
the immediate product of the patented process. The fascinating aspect of the judgement is
however not so much the result, as the apparent enthusiasm with which the Court of Appeal
embraced "European "authorities that are in reality German authorities based on German case
law and which appear at best to be conflicting, and at worst unclear and of not even
persuasive authority. Other European courts were said to disclose no difference of approach,

63 at p 590 of the report.
and consequently the German law represented European law.

**Academic authorities.**

The trial judge had relied upon an article by the late Dr. Karl Bruchhausen, an expert on patent law and a former German Federal Court judge. He had favoured a "loss of identity" test, which was based upon a review of the relevant German authorities between 1897 and 1977, nine of which were considered by the court of Appeal. The question as far as Nourse LJ was concerned was whether that test "...is indeed the test adopted in the German authorities and also in the Netherlands, Switzerland, Denmark and Austria." Without rehearsing all of these authorities here, it is enough to say that the writer suggests that these authorities are themselves inconsistent. Thus in *KI v W and H* the defendant's use of a patented process for the manufacture of fire proof iron girders in a building was not an infringement because the ceilings had become an inseparable component of the constructed building, whilst in a 1922 case a process for the production of a filament to be used in electric light bulbs was infringed by the manufacture of the finished light bulbs because the preformed metal threads maintained their zig-zag shape, and were therefore obtained directly by means of the patented process. Nourse LJ cites another authority, *per* Dr Bruchhausen, as saying that "...there is nothing to drive from the wording of the Patents Act [Ger.] nor form the meaning and the history of this provision that an article must cease being a "direct" product of the patented process just because it has been subject to further processing..." Dr Bruchhausen himself had criticised that decision as being an incorrect application of his test. Nourse LJ rejected the plaintiff's reference to another academic's work, Dr Benyamini, who had pointed out

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64 Rep.I 366/96, at 592 of the Pioneer Report
65 MuW, vol. XXIII at 58f, at 593 of the Pioneer report
inconsistencies in Dr Bruchhausen's work.

Nourse LJ then proceeded to examine other European courts that had followed this authority by citing with approval a Dutch case that had been consistent with the views of Dr Bruchhausen, but it is submitted that since that case did not require that the word "directly" be construed, it was at least capable of being distinguished, if indeed it was of even persuasive authority. Nourse LJ continued in similar vein with regard to the Swiss, Danish and Austrian authorities, concluding that there was no difference of approach and that the loss of identity test represented the test adopted by European law. The Swiss authorities, for example, were again academic only, and were not unambiguously supportive of the German authorities. This is a striking change of approach in statutory interpretation by the Court of Appeal. Unfortunately, Pioneer declined an invitation to contribute to this thesis.

In conclusion, it can be seen that though the basic elements of patent law that derive essentially from the Tudor system of letter patents are still visible in the new law, its requirements have been refined and developed. The wording of the statute remains deceptively plain, ordinary language deriving in translation from that of the European patent Convention. However the construction placed upon those words by the courts reveals a dangerous dynamic tension between the U.K. and the European Patent Office Boards of Appeal that leads at best to uncertainty, and at worst to isolation of the U.K. if it is seen to "go it alone" in matters of patentability. Though not many of those surveyed in the empirical study that forms a significant part of this thesis, this uncertainty and isolation may be one reason why so many who had applied were bitter about their experiences with patent applications.
Utility model protection is presently not available in the UK, and although there have been proposals for the harmonisation of utility model protection within the EU, this has not been achieved to date. Consequently, there is not one single definition of a system of utility model protection. Analysis of the proposed EU Utility Model system will be made below, together with some of the existing European systems in use today. Speaking therefore by necessity in general terms, utility models may be loosely defined as a sort of petty patent, that is to say, an intellectual property right which:

- is granted for the protection of technical inventions (not merely their form);
- which must be registered with a drawing and/or a model, but which may or may not require previous examination.
- of limited duration (typically ten years).
- must be new, though generally with a grace period of up to one year in which prior use or disclosure would not invalidate the application.
- must not be obvious to a person skilled in the art, though with a lower standard of inventiveness; and with similar exclusions to those of the patent system, though clearly if the applicant has to submit a working model of the invention this places severe and anachronistic limitations on the system, in particular process inventions.
would be excluded in for example Greece, Spain, Portugal and Italy. These countries remind the reader that Bennet Woodcroft's original vision of the London Patent Office was that it would hold drawings and models of patents of invention, his original collection passing by bequest from his widow and forming eventually the basis of what is now the Science Museum. It is submitted that the requirement of three-dimensional protection of Utility Models in those four countries will not form the basis of any UK system if introduced.

- confer similar rights to those of a patent, viz. to prevent third parties without the owner's consent from making, using, offering for sale, selling, or importing the product, and where the utility model is a process, from doing the same things with the product obtained directly from that process.

No meaningful study of utility models in the UK can be made in isolation from the EU for the reason stated above, namely that there is no UK utility model apart from that which would be created in line with the EU Directive dealt with in detail below. At the same time, a meaningful comparison cannot be made with design law in the UK alone. It would not be logical to look in detail at the proposed harmonisation of utility models in the EU without looking in similar detail at the EU legislation and proposals for the protection of designs. Of course the UK has its own registered and unregistered design systems, which can be illuminated all the more clearly from a European Union viewpoint. This gives a complete analysis of the potential value of the utility model to the musical instrument industry.
HARMONISATION OF INTELLECTUAL PROPERTY RIGHTS WITHIN THE EU AND ELSEWHERE

INTRODUCTION.

The approach taken in the first part of this work has been essentially historical, looking at the development of U.K. intellectual property law and also the development of musical instrument technology, and by means of surveying the use to which the protection afforded by the law has been put, particularly with reference to patents and to a lesser extent with registered trade marks. It has been possible to form for the first time a reasonably clear picture of the relationships that have typified the emergence on the one hand of the law from its earliest times, and on the other of musical instrument technology.

It has been seen earlier in this work that the whole thrust of the early granting of letters patent of invention in the U.K. was to promote industry and commerce within the U.K., both by encouraging the exploitation of new inventions within the realm, and by encouraging the bringing in of new inventions from without the Realm. In effect this policy continued up until the repeal of the 1949 Patents Act in 1977 in so far as the geographical and temporal limitations applied. However, from the earliest times the granting of patents by the U.K. and other countries has had a significant effect on international trade, and various international conventions have come into force to ensure that reciprocal rights are accorded in respect of intellectual property rights to other countries. The first international agreement was the Paris Industrial Property Convention of 1883, generally known as the "Paris Convention". This provides at its most basic for the reciprocation of rights so that the nationals of one Member

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1 the U.K., and 50 years [see the section on patents earlier in this work for details of this anomaly]
State shall be accorded the same rights in another Member State as one of its own nationals could expect to be entitled. Another important function of the Paris Convention is that it administers a system of priority, whereby the applicant for a patent in one Member State is automatically entitled to a grace period of twelve months from the date of application to file an application in other Member States. The Paris Convention is administered by the World Intellectual Property Organisation [WIPO], and is periodically updated. The last revision was in 1979. The Paris Convention also applies to industrial designs, trade marks and indications of origin, and unfair competition. WIPO also administers the Berne Copyright Convention, and the Madrid Agreement, which is concerned with the international registration of trade marks. Whilst these agreements are recognised on the one hand by their Member States, and incorporated into national law, they are also recognised by the European Union. However, the extent to which intellectual rights have been harmonised within the European Union has been, and as will be shown is likely to remain, uneven. The many different ways and extent to which particular intellectual property rights have or have not been incorporated into European Union law, together with a look towards future implementation of harmonising measures, has formed a large part of the law research which informs the rest of this work.

The development of competition law, particularly within the EU, has threatened the very existence of intellectual property rights, since they involve by definition the granting of monopoly rights of varying powers specifically in order to prevent the free movement of protected goods and services. The often uneasy interface that exists on the one hand between the exercise of intellectual property rights within a Member State, throughout the European

2 foreign priority is maintained in the U.K. by sections 5 and 90 of the Patents Act 1977.
3 September 28th
4 the Berne Convention for the protection of literary and artistic works of September 9th 1886, as amended on September 28th 1979.
5 of April 14 1891, as amended on September 28th 1979
Union and then on a global scale, and on the other, the stern hand of the European Court of Justice in interpreting Articles 85 and 86 of the Treaty of Rome, which prevent cartels and abuse of a dominant position in the market, has often been uneasy. It falls to be examined [below] what effect, if any, this has had, and will continue to have, on the musical instrument industry.

**WTO / TRIPS**

Having considered in outline the position of the U.K. in relation to Europe generally and the European Union and Munich Convention in particular, the question arises as to the position of "Europe" to the rest of the world. Intellectual property rights have increased in economic and political importance dramatically throughout the second half of this century, and their protection and enforcement is central to international negotiations on a global level. For example, the relative percentage of US exports with a high IP input has risen from 9.9% in 1947 to 27.4% in 1986, making it accountable for more than a quarter of all US exports. This is a hugely important source of national revenue, which the US has been keen to protect in both established western economies, and emerging economies, whether from the Eastern block, third world or China. The principle and national treatment of IP rights, and the establishment of a global system for enforcement of those rights, has been the long-term aim of signatories to the General Agreement on Tariffs and Trade (GATT) since 1947.

On 1 January 1995 the World Trade Organisation (WTO) came into being, in effect replacing GATT. It ratified and implemented the Final Act Embodying the Results of the Uruguay

Round of Multilateral Trade Negotiations, the most important of which for the purposes of this research was the Agreement on Trade Related Aspects of Intellectual Property rights (TRIPS). The TRIPS agreement has amalgamated the basic principles embodied in GATT, that is to say national treatment of intellectual property rights, with "most favoured nation" treatment, which effectively welcomes trading partners into the US economic fold, so to speak. In addition, there are substantive provisions for the protection and enforcement of intellectual property rights which, for the first time, establish a dispute resolution process that really does have "teeth". TRIPS is not merely a stick to wave at recalcitrant signatories, it is a stick with which to beat them. This represents to a great extent recognition of the fact that greater protection of intellectual property has become a critical trade issue; it has been estimated7 that "intellectual property theft" accounts for global losses to US multinationals of between US$43 - 63 billion per annum. Since the World Intellectual Property Organisation (WIPO) does not provide for the effective enforcement of IP rights, one of the driving forces behind TRIPS was to provide the means for procuring compliance with IP rights, and for settling disputes under one single, unitary authority, equipped with the means to enforce its decisions.

The principle of national treatment.

The Paris Convention 1883 provided for the national treatment of industrial property in the first multinational agreement of its kind, and thereby provided for the integration of patents, utility models, trade marks and industrial designs8. Foreigners are given the same rights as

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8 Art 1 Paris Convention 1883 as amended.
nationals in a member country, and are bound by the same judicial process. They enjoy a right of priority which runs from the date of filing in the member state in which they are domiciled. However, no compliance with the substantive provisions of the Convention may be required of the Member State through access to an international judicial body - "national" treatment gives "national" rights, which must be enforced within the judicial system of the member state. The Berne Convention provides an equivalent form of national treatment for copyright holders. Essentially, therefore, intellectual property rights have been protected internationally by means of what are bilateral agreements between signatories, based on an exchange of privileges, with a variable degree of protection based on the prevailing law in a given member state.

Evans has stated that the Paris Convention provided no more than a statement of intention as to the object of the Convention, and that this was no more than a mere formality, because it confers little other than the basic right of priority, and each IP right receives independent protection in each signatory state to which the holder has successfully applied. Whilst GATT provided an obligation in respect of intellectual property, there was still no adequate international protection for intellectual property rights, resulting in the use, for example, of the general exception in Article XX(d) in respect of those IP rights, to prevent the pirating of US intellectual property. In Imports of certain Spring Assemblies the GATT panel had condemned unilateral action taken by the US using section 337 proceedings in the US Supreme court to violate its obligations under GATT. For a detailed treatment of this area of

law, reference should be made to Evens' article. The present purpose of the writer is merely to establish the need for reform under the TRIPS agreement.

COMPARISON OF UTILITY MODELS WITH PATENTS AND DESIGNS IN THE CONTEXT OF THE HARMONISATION OF THESE RIGHTS WITHIN THE EUROPEAN UNION.

PATENTS

There are obvious similarities between the utility model system outlined above and the patent system. Essentially, a patent is harder to obtain because the substantive examination procedure is strict, and of course it lasts for twice as long at twenty years duration. It is envisaged that the two systems would offer the option of dual protection for the same invention, with the distinct possibility that the utility model would offer the opportunity to obtain temporary protection for the technical invention pending the grant of a patent\textsuperscript{15}. In that sense the two systems would be loosely comparable to the trade marks system under the 1938 Act, where registration in Part B was sometimes used as the stepping stone on the way to registration under part A for trade marks which lacked inherent distinctiveness.

There is at present no proposal by the Commission to create a single unified Community Utility Model. The proposed Directive analysed below will require member States to create or amend their own utility model systems, and though it is envisaged that the registration

\textsuperscript{15} specific provision is made for dual protection of patents and utility models in the Commission proposal for the harmonisation of utility model systems dealt with in detail in this chapter post.
system will be administered from the Community Trade marks Office in Alicante, the
applicant will effectively have to apply for a bundle of utility model rights in each of the
designated member States of his choice. In that sense the EU Utility Model system will be
comparable with the patent system, though of course the latter exists independent of the
European Union, being administered by the European Patent Office and the Patent Offices of
the individual Member States.

INDUSTRIAL DESIGNS: (UNREGISTERED) DESIGN RIGHT UNDER
COPYRIGHT, DESIGNS AND PATENTS ACT 1988

Part III of the Copyright, Designs and Patents Act 1988 provides a property right to subsist in
an original design, which essentially provides protection for functional designs. Under s
213(2) a design means the design of any aspect of the shape or configuration (whether
internal or external) of the whole or part of an article. A design is not original if under s
213(4) it is commonplace in the design field in question at the time of its creation. Section
213(3) excludes a method or principle of construction; the so-called "must match" features of
shape or configuration which enable the article to be placed in around or against another
article so that either article may perform its function, or which are dependent on the
appearance of another article or which the article is intended by the designer to form an
integral part; and surface decoration. Under subsection (6) design right does not subsist until
the design has been recorded in a design document, or the article has been made to the
design. There is NO registration system, and NO examination system. Duration of design
right under s 216 is fifteen years. The rights conferred under s 226 give the owner the
exclusive right to reproduce the design by making article to that design, or by making a
design for the purpose of enabling such articles to be made. Reproduction is defined as copying the design so as to produce article which are exactly or substantially to that design, and includes direct and indirect copying, it being irrelevant whether intervening acts would themselves constitute infringement of design right. Secondary infringement prevents a person from importing or dealing with infringing articles without the licence of the design owner. There is a presumption under s 228(4) that where a design is made in which design right subsists, that the article was made at a time when design right subsisted unless the contrary can be proved. Dual protection is NOT available, s 236 providing that it is not infringement of design right in the design to do anything which is an infringement of the copyright in that work.

Design right is therefore firmly rooted in copyright. In sharp contrast to Utility Model protection, only the shape or configuration is protected, and not the function of the article. The Utility Model, on the other hand, has its roots firmly in the patent system. A utility model is granted for the protection of technical invention and not merely its form. It protects both products and processes. There is an absolute requirement of novelty, as opposed to the relative requirement that a design be not commonplace in the design field in question. A utility model must be registered, and is subject to a minimum procedural examination. The register can be checked and is prima facie evidence of the validity of the utility model's validity. The design right simply puts the onus of proof in a design right dispute on the party who does not have a design document or article. Since there is no register, this may present a difficult evidential burden. It is not always easy to establish the date of an unregistered document. The rights conferred on the owner of a design are basically to prevent it being copied, similar to copyright. The utility model gives much wider protection, most importantly
that a third party cannot use the invention, nor provide the equipment to make it. Duration of
the design is longer at fifteen years as opposed to a potential ten for the utility model. Also
the utility model system is proposed to be harmonised throughout the EU, which the
unregistered design is not.

Therefore, the musical instrument inventor and innovator cannot rely upon unregistered
design right to protect his inventions, he can only use it to protect their shape or
configuration. The empirical survey found that this was still useful, but given the exclusion of
surface decoration and the opportunity to protect that under copyright for life plus seventy
years, it is not surprising that so many of the respondents had thought about its importance.
Given the very fine changes that musical instrument manufacturers make to improve existing
instruments, it is submitted that it would be difficult to show that many new designs could
not be described as commonplace in the field in question. For example, a new method of
finishing a brass instrument might look virtually the same as any other, yet the process would
be excluded form design right subsistence. A utility model application would afford the
inventor the opportunity to protect a minor technical advance in manufacturing technique
with relative simplicity and certainty, throughout the EU.

REGISTERED DESIGNS UNDER REGISTERED DESIGNS ACT 1949

Section 1(1) Registered Designs Act 1949\(^{16}\) states that "design" means features of shape,
configuration, pattern or ornament applied to an article by an industrial process which appeal
to and are judged by the eye, but does not include a method or principle of construction, or

\(^{16}\) as amended by the Copyright Designs and Patents Act 1988 ss. 266-271 and Schedule 3
the so-called "must fit / must match" features of shape or configuration which are dictated by
the function or appearance of the article. This system is therefore readily distinguishable from
utility models and patents since it does not afford protection for inventions. It is
distinguishable from design right in that the design features have to appeal to and be judged
by the eye. Also the design has to be applied to an article - there is no protection for the
design in isolation under this Act, and the article cannot form an integral part of a larger
article. Thus some internal part of a design would be excluded, for example the bore or a
brass instrument, and purely functional designs such as, for example, mounting brackets for
clarinet keys would be excluded, unless the dimensions could be shown to have been chosen
so as to produce a pleasing effect upon the eye. Even so, because they all tend to different
shapes and sizes they would be deemed to be part of the larger article, i.e. the clarinet itself.
A design shall not be registered under s 1(3) RDA 1949 if the appearance of the article is not
material, that is if aesthetic considerations are not normally taken into account to a material
extent by customers. This requirement also distinguishes the registered design from its
unregistered counterpart. the design must be new, which requirement is slightly stricter than
the unregistered design right in that it must not be registered or published in the United
Kingdom as opposed to not being commonplace in the design field. However it is clearly not
as strict as the patent and utility model, which must not have been made available to the
public (whether in the UK or elsewhere) by written or oral description, by use or in any other
way. Similar to a patent, there is a provision that an application shall not be refused or
invalidated under section 6 RDA 1949 where it is the subject of confidential disclosure in

17 see e.g. R v Registered Design Appeal Tribunal ex p Ford Motor Co Ltd (1994) The Times 9/3/94 where a motor part
had no independent life as an article of commerce and an adjunct to a larger item.
18 see e.g. Amp v Utilux Pty Ltd [1972] RPC 103 HL, where electrical terminal fixings for washing machines could not be
registered because they were held by the House of Lords to be purely functional
19 see e.g. Interlego AG v Tyco Industries Inc. [1988] RPC 343 where the bumps on the top of toy building blocks which
were purely functional were held by the Privy Council to have dimensions chosen so as to have a pleasing effect upon
the eye.
The registered design, like a patent or utility model, must be registered, which at least provides a register which can be searched. The duration of a registered design under s 8 RDA 1949 is five years which may be extended for periods of five years up to a maximum of twenty-five years. It is therefore of potentially longer duration than a patent, utility model and unregistered design. The exclusive rights conferred on the registered design owner under s 7 RDA 1949 are, without the licence of the proprietor, to make or import, for sale or hire or for use for the purposes of a trade or business, or to sell, hire or offer or expose for sale or hire, an article in respect of which the design is registered and to which that design or one not substantially different from it has been applied. These rights extend under subsection (4)(b) to a kit which is defined as a complete or substantially complete set of components intend to be assembled into an article.

In conclusion, the registered design does not afford protection to the inventor and innovator who wants to protect his technical innovation or invention. The requirement of eye appeal and lack of protection for the design in isolation limits its usefulness for general application in the musical instrument industry.
HARMONISATION OF DESIGNS WITHIN THE EUROPEAN UNION.

The basic thrust of EU design harmonisation is to provide protection for designs which are not functional by means of an unregistered design right which only prevents copying, and a registered design right which gives greater protection and legal certainty. It is the appearance of the product that is protected and not its function.

Directive 98/71/EC on the legal protection of designs.

In 1993, the Commission submitted to the Council and the European Parliament proposals for a Regulation on the Community design and for a Directive on the legal protection of designs. The Directive was adopted on 13 October 1998. It is required to be implemented by 28 October 2001. The definition of a design, requirements for registration, duration of term and other substantive matters are intended to be identical to those of the Regulation which will be dealt with below with one important exception: the Directive only provides for a registered design system. There is no provision in the Directive for an unregistered design.

The rights conferred on the owner of a registered design under the Directive are identical to those under the Regulation amended proposal. It is therefore proposed for the sake of convenience and in order to avoid unnecessary duplication to consider the registered design created by the Directive at the same time as that created by the Regulation.

1 OJ L 289, 18/10/98
5 Article 19
Amended proposal for a Council Regulation on Community design

On 21 June 1999, the Commission adopted an amended proposal for a Council Regulation based on Article 308 of the Treaty, which will establish both a short term unregistered community design and a longer term registered community design.

Community unregistered design,

Some changes to the original Regulation have been introduced in order to clarify the scope of this form of protection and to ensure its legal certainty. In its opinion of 27 January 2000, the Economic and Social Committee supported the importance of having a protection for an unregistered Community design. This form of protection is said by the Commission to provide better design protection for products with a short real life span, such as textiles and toys. However, there was a need to further clarify the concept and rights related to the unregistered Community design. These amendments are intended to make clear that the scope of protection of the unregistered Community design is identical as that of the registered Community design. However, the unregistered Community design does not allow the right holder to oppose designs which are the result of an independent creation by a second designer.

As with the utility model system proposal, reference is made to the substantial differences between Member States' design laws which prevent and distort Community-wide competition between the producers of protected goods. The effect of design protection being limited to the

6 Document delivered on: 19/02/2001.
7 (presented by the Commission pursuant to Article 250(2) of the EC Treaty) 500PC0660, 1993/0463 (CNS)
territory of the individual Member States leads to a possible division of the internal market with respect to products incorporating a design which is the subject of national rights held by different individuals, and hence constitutes an obstacle to the free movement of goods. A more accessible design-protection system adapted to the needs of the internal market is essential for Community industries. However, the essential distinction between the UK unregistered design right and the EU proposed Regulation is that technological innovation must not be hampered by granting design protection to features dictated solely by a technical function. The UK system specifically protects functional designs. It is understood that this does not mean that a design must have an aesthetic quality. Protection should not be extended to those component parts which are not visible during normal use of a product, or to those features of such part which are not visible when the part is mounted, or which would not, in themselves, fulfil the requirements as to novelty and individual character. Full-scale approximation of the laws of the Member States on the use of protected design of component parts of complex products for repair purposes could not be achieved through Directive 98/71/EC. It should be noted that the Commission is very attached to the principle that the Regulation should not deviate from concepts which are embodied in the Directive.

Registered Community Design

The Commission stated that it is appropriate to have two forms of protection, one being a short-term unregistered design and the other being a longer-term registered design. A registered Community design requires the creation and maintenance of a Register in which will be registered all those applications which comply with formal conditions and which have been accorded a date of filing. Similar to the proposed utility model system, this registration
system should in principle not be based upon substantive examination as to compliance with requirements for protection prior to registration, thereby keeping to a minimum the registration and other procedural burdens on applicants. A Community design should not be upheld unless the design is new in the sense that it is not identical to any other design previously made available to the public, and unless it also possesses an individual character in comparison with other designs. The exclusive nature of the right conferred by the registered Community design is consistent with its greater legal certainty. Therefore it is appropriate that the unregistered Community design should constitute a right only to prevent copying. This right, which should also extend to trade in products embodying infringing designs, should not extend, however, to design products which are the result of a design arrived at independently by a second designer. In that sense, it is submitted, the EU system has grown out of copyright, like the UK design right.

The Commission proposal states that the enforcement of these rights is to be left to national laws and it is necessary therefore to provide for some basic uniform sanctions in all Member States. These should make it possible, irrespective of the jurisdiction under which enforcement is sought, to stop the infringing acts. It is a fundamental objective that the procedure for obtaining a registered Community design should present the minimum cost and difficulty to applicants, so as to make it readily available to small and medium-sized enterprises as well as to individual designers. Those sectors of industry producing large numbers of possibly short-lived designs over short periods of time of which only some may be eventually commercialised will find advantage in the unregistered Community design. It is essential that the rights conferred by a Community design can be enforced in an efficient manner throughout the territory of the Community. Specific rules concerning litigation based
on Community designs should therefore be provided in order to guarantee such a result.

Member States should designate Community design courts and the litigation system should
avoid as far as possible any element of choice between several judicial fora ('forum
shopping').

The proposal does not preclude the application to designs protected by Community designs of
the industrial property laws or other relevant laws of the Member States, such as those
relating to design protection acquired by registration or those relating to unregistered designs,
trade marks, patents and utility models, unfair competition or civil liability.

The Regulation

Looking in some detail at the General Provisions in the proposed Regulation,

Article 1 provides:

Community design

1. A design which complies with the conditions contained in this Regulation is hereinafter referred to as a "Community design".

2. A design shall be protected under the terms of this Regulation:

(a) as an 'unregistered Community design', if made available to the public in the manner provided for in this Regulation;

(b) as a 'registered Community design', if registered in the manner provided for in this Regulation.

3. A Community design shall have a unitary character. It shall have equal effect throughout the Community.

There are then clearly two systems, one registered and the other unregistered. It should be
noted that, unlike the Utility Model proposal, this Regulation does provide for a unified Community Design, which would be administered by the Community Trade Marks Office.

Looking at the requirements for protection, Article 3 defines a design as:

(a) "design" means the appearance of the whole or a part of a product resulting from the features of, and in particular the lines, contours, colours, shape, texture and/or materials of the product itself and/or its ornamentation;

(b) "product" means any industrial or handicraft item, including inter alia parts intended to be assembled into a complex product, packaging, get-up, graphic symbols and typographic typefaces, but excluding computer programs;

(c) "complex product" means a product which is composed of multiple components which can be replaced, permitting disassembly and re-assembly of the product.

For both systems the definition of a design is the same. What is protected is the appearance of the whole or part of a product. It is therefore similar to the requirement of eye appeal under the Registered Designs Act of 1949, and not at all like the UK unregistered design under the Copyright, Designs and Patents Act 1988, which provides protection for functional designs.

Article 4.1. states that a design shall be protected by a Community design to the extent that it is new and has individual character. However,

8 Article 2, The Office for Harmonisation in the Internal Market (Trademarks and Designs), instituted by Council Regulation (EC) No 40/94
4.2. A design applied to or incorporated in a product which constitutes a component part of a complex product shall only be considered to be new and to have individual character:

(a) if the component part, once it has been incorporated into the complex product, remains visible during normal use of the latter; and

(b) to the extent that those visible features of the component part fulfil in themselves the requirements as to novelty and individual character.

This part affords protection to kits and the like, and the requirement of individual character is quite new to the UK, although the requirement of visibility is not. Under Article 6 a design shall be considered to have individual character if the overall impression which it produces on the informed user differs from the overall impression produced on such a user by any design which has been made available to the public. However, in assessing individual character, the degree of freedom of the designer in developing the design shall be taken into consideration.

Novelty is defined in Article 5.1:

A design shall be considered to be new if no identical design has been made available to the public:

(a) in case of an unregistered Community design, before the date on which the design for which protection is claimed has first been made available to the public;

(b) in case of a registered Community design, before the date of filing the application for registration or, if a priority is claimed, the date of priority.
(b) in case of a registered Community design, before the date of filing of the application for registration of the design for which protection is claimed, or, if priority is claimed, the date of priority.

2. Designs shall be deemed to be identical if their features differ only in immaterial details.

This definition has been imported from the patent and utility model systems and is much wider than, say, the UK unregistered design under CDPA 1988 which requires merely that the design be not commonplace in the design field in question.

Article 8 defines Disclosure. Similar to patents and utility models, the design must not have been made available to the public. For the purpose of applying Articles 5 and 6, a design shall be deemed to have been made available to the public if it has been published following registration or otherwise, or exhibited, used in trade or otherwise disclosed, before the date referred to in Articles 5 and 6, except where these events could not reasonably have become known in the normal course of business to the circles specialised in the sector concerned, operating within the Community. The design shall not, however, be deemed to have been made available to the public for the sole reason that it has been disclosed to a third person under explicit or implicit conditions of confidentiality.

Article 9 excludes designs dictated by their technical functions, and also the design of interconnections. Article 9.1. states that a Community design shall not subsist in features of appearance of a product which are solely dictated by its technical function. Article 9.2 has the "must fit / must match" exception where design features of appearance of a product must necessarily be reproduced in their exact form and dimensions in order to permit the product in which the design is incorporated or to which it is applied to be mechanically connected to
or placed in, around or against another product so that either product may perform its function. Article 9.3. however allows for a design to subsist in a design serving the purpose of multiple assembly or connection of mutually interchangeable products within a modular system.

Article 11 defines the scope of protection conferred by a Community design, which shall include any design which does not produce on the informed user a different overall impression. In assessing the scope of protection, the degree of freedom of the designer in developing his design shall be taken into consideration.

Under Article 12.1. the term of protection of the unregistered Community design is a period of three years as from the date on which the design was first made available to the public within the Community. Under Article 12.2. a design shall be deemed to have been made available to the public within the Community if it has been published in any way or exhibited, used in trade or otherwise disclosed therein, except where these events could not reasonably have become known in the normal course of business to the circles specialised in the sector concerned, operating within the Community. The design shall not, however, be deemed to have been made available to the public for the sole reason that it has been disclosed to a third person under explicit or implicit conditions of confidentiality.

Article 13 provides that the term of protection of the registered Community design shall be a period of five years as from the date of the filing of the application. The right holder may have the term of protection renewed for one or more periods of five years each, up to a total term of 25 years from the date of filing.
Article 20.1. provides that registration of a Community design shall confer on its holder the exclusive right to use it and to prevent any third party not having his consent from using it. This use shall cover, in particular, the making, offering, putting on the market, importing, exporting or using of a product in which the design is incorporated or to which it is applied, or the stocking of such a product for those purposes. However, Article 20.2 confers on an unregistered Community design holder the right to prevent the acts mentioned in paragraph 1 only if the use contested results from copying the design protected.

Article 22.1. derives from patent law and provides for limitation of the rights conferred by a Community design which shall not be exercised in respect of:

(a) acts done privately and for non-commercial purposes;
(b) acts done for experimental purposes;
(c) acts of reproduction for the purpose of making citations or of teaching, provided that such acts are compatible with fair trade practice and do not unduly prejudice the normal exploitation of the design, and that mention is made of the source.

Article 24 provides for the exhaustion of rights conferred by a Community design which shall not extend to acts relating to a product in which a design included within the scope of protection of the Community design is incorporated or to which it is applied, when the product has been put on the market in the Community by the holder of the Community design or with his consent. Article 25 provides rights of prior use in respect of a registered Community design.
Article 39 provides conditions with which applications must comply, and which include:

1. ... (c) a representation of the design suitable for reproduction.

2. (a) an indication of the products in which the design is intended to be incorporated or to which it is intended to be applied;
   (b) the classification of the products in which the design is intended to be incorporated or to which it is intended to be applied according to class;
   (c) the citation of the designer or of the team of designers or a statement under the applicant's responsibility that the designer or the team of designers has waived the right to be cited.

3. In addition, the application may contain:
   (a) a description explaining the representation ...

6. The information contained in the elements mentioned in paragraph 2(a) and (b) and in paragraph 3(a) does not affect the scope of protection of the design as such.

Conclusion.

The Community design is therefore based on appearance rather than function, and provides unregistered EU-wide protection from having the design copied for three years, and a registered system that prevent use, making, selling importing and so on of the design for a maximum of twenty-five years subject to examination and renewal. It does not protect invention, nor technical improvement of inventions. In that sense it does not present itself as an alternative to the utility model as a suitable vehicle for the protection of innovation in the musical instrument industry.
(3) PROPOSED HARMONISATION OF UTILITY MODELS WITHIN THE EUROPEAN UNION

Although the United Kingdom continues to turn a blind eye to the Utility Model system of protecting sub-patentable inventions the fact is that at the time of writing, twelve of the fifteen Member States of the European Union have some form of utility model scheme in place. Jeremy Newton has grouped these schemes into three broad classes, the first having broadly the same requirements as those for a patent, that is to say requiring novelty and inventive step, though without any proper examination as to whether those requirements have been satisfied. Typical of this group are France, Belgium, and the Netherlands. The second group requires a lesser degree of inventive step than that required under patent law, thus providing a "second-tier" form of monopoly for sub-patentable inventions. However, there is a requirement that the invention must be embodied in a three dimensional form, which effectively limits the number of applications. This is typical of the systems that exist in Greece, Spain, Portugal, Italy and Finland. Lastly, there is the type of system which has the lower level of inventive step but which does not necessarily require that the invention be embodied in a three dimensional model. Germany, Denmark, Austria and Ireland have such systems. It will be seen then that all of these systems have as a unifying thread the fact that they grant a monopoly right without prior examination as to novelty or obviousness.

The recognition of the economic importance of these disparate systems, together with the need for their harmonisation, has long been debated in various forums. The Max Planck Institute organised a Symposium attended by members from the European Union, European

1 Towards a European Model, [1996] 8 EIPR 446
Patent Office and the European Commission to discuss a draft proposal for the creation of a European Utility Model. The draft proposed the creation of a European utility model through an EU regulation, which would supplement existing national patent and utility model laws.

A pilot study conducted by the Ifo-Institut für Wirtschaftsforschung [hereafter called Ifo] for the European Community Commission consisting of questionnaires submitted to patent attorneys in France, Germany, Spain and the U.K. revealed that current protective measures for technical inventions in France and the U.K. were deemed to be inadequate. The results were placed in two categories, one for large firms and one for small and medium-sized enterprises [SME's], and nearly half of the patent attorneys in France and the U.K. said that they frequently did not apply for protection of inventions on behalf of their SME clients. In particular, British patent agents cited high costs and a long and complicated patent procedure which made their SME clients disregard the possibility of attempting to apply for a patent, and of course there was no alternative utility model scheme in place. All four countries' attorneys favoured the introduction of a European utility model. Only a minority considered the absence of an official obligatory search to be a disadvantage, in spite of the legal uncertainty that this inevitably creates.

Whilst recognising that the patent system provides the most powerful and valuable monopoly protection for an invention, the research revealed that the utility model scheme targets a different class of applicants, that is to say SMEs rather than large firms and was not likely to confuse the state of protective measures for industrial property. In spite of general scepticism in the United Kingdom and mistrust of the granting of an unexamined industrial property

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3 by the Ifo Institute of the economic impact of utility model protection in the European Union, May 1994
right, the reduced financial cost and emphasis on "improvement" inventions found favour with SMEs. It also became apparent that some larger firms would lobby fiercely against the introduction of an additional industrial property right aimed at SMEs. Against this, some larger firms anticipated using the new system to "bridge the time lag" until patent protection was granted, there being rights granted on application which contrasts with the "patent pending" status of a patent application which has not yet achieved, and which may never achieve, "B" publication and grant. In this sense it would provide a "quick weapon".

It was felt that, in contrast with the European patent system under the European Patent Convention, a European utility model system would function more effectively if it operated as a right having unitary effect across all designated member states rather than operating as a bundle of rights, as is the present situation with patents. However, it was felt that applicants should be able to elect which member states they wished to designate, thus ensuring flexibility in territorial scope, which would therefore reflect the EPC in that particular respect. It was also felt that a convention along the lines of the EPC would not be viable. The preferred option was for the European Patent Office to integrate a Community Utility Model Office, which would save time and be more efficient for the purpose of carrying out searches, also providing an efficient examination procedure for those utility models which are subject to revocation proceedings. This approach would be both novel and hybrid, and will be considered in the light of proposals for EU-wide utility model protection later in this chapter.

The Ifo Draft called for all technical inventions to be capable of being registered as utility
models, including process inventions, which are expressly excluded from utility model protection in Germany, Italy and Spain, which would obviously lead to conflict. However, the Draft adopts, with Articles 5 to 7, the same substantive requirement for novelty as does the patent system, i.e. absolute novelty, which met with general approval from the participants in the survey. In contrast to the EPC, which abolished the grace period for patent applications in all cases save for abuses and displays at international exhibitions, the Draft proposes a limited grace period for utility model applications by Article 6, and that this should in due course "supply the impetus for the amendment of European patent law". Support for this proposal was apparently very strong.

The Ifo Draft proposed a novel standard of inventiveness which is completely different from that of any patent system. Article 7 of the Draft supplemented the requirement of inventive step with another criterion requiring an "advantage of practical significance", either resulting from creativity or which is a de facto technical or economic advance, rather than inventive step as required by the EPC for a patent to be granted. This appears to be a truly novel and original approach, distinguishing inventiveness in the Ifo Draft for utility models from that required for patents. The distinction is one of substance rather than form, and is clearly a more moderate condition. It was contrasted with the distinction in Germany between the requirement of "erfinderische Tätigkeit" (inventive activity) required for the grant of a patent, and "erfinderischer schritt" (inventive step), which is required for a utility model. The distinction between these terms is therefore one of degree and quality rather than substance. The Ifo Draft expresses a term which is, in the writer's view, sui generis and therefore represents a real intermediate level of inventiveness between patentable and sub-patentable

4 by Article 3
inventions, which may still be distinguished from each other with a reasonable degree of certainty and objectivity. However, Kern reports that the symposium was unwilling to abandon the requirement of inventive step altogether, and the relationship between the two terms remained unclear. Could a lack in inventive step be supplemented by evidence of an advantage of practical significance? It seems to the writer that it is not clear whether the word "or" was being used in its conjunctive or disjunctive sense, and it is suggested that, not for the first time, an attempt to provide flexibility in a new codification of law based on a Roman system could easily prove problematic to interpret in the common law courts of the United Kingdom.

Contrary to the proposals made by the Chartered Institute of Patent Agents [CIPA], suggestions that a more relaxed approach to the drafting of utility model claims be adopted were felt to be unreasonable. It was also felt that an abstract should be required, particularly since this would enable the "First Page Database" system that exists for patents to be extended to utility models, thus simplifying the state of the art and the carrying out of searches. However, the symposium broadly favoured a more relaxed requirement for a filing date, in accordance with Article 8 of the Patent Law Treaty [PLT], which requires that the application simply confirm that an application is sought, together with a description of the invention and the identity of the applicant. This contrasts sharply with the present state of patent law. It was seen earlier in this work\(^5\) that the House of Lords\(^6\) recently confirmed that the priority date for a EPC(UK) patent is the first application, in that case a U.K. application, but that the doctrine of enabling disclosure required that the patent claim both disclose the

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5 in the section devoted to U.K. Patents
6 in Biogen v Medeva 1997 RPC 1, discussed in detail by Batchelor, International Review of Computers, Law and Technology, Vol. 11, Number 2, at 318

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invention such that a person skilled in the art could work it, and also that the claims be not too broad. The fact that a subsequent EPC application disclosed the invention more fully or more precisely did not assist the validity of the claim. Consequently, the members of the symposium were not hostile to an extension of the subject matter of the original application, as long as the amended application did not obviously go beyond the application as filed. This was in line with the overall objective of making utility models inexpensive and easily obtainable.

These proposals do not sit at all well with Article 52 of the Draft, which provides only for an examination of limited scope for obvious deficiencies in the application, but does not allow at all for examination of the material conditions of protection such as novelty and inventive step, albeit of a lower standard than that required for patents. The working group, whilst endorsing Article 52, suggested that the applications should ordinarily be registered with no examination, which should be left to later proceedings.


With the stated objective of promoting business competitiveness especially among small and medium sized enterprises, the proposal for a European Parliament and Council Directive approximating the legal arrangements for the protection of inventions by utility model proposes a system of registered rights which confers protection for technical inventions which is more rapid and cheap than patents, but which is legally less secure. Registration

7 98/C 36/05 COM(97) 691 Final - 97/0356(COD) Submitted by the Commission on 12 December 1997, as amended in 599P C0309.
would require novelty, inventive step and capability of industrial application, and the invention must not be excluded.

Article five of the Commission Proposal explains that novelty is essentially the same requirement as for patents, i.e. that the invention is considered to be new if it does not form part of the international state of the art, having regard to everything made available to the public by means of a written or oral description, by use, or in any other way. The standard is therefore one of absolute novelty.

However the test for inventive step under Article six is completely different in that it imposes, following the Ifo Draft above, a lower standard of inventiveness. The invention would involve inventive step if it is either particularly effective, (ease of application or use or has a practical or industrial advantage). The test of being obvious to a person skilled in the art, as for patents, is therefore not suggested. In this sense the test of inventive step is therefore a lower standard than for patents, and is less of a hurdle for the applicant to jump. This wording is designed to cover the wide variety of situations which are provided for in the various national systems, and examples given in the proposal are an invention making it possible to solve a technical problem and an invention relating to the effectiveness or ease of use of a product in that it increases the product's usefulness by making it more effective and easier to use.

Industrial application under Article seven is the same as for patents, i.e. that the invention can be made or used in any kind of industry including agriculture. The exclusions under Article four are broadly the same as for patents, most notably stating that utility models shall not be
granted for computer programs. Duration under Article nineteen to be six years, renewable for two yearly periods up to a maximum of ten years. The rights conferred on the owner under Article twenty are essentially the same as for a patent, i.e. the right to prevent third parties not having the owner's consent form making, offering for sale, selling or importing the product. Where the invention is a process, the right to prevent third parties without consent from using the process, offering for sale, selling or importing the product obtained directly by that process. Acts done for private, noncommercial and experimental purposes, like the patent system, do not infringe the utility model. Article twenty-one provides for the exhaustion of utility models rights once the product has been put on the market within the Community by the owner or with his consent. The proposal would encompass both products and processes.

Chapter III Article eight to sixteen deal with utility model applications, which differ significantly from applications for patents. The important distinction between the proposed utility model and a patent is that the examination under Article fifteen as to formal requirements merely requires that the application contains a request, description of the invention, one or more claims, drawings and an abstract under Article eight, and the designation of the inventor under Article ten. Like a patent, Article twelve requires that the application must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. Article thirteen requires that the Claims define the matter for which protection is sought, and that they shall be clear and concise and be supported by the description. There second part of Article thirteen states that the number of claims shall be limited to that which is strictly necessary having regard to the nature of the
invention. This is in line with the intention to keep the utility model system as simple as possible. Article fourteen requires an Abstract, which shall merely serve for use as technical information, which may not be taken into account for any other purpose. This is clearly an aid to searching the register.

There is NO compulsory examination for novelty, inventive step, industrial application nor exclusions. The APPLICANT may, however, request a search report covering the relevant state of the art. The onus is therefore clearly on third parties to object to the conferment of a utility model, which is prima facie valid until challenged.

The main features that would distinguish a community utility model from a patent are therefore the lower level of inventiveness, and a shorter period of protection, and the lack of a substantive examination by the competent authority. With the aim of reinforcing legal certainty and transparency, and striking a better balance between the rights of utility model proprietors and those of third parties, the proposal was amended to include an element of obviousness in the test of inventive step, though without examination. Inventions would be considered as involving inventive activity if they represented an advantage and, from the point of view of those in the particular fields, were not derived in a very obvious way from the state of the art, a change brought about in light of the opinion of the European Parliament. It is suggested that this amendment will detract from legal certainty and transparency, making the system somewhat fuliginous.

IMPORTANCE OF UTILITY MODEL PROTECTION FOR INDIVIDUAL INVENTORS AND SMEs

The empirical research questionnaire showed that only two firms had a turnover in excess of one million pounds and only two firms had more than two hundred and fifty employees. The rest were therefore small sized enterprises within the meaning of the Companies Act 1985, and many were individuals. The other two would fit into the medium sized enterprise category. Therefore all of the respondents can be described as small and medium sized enterprises, or SME's. The empirical research showed a clear dissatisfaction with the patent system and an interest in a sub-patentable system for protecting inventions and technical innovations to musical instruments, though this was accompanied by an acute lack of awareness of utility model protection. The applicability of a Utility Model system to SME's in general is therefore worthy of discussion to lend support to the view that such a system is attractive to and suitable for the protection of innovation in the musical instrument industry.

In its amended proposal for a European Parliament and Council Directive approximating the legal arrangements for the protection of inventions by utility model the Commission did not only outline the elements of the Community Utility Model system. Its initiative in presenting the Green Paper on the protection of Utility Models in the single market had revealed a need for the protection of inventions in the Community, "especially on the part of SMEs, patent protection being unsuited to certain types of invention such as minor technical inventions."

The majority of business circles had come out in favour of a Community initiative in this field consisting of a harmonisation of national laws, "including the introduction of a system

9 defined in s246 Companies Act 1985 as fulfilling two out of three of the following criteria: a turnover of not more than £2.8 million, gross assets of £1.4 million gross and not more than 50 employees.
10 defined as not more than £11.2 million turnover, £5.6 million assets, and not more than 250 employees.
11 ibid.
12 COM(95) 370 final of July 1995 discussed above
of utility model protection in those Member States where there is none." The proposal states that the existence of differences between Member States' utility model systems, and the absence of any system at all in some Member States, "may discourage an inventor or a small firm from seeking protection in other Member States". Research by Ifo confirmed that the number of crossborder applications for utility models was very small, and that the administrative hurdles to be cleared with difficulty hampered industrial innovation in the case if independent inventors and SMEs. The Commission found that a survey by the Ifo Institute of British firms and independent inventors revealed the existence of a marked economic interest, especially among SMEs, in this new form of protection. The differences between Member States was outside the control of the rightholder and force him to avoid markets in which he cannot obtain equivalent protection for his invention. In the Ifo survey 50% of all firms questioned had experienced difficulties with cross border utility model applications, whilst 32 % fell into the "don't know" category. The Commission went on to note the differences between national systems which has been discussed in this thesis above.

The Commission noted that the inclusion of the Single Market under Article 3(c) EC Treaty, and the abolition of obstacles to the free movement of goods under Article & EC in order to create an internal market without internal frontiers could not be reconciled with the national systems for the protection of inventions by utility model which produced effects entirely confined to the territory of the Member State in respect of which the protection is granted. The commission also noted that the utility model right is a right which forms part of industrial and commercial property as referred to in Article 36 EC, which has been

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13 see the Introduction to the Proposal.
14 by the Ifo Institute of the economic impact of utility model protection in the European Union, May 1994
15 Part 1, C at page 7
interpreted by the Court of Justice of the EC not to affect the existence of rights recognised by the legislation of Member States to the extent that they are justified as derogations from the free movement of goods for the purpose of safeguarding rights which constitute the specific subject matter of such property\textsuperscript{16}.

The view taken by the Commission in its amended proposal for a utility model directive is that the present state of affairs causes a distortion in the internal market which particularly affects individual inventors and SMEs. The consequent need for legal or expert advice is a source of administrative difficulty and a major cost factor which restricts innovative activity in this group\textsuperscript{17}. Specifically, the proposal goes on to say that in Member States where there is no utility model protection the result is that products may be copied or imitated with impunity, and that the imitation may have a bigger share of the market than the original, and counterfeit goods may be imported more easily. This distorts competition because, the Commission says, the creative efforts and substantial investment carried out by individual inventors and SMEs are not properly shielded. Businesses in the single market must be assured of a level playing field.

To that end, especially for the needs of SMEs, there is a need for protection at Community level. However, it is important to note that the Commission proposal is not "to create at Community level, a Community right to utility model protection ... through a single application to a common office in accordance with a single procedure and a single law. Nor is it the intention to introduce a mutual recognition of national systems whereby a utility model

\textsuperscript{16} whilst the writer is aware of the voluminous case law regarding this point, it is not relevant to this thesis to discuss it in detail. The Commission give as one example Case 192/73 Van Zuylen Freres v Hag AG [03.07.1974] ECR 73.

\textsuperscript{17} see Part 1. d 2 ibid.
registered in one member State can produce effects in the other Member States if the applicant so requests. This is because such a proposal aroused only limited interests in this sector as a result of the Green Paper. The aim of the amended proposal is limited, in accordance with the principle of proportionality laid down in Article 3b EC, to harmonising national laws, including the introduction of a utility model system of protection for inventions in those Member States where none yet exists. The harmonisation will be confined to approximating those essential provisions which have the most direct impact on the functioning of the single market. It is submitted that in restricting the proposal within these limitations, and not going for a full Community Utility Model along the lines of the Community Trade Mark, the Commission has missed a valuable opportunity.

\[18\] Part 1. E ibid.
# Spreadsheet of Questionnaire Responses

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The size and economic significance to the UK of the musical instrument industry, and whether it is developing or contracting.


The Office for National Statistics does not collect data on the size nor economic significance of the musical instrument industry in the UK. The Music Industry Association does collect data from its members but imposes a confidentiality clause which prevents the unauthorised publication of that data. They were approached but flatly refused to release data for this research project. Therefore there is no official data as to the size and economic significance of the musical instrument industry in the UK. However, it is common knowledge in the trade that the total annual retail turnover including VAT at 17.5% in the UK for the year 2000 was just under £300 million, which is less than the total sales of, for example, Whiskers cat food, Mark & Spencer yoghurts, or babies' nappies. There were less than 20000 flutes, 20000 clarinets, 15000 trumpets and cornets, 4000 pianos and 600 grand pianos sold in the year. It is generally accepted that turnover is reducing by 5 to 10% per annum. This is due to there being less music taught in schools, a tendency to use electronic and computer generated sounds in bands, a the continuing drop in the unit value of musical instruments generally. For example, the price of a cheap student violin outfit has remained at around £60 for some years, which allowing for inflation reflects a reduction in real terms. There are only 800 or 900 retail music shops in the country now compared with about 1000 five years ago.
MI Pro Survey.

However, the trade magazine MI Pro commissioned empirical research form its members into the state of the industry which it published in February 2000. membership was divided into five categories: ProAudio, DL/Dance, Musical Instruments, Publishers and Retailers. All five were then grouped together to give an Overall result. The sector of relevance to this thesis is that of Musical Instruments. Members were asked three questions:

1. Was 1999 better than 1998?
2. Was the last quarter good?
3. Is 2000 starting well?

In response to question 1, 58% of members said that 1999 had been a better year than 1998. 82% of members said that the last quarter of 1999 was good. 82% also said that 2000 was starting well. Respondents were invited to make comments, for example Yamaha-Kemble's Andrew Kemble admitted being "disappointed that there wasn't more of a boom considering the economic climate." Rob Castle of Korg similarly lamented that "turnover is up but our margins are down." However, Bruce Perrin of Barnes and Mullins declared that business was up so much that it "felt like old times again." The musical instrument industry was said in the editorial comment to be "gritting its teeth", but "trying to look on the bright side". It was

1 A year in the lifeboats for MI? How the trade views the past twelve months, MI Pro Feb. 2000 at 19
2 this firm manufactures and imports pianofortes.
3 mainly electronic keyboards.
4 Barnes and Mullins manufacture a high end range of products which includes amongst other trade marks Hidersine, W.E.Hill and Sons, and Sonella. These products are made in their factory in Oswestry and are distributed world wide. They are also the sole UK agents for Dr. Thomastik products.
suggested that the sector was "behaving like a traditional rather than a growth market.

The editors commented that the performance of retailers was a cause for concern, with just 20% reporting an increase in trade. The retail sector was said to look "defeatist, if not defeated, at the end of the millennium". The consensus of opinion was that 1999 was hard and 40% of shopkeepers said that the problem was likely to recur in 2000. However, a "late Christmas", confirmed by the 82% answers to questions 2 and 3 above, helped to disperse some of the gloom.
INTRODUCTION

This part of the thesis lends itself more readily to computer analysis, and wherever possible computer generated graphs have been used to illustrate more effectively and succinctly the observations and discoveries that have been made using the empirical data collected. WIPO records for 1992-3 were analysed, a selection of modern EPO patent applications were sampled, and a twelve page questionnaire was received from 27 respondents in or associated with the musical instrument industry.

The core of the historical part of this thesis has been the use of patents to protect musical instrument inventions, and the trend for the use of this form of intellectual property has been increasing. For example, there was an increase in IPC Unit 28' patent applications in the U.K. Patent Office from 213 to 229, and in grants from 150 to 237. This compares with, for example, a marked decrease in Class F3 Armaments and projectiles, where applications in the same period fell from 77 to 54, and grants fell from 87 to 80.

Looking in the wider WIPO context, in 1992 there were 325 national patent applications of which 235 were successful. In 1993 there were 321, of which only 217 were successful.

However, under the Patent Co-operation Treaty, there were only 95 designations in international patent applications in 1992 of which none were successful, whereas in 1993 there were 147 of which 11 grants were made on the basis of those applications. Under the European Patent Convention there were 1530 designations in international patent applications.

5Class G9 to 12 includes advertising, education, music, recording. This is the nearest classification that is available in the Patent Office Annual Report and Accounts, London HMSO
in 1992, and 880 grants made on the basis of those applications. In 1993, there were 1509 applications, and 872 grants. In 1992 there were 473 designations in applications filed under the Patent Co-operation Treaty with a view to obtaining a European patent, and 86 grants, having effect in the country concerned, made on the basis of such applications. In 1993, there were 475 applications, and 87 grants. Overall, therefore, there is a consistent and slightly rising number of Class G09 to G12 patents, and making the assumption that the proportion of musical instrument patents remains more or less constant, the use of patents as a form of protection remains attractive to inventors in this field.

It is also very interesting and for that matter impressive to compare the total number of applications for the European Patent Office with those having effect in the U.K., and to look at those having effect in some other EPO members. In 1993, the number of U.K. designations was 1509 (1530 in 1992) out of a total EPO number of 1570 (1595 in 1992), showing that 98.6% (98.4%) of the Class that applied for a bundle of EPO patents included the U.K. These figures may be compared with for example the Netherlands, where the figures were 633 in 1993 which was 41.4%, and 652 in 1992 which was 41%. The number for Germany in 1993 was 1551 (98.8%), and in 1992 was 1572 (98.5%). In France in 1993 it was 1461 (93%), and in 1992 the figure was 1462 (91.7%). In Belgium in 1993 there were 457 EPO designations (29%), and up substantially from 1992 when there were 287 EPO designations (18%). Again, compare for example Greece where there were only 175 (11.1%) EPO designations in 1993, and 190 (11.9%) in 1992. In Italy there were 733 national designations (46.7%), and 720 in 1992 (45.1%).

6Source: Industrial Property Statistics 1993, WIPO Geneva 1995. Note that section 28 includes Classes g09 to g12 inclusive, of which G10 is musical instruments and acoustics, while G09 is educating, cryptology, display, advertising and seals. G11 is information storage. G12 is instrument details. These are the only figures published figures, and WIPO did not respond to my enquiry for more specific statistics.
By reference to the *EPO patent applcn.s*. illustration in Appendix C, it becomes graphically clear that the U.K. is one of the most important member states of the EPO in terms of preference when applicants are choosing which member states to designate in their applications for musical instrument related patents of invention. The yellow strip represents the total of EPO patent applications for 1992, and the red strip the proportion of national designations for each of the member countries selected for analysis here. Thus there is a marked dip for the Netherlands, Belgium and Greece, whilst the U.K., Germany and France are very close to the yellow strip. Similarly, the green strip represents EPO applications in total for 1993, and the blue national designations for 1993. Of course there are many more members in the EPC, but this selection serves to illustrate the point very well, perhaps even more clearly than by presenting the entire membership. The U.K. is essentially at the top with France and Germany, whilst the others trail a long way behind. It is a sad indictment of Belgium that its present status in musical instrument patent terms reflects the conduct of its most celebrated musical instrument maker Adolph Sax, who in the last century left his native Belgium for France in order to make what he hoped would be his fortune.  

7see Adolphe Sax 1814-1894 - His Life and Legacy, Wally Harwood, Egon Publishers Ltd 1983 for a detailed and affectionate account of the troubled life, prodigious output, unprecedented ingenuity and vexatious litigation of this incredible man.
EMPIRICAL SURVEY QUESTIONNAIRE

It is therefore within the context of a country that is at the forefront of at least patent protection of musical instruments within the European Patent Convention countries that the results of the questionnaire must be viewed. The wide range of questions presented was intended to broaden the thesis from its concentration in the historical section on patents and to a degree trade marks, to embrace all forms of intellectual property save confidentiality.

Since it rapidly became clear from making more than one hundred telephone calls that many firms were simply not prepared to answer questions about anything as sensitive as intellectual property, it was resolved to make the questionnaire as comprehensive as possible so that those who did agree to respond would provide sufficient information about themselves. There were several drafts of the questionnaire, and quite simply the "difficult" questions that were ignored by the first respondents were deleted. This produced a final form of twelve sheets, each starting with a simple question that would enable the respondent to skip a section if unfamiliar with it, and go on to the next. The aim was not to put off for example a respondent who might know all about copyright, simply by making him or her trawl through the section on patents. On the whole, this strategy paid off.

THE SECTIONS OF THE QUESTIONNAIRE.
Page one found out about the structure of the firm, that is to say when it was established, what it does, its type, turnover and number of employees. Page two is a checklist. The layout owed more than the merest scintilla of its origin to the new Inland Revenue Self-assessment tax return, which I hope was not prejudicial to its outcome. Pages three and four dealt with patents, chiefly dealing with how many applications were made, if any, and where. The earlier drafts which included sections on novelty and obviousness were ignored, and therefore deleted from the final layout. Each section contains one final question asking for any other comments, and that on patents is no exception.

Registered designs used pages nine and ten, and was broadly similar to the patents section. Design right on page eleven again concerned familiarity and duration, but also asked whether there should be some form of registration, and whether the requirement that the design be not commonplace was too strict. Fixation and infringement were also looked at. Finally page 12 concerned utility models, and in addition to familiarity asked questions about European harmonisation and also made a comparison with patents.

**RESPONDENTS’ PROFILES**

Referring to graph *B1* in Appendix C *Year established* it is clear that there is a good range in the sample obtained, ranging from before 1750 to 1996, with several nineteenth century firms and many from the mid to late twentieth century. The sample comprised mainly manufacturers and repairers, where the most likelihood of inventing activity would be likely to occur. Some of these were also engaged in wholesaling and retail. None were engaged
solely in retailing. One respondent was a patent agent with a thriving practice, and one an intellectual property lawyer in a large West End firm. The sample was mainly comprised of small and medium sized enterprises, only two of the firms ticking the 51-250 box for the number of employees (see graph B6 employees in Appendix C), eight ticking the 6-20 box, ten ticking the 2-5 box, and all but one of the rest ticking the 1 box. This profile is reflected broadly in the Turnover £000 graph B5 in Appendix C, with the same two firms having a turnover of over £1 million. Six firms were in the £251,000 to £1 million category, another six in the £51 to 250,000 category, and seven on the up to £50,000 category. The rest did not tick any box. This is clearly an even sample across the range.

The sample therefore presents a good selection from a very specialised field of industry, and although relatively small at twenty-eight respondents, the range of diversity combined with the thoroughness of the questionnaire was felt to be likely to provide significant results for the thesis.

PATENTS

Turning to graph P1 patents - are you familiar with them? in Appendix C, five of the sample were very familiar with patent law, or 19%. Eleven were familiar with patents, or 41%, making a total that were familiar with patents of 60%, which is encouraging. The remaining 40% were not at all familiar with patents. Graph P2 patents - use to protect inventions?
shows that eight firms (30%) would almost certainly or certainly use patents to protect their inventions, in addition to which three would probably (11%), and three (11%) would possibly use patents. Therefore 52% or over half of the sample would potentially seek to rely on patents to protect their inventions. This is slightly less than those that said they were familiar with patents, and shows the attraction of this form of intellectual property for the musical instrument industry. Only three (11%) said that they would not use them.

Looking at the **patents - duration** of a patent monopoly graph P9 in Appendix C, only one said that at twenty years this was too long. The questionnaire was careful to tell the respondents what the term of a patent was, so that ignorance would not give a false result. Seven (26% of the total, though 58% of those who answered this question) said that the term was about right, whilst (15%) four said that it was too short. There is therefore a majority of those who thought about it enough to respond that consider twenty years to be about right.

Of the fourteen respondents who had applied for a patent, all had applied for a national patent, including the one French firm. Five had applied for some form of world patent using the World Intellectual Property Organisation priority system under the Patent Co-operation Treaty. The same five had also applied for a bundle of patents under the European Patent Convention through the European Patent Office. Therefore 52% of respondents have applied for at least one patent, and 36% of them had applied for European and global patents. This is a much higher figure than had been expected, and demonstrates that the monopoly patent is found to be an essential form of industrial property protection for more than half of the respondents. One respondent had 109 national patent grants over a period of more than a century, one had thirty and one twelve and the rest were in single figures. There was an
illuminating comment in one of the questionnaires:

*That you do not have to protect your own patent with a law suit. But the government that issues the patent protect your interests, and send notices to stop infringements.*

*If a US patent is granted the patent office publishes the patent details and broadcast to all the other countries the information and they copy it. They then make it and sell it every place except the US*

*All patents should be a world type and protected by a world patent infringement board.*

indicating that the very weakness of publication and policing of your patent that prevented the full disclosure of patents in the early days before the nineteenth century reforms still presents a significant problem to today's patentees, though in a different, global way.

In terms of costs, thirteen or 48% of the boxes were completed, as can be seen from graph P8 *patent - costs* in appendix C. Seven of them (i.e. 54% of those who expressed an opinion) thought that the costs were about right, one did not know, and four (31% of those who stated an opinion) thought that the costs were excessive. One respondent stated in section P10:

*I have lost rights to inventions which have subsequently proved valuable, through being unable to afford all the repeat fees levied by each National Office.*

*The public seems generally unaware of the huge official and legal costs involved whether or not an invention is successful. The problem concerns mostly inventions which take time to bring fully to the market, or are*

8 see Appendix C source H
commercially viable only in the long-term, or on a modest scale. For these (which presumably are the majority of worthwhile products) legal and official costs are disproportionate. Particularly since so many of the most original ideas still appear to come from the "man in the garden shed", working without the back-up funds of a large organisation.

The initial costs of establishing priority are minimal, but then the inventor finds he is faced with 2 choices: 1) Abandon and lose rights over it forever or 2) Face many years of escalating fees whatever happens. A later inability to pay (for whatever reason) means not only loss of all rights, but also publication ensures commercial rivals have all the information they need. Then, the existence of patent insurance raises questions about the value of patents generally.

Also note other comments:

All our patents have been allowed to lapse. Commercial value less than cost of maintaining patents.\(^9\)

Major cost to consider - can I afford to defend properly any infringement on my patent?\(^10\)

One respondent explained the problems he had had when, after filing his patent application for the "Cellino", a small and ingenious invention which essentially comprised a 'cello shaped spike holder which when placed on the floor stops a 'cello from running away from the player by means of a new gripping device contained within the protector, and which grips a piece of curtain cord which can be adjusted to attach to the player's chair when seated in the playing position. He said that:

\(^9\) see Appendix C source C
\(^10\) see Appendix C source D
\(^11\) see Appendix C source N
I did not take up my original 'patent pending'. I did renew it for a second year, after modifications to the Cellino, but realised that the annual costs would wipe out much of the minute profit. In fact there was a loss overall till the fifth year. The capital costs of it are considerable - around £10,000 - and my 'copier' would then still be in competition with me. So I thought the patent not worth the costs\(^{13}\).

This was merely for a GB patent, with no applications to the European Patent Office nor under the Patent Co-operation Treaty. Costs therefore present a very real obstacle to a significant proportion of potential inventors in the musical instrument industry, and perhaps reflect the situation that led to the reforms of 1852. Then of course, the system was purely a national system, but the argument that the global patent system is in need of reform in terms of the cost of obtaining a global bundle of patents can be advanced in the light of this empirical evidence. After all, the evidence suggests that without a global patent, the patentee might just as well not have bothered. It will be recalled that there was a massive increase in the use of patents to protect musical instrument inventions \(^{13}\) after the costs were reduced from 300 guineas to £25 in 1852.

Looking at the total number of applications and grants in graph *P5 total - patents - how many applications/grants?*\(^{14}\), there is only one respondent that had over one hundred, one with more than forty, one at sixteen and the rest in single figures. It should however be noted that the high figure included many that have expired. The inventions protected therefore occur mainly in single figures, multiple applications being the exception rather than the norm.

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12 see Appendix C source J
13 see earlier in this work
14 see Appendix C
In conclusion, therefore, the use of patents as a means of protecting musical instrument related inventions remains current, though with significant reservations with regard to costs, both in terms of registration and maintenance of the patent once granted. Twenty years duration appears to be acceptable. The prospect of publication was cited as a weakness in the system for the inventor, reflecting historical concerns from centuries earlier. Problems relating to novelty and obviousness will be looked at in some depth later in this chapter\textsuperscript{15}.

REGISTERED DESIGNS

Nine (33\%) respondents were familiar or very familiar with registered designs in graph \textit{RD1 familiarity with reg. designs}\textsuperscript{16}. Seventeen (63\%) were not at all familiar with them. Looking at graph \textit{RD3 registered designs have you ever applied for one?}\textsuperscript{17}, of those who expressed a preference, six (60\%) said clearly that registered designs were a suitable form of protection for musical instruments, and combined with the one who said that they probably are, an overall 70\% gave a favourable response to the question. Five responses indicated that an application had been made to register at least one registered design, which is 83\% of those who considered this to be a suitable form of protection for musical instruments. When asked how many in Question RD4, the patent agent naturally said "many", but of the others one had applied for thirty five, one for six, and one had made a single application only. The other respondent did not reveal how many applications had been made. In terms of costs, four (or 66\% of those who thought the registered design system suitable for their needs) considered them to be "about right" in graph \textit{RD7 registered designs costs}\textsuperscript{18}. When asked about the term

\textsuperscript{15} under the heading EPO Search
\textsuperscript{16} \textit{ibid.}
\textsuperscript{17} \textit{ibid.}
\textsuperscript{18} \textit{ibid.}
of five years renewable up to twenty-five years for a registered design, three or 60% of those who expressed a preference said that it was about right, while one said it was too long and one said too short. In light of these responses, it is safe to conclude that the term is right.

Overall therefore the registered design system was popular with those surveyed, and presents far less problems than patents did.

DESIGN RIGHT

As is illustrated by graph *DRI design right familiarity with design right*\(^\text{19}\), the majority of those surveyed, nineteen (70%), were not at all familiar. Six (22%) were familiar or very familiar with design right. This compares unfavourably with copyright, which is similar in the sense that it is an unregistered form of intellectual property, albeit of different forms of intangible property, i.e. artistic works rather than functional designs. There, 63% were familiar with copyright. Of those who expressed an opinion, five out of six (83%) said that design right was suitable for protecting musical instruments. Compared to copyright, just under half (48%) had even thought about the importance of copyright. Although the comparison is slightly distorted in that the design right respondents were a smaller group, the fact remains that a sizeable majority considered the new form of intellectual property to offer advantageous protection for what after all is largely a functional design field. This suggests that design right may become more popular, particularly since it merely requires awareness for the right potentially to subsist in the protected design.

In terms of duration, 83% of those who expressed an opinion said that fifteen years was about

\(^{19}\) *bid.*
right, as seen from graph DR3 design right duration\textsuperscript{20}. Three, or 60\% of those who expressed an opinion, thought that recording the design in a document was enough, and that there should be no form of registration. Only one firm thought that there should be some form of registration, see graph DRS should des. right be registered?\textsuperscript{21}. Of those who expressed a preference, four (80\%) said that the requirement that the design must be new and not commonplace in the design filed at the time of its creation was "about right", while only one said that it was too strict, as is illustrated in graph DR6 design right requirement\textsuperscript{21}.

Overall therefore, design right as a means for protecting musical instruments as functional designs had a favourable reception from those surveyed.

**UTILITY MODELS**

The majority of those who expressed an opinion in graph UM1 utility models - familiarity with utility models?\textsuperscript{21} were not at all familiar with utility models, that is to say 21 or 84\%, which would be 78\% of the total surveyed. Clearly this is an area that musical instrument manufacturers are unlikely to exploit. Given that there is no utility model system in this country this is not really surprising. However, it was encouraging to note from graph UM2 utility models - prior search requirement? that two (8\%) of those who expressed an opinion were familiar with utility models, and a further two (8\%) were very familiar, giving a total of four (16\%) who were familiar or very familiar with this form of protection for inventions.

Three firms (50\% of those who answered question UM2, though this could be expressed as

\textsuperscript{20} see Appendix C
\textsuperscript{21} ibid.
\textsuperscript{22} ibid.
\textsuperscript{23} ibid.
only 12% of those who responded to question UM1) said that there should be no prior search requirement for utility models, and one said that there should be such a requirement. One was not sure, and the rest did not respond. This may be usefully interpreted as a slim vote in favour of keeping the system simple, that is to say not burdening the applicant with a prior search requirement. Graph **UM3 utility models - novelty and inventive step should be** shows that five (83% of those who responded to this question) firms felt that the requirements of novelty and inventive step should be less strict for utility models than for patents, which bears out the legislation in other European countries. All six (100%) of those who expressed an opinion said that they would use the utility model system if one was available to protect their inventions, see graph **UM4 utility models - would you use the system?** There was one firm that, having expressed very strong misgivings about the patent system, had this to say about utility, models:

*How do costs compare with Patents? Is this a recent scheme? Sounds promising!*

Turning to graph **UM6a UM6b UM6c utility models harmonisation within EU**, the red area of the graph suggests a firm view in favour of a world utility models system, with slightly less voting for both an EU and an EPO system. It is probable that firms were not at all clear as to the distinction between a European Union system as opposed to a European Patent Office system.

It may therefore be concluded that although awareness of this new form of European protection for inventions is limited, those that are aware of it would very much like to use it

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24 see earlier in this work, particularly the section dealing with the Harmonisation of European intellectual property rights.
25 see Appendix C
26 see Appendix C source C
27 see Appendix C
in preference to patents, particularly in view of the relaxed registration requirements, and that they would favour a global system.
There is simply a huge number of musical instrument related applications for patents made through the European Patent Office, and even breaking the search down to stringed musical instruments still produced hundreds. It was therefore felt that a selection of violin related inventions looked at with a view to issues of novelty and obviousness would provide a reasonable sample that could be analysed to produce some indications as to the way in which patents are presently being used by the musical instrument industry. It would be frankly unmanageable to look at more than a few in detail. Having selected these, the European Patent Office Reports (EPOR) were searched for musical instrument cases, so to speak, and one important "use" claim was found which has given valuable guidance on the approach taken by the Technical Board of Appeal to the old problem of deciding whether a new application of a known process wants novelty, is obvious, or both.

Looking at patent number GB2244587 for a jaw rest, the invention relates to what is essentially an outsized chin rest for people with long thin necks. Given the amount of chin
rest patents there are in the old GB vaults of the patent office alone, it is difficult to imagine
what could possibly be new about such an invention, let alone not obvious to a person skilled
in the art of violin making. Given that "players of ectomorphic physique" will to a degree
dictate by necessity the dimensions of accessory fittings, the only question that remains to be
answered is whether the accessory should mount above or below the instrument, both of
which have been amply covered in the prior art. The dimensions of this one do conjure up
some of the more medieval characteristics of the many Victorian inventions looked at in
detail by the author elsewhere, e.g. Claim 2:

A jaw rest as claimed in claim 1, and having a ridge extending when mounted on the instrument substantially at
right angles to the strings of the instrument, this ridge, when the instrument is being played, hooking behind the
mandible of the player.

Looking at the description,

...the jaw-rest extends for a height of 2" above the table of the violin. It comprises a transverse portion 11 which
cooperates with a player's jaw when the violin is being played and a pair of legs 12 each having a
screw-threaded clamping arrangement 14. Figure 3 of the drawings shows another important difference between
the jaw-rest 10 and the conventional chin-rest 1 shown in Figure 1. As can be seen from this figure the bulk of
portion 11 extends outside the outline or plane of the table of the violin. Furthermore the portion 11 is formed
with a ridge indicated at 15 which is approximately 3/4" high.

The only remotely novel part of this invention seems to be that the device extends beyond the
outline of the instrument, though it is submitted that even this would want for what old patent
agents would have called utility. The writer suggests that even ectomorphic players are unlikely to want the instrument pushed too far out laterally from their necks. The main novelty seems to lie in the recognition of the problem that ectomorphs have, though of course there is some authority that such an observance may well be considered inventive together with some interesting ideas on methods of construction, but unfortunately they do not seem to have been adequately ring-fenced within the claims, being mentioned only in the description.

*The jaw-rests according to the present invention may be manufactured in a number of different ways but a particularly suitable method of manufacture is to mould them from thermoplastic resins.*

Claim three is a good idea, though given the apparent size of the invention, has to be obvious if it is ever to be stored in a violin case with the instrument:

*A jaw rest as claimed in either of the preceding claims wherein for storage purposes the jaw rest can be separated into at least two portions.*

Looking further at the EPO database, Patent number GB2264191 for a chin rest unfortunately contains a claim for one of the same features claimed in patent number GB2244687 above. In the abstract from patent number GB2244687

*A step 6 is provided on the chin-rest 5 which engages inside and behind the jawbone 8 of the player giving a positive location and minimising the pressures needed to hold the instrument in position - particularly...

*a ridge indicated at 15 which is approximately 3/4" high...*
and in the description:

on the periphery of the platform adjacent to the securing means, there is provided a step which, in the playing position of the instrument, extends upwardly from the platform to engage inside and behind the jawbone of the player.

Exactly the same phrasing is used in the description. It does not take a violin make to see that the 1991 claim above renders this 1993 patent invalid for want of novelty. Here the clamping mechanism is described in some detail, but again it is commonplace in the art:

a variation where the platform 5 is clamped to the instrument by similar clamp screws 7 but positioned astride of the tailpiece 2 whilst the platform 5 is still positioned to the side of the tailpiece 2. In the construction of the musical instrument there is a wooden block inside under the tailpiece, so providing a more secure clamping base.

There are only two places that a chin rest can be fitted to a violin, and that is either over the tail-piece or on one side of it. Further, the description does not enable a person skilled in the art to work the invention, since it does not tell him how to actually make it.

In this invention the step 6 can be moulded or machined integrally with the platform 5. Alternatively, it can be a separate detachable piece as shown in Figure 5, with locating pins 9 or similar. Being detachable it is easier to shape the step 6 to fit the individual jawbone of the player.

there is nothing to tell the maker how to mould it or shape it, nor how to fix the two
detachable parts together.

Perhaps the most surprisingly ill-advised patent to come to the attention of the writer is US4822690 for a violin and a method for finishing a violin. The Abstract states that

The violin comprises a plurality of coats of an alcohol based finish having a dye dissolved therein applied to the violin. At least one coat of a spirit based finish and preferably varnish is applied over the alcohol based finish coats. The interior of the violin may also be coated with one or more coats of alcohol or oil based finish.

Apart from anything else that forms part of the recent state of the art, this varnish contains the chief elements to be found in an eighteenth century varnish recorded by one Antonius Stradivarius, whose work is at the very least rather well known throughout the violin making world¹. What the patentee claims is, amongst other things:

1. A wood violin having a multi-layer finish comprising as the first layer a pigment applied to the exterior surface of the violin, as a second layer plural coats of an alcohol based finish having a dye dissolved therein, and as a third layer at least one coat of a spirit based finish having a dye dissolved therein.

5. A violin as in claim 1 wherein the first layer is provided by a white shellac comprising a shellac gum dissolved in an alcohol base and the dye.

6. A violin as in claim 1 wherein the spirit based finish defining the third layer comprises a varnish having an ultraviolet light absorber therein.

7. A violin as in claim 1 wherein the dye in the second layer is a powdered gamboge gum.

¹ I see e.g. Antonio Stradivari, His life and work, Hill, London 1902; The "Secrets" of Stradivari, Simone F Sacconi, Libraria del Convegno, Cremona 1979; Violin-Making As it was and is, Ed. Heron-Allen, Ward Lock Limited, London 1885 etc.
8. A violin as in claim 1 wherein the first layer further comprises an organic solvent as a vehicle for the pigment.

9. A violin as in claim 1 wherein the dye in the third layer is alizarin.

10. A wood violin having an exterior surface with a multi-layer finish comprising as the first layer a pigment and an organic solvent as a vehicle for the pigment; as a second layer, between three and ten coats of white shellac having a gamboge dye dissolved therein; as a third layer a coat of boiled linseed oil and as a fourth layer at least one coat of varnish having an ultraviolet light absorber and a dye therein, said violin further comprises an interior surface, said interior having at least one coat of an alcohol or oil based finish.

There are twenty-three claims, and frankly none of them is remotely novel. The writer was himself taught in the 1970s at the London College of Furniture to dissolve gamboge in alcohol to stain white polish, this technique being taught to the then head of violin-making Pat Naismith by her predecessor William Luff MBE, who had worked at J & A Beare Ltd and prior to that Hart & Son, two old London firms. Alizarin is another common dye, used for example by Rembert Wurlitzer in New York in the 1940s, and probably taught to him by W.E.Hill & Sons, then of Old Bond Street, London. They had it from the French immigrant workers who joined the firm at the end of the last century, who had it from the Italian masters. Further, the references to boiled oil in the claim are all mentioned in the literature dealing with French polishing².

A very fine microscopic plasticizing coat 70 of a drying oil such as boiled linseed oil may be applied to the final top coat 66. Other drying oil may be employed. The oil coat application preferably comprises one or two drops of the oil placed on a soft cloth, and rubbed over the entire violin exterior.

² see e.g. French Polishing, free guide published by Gedges, London, circa 1950.
Any French polisher knows that this is not only a way, but the only way to stop a rubber from sticking to previous coats of shellac. This is merely to pick several examples of want of novelty, before one even starts to consider inventive step. Then there is the further objection that the claims are far too wide - this patent would prevent any other violin maker from using the most common vehicle (alcohol) to carry the most common varnish constituent (gum lac) and suspending or dissolving two of the most common dyes, gamboge and alizarin, in the mixture. What makes the patent even more bazarre is the detailed description that essentially provides any objector with more than enough ammunition to destroy the patent anyway.

Leaving aside the possible objections that may be made against this patent, one wonders whether the patentee has ever stopped to think whether an infringement action could ever succeed. How would he ever prove that the materials had been applied using his detailed method, giving that they are already so commonly used in the trade? His method is at best nothing more than a minor variant on a common method. It cannot even be described as a new use of an existing substance.

Similar problems may be observed by looking at US4836077, a patented invention which claims:

A violin having a wooden sound box, including a wooden belly board and a wooden back board, a wooden neck connected to the sound box, and string means, first means connecting one end of the string means to the sound box and second means connecting the opposite end of the string means to the neck, and a neck block mounted in the sound box and attached to the neck, the improvement comprising: the neck block having a first dowel-receiving opening; the neck having a second dowel-receiving opening; a wooden dowel tightly received in
the first opening in the neck block and the second opening in the neck to reinforce the joint between the neck and
the sound box in response to a force applied by the string means.

2. An improvement as defined in claim 1, in which the dowel is disposed at an acute angle with respect to the
belly board, and aligned with the neck.

3. An improvement as defined in claim 1, in which one end of the dowel is disposed adjacent the back board of
the sound box.

Reference to a GB patent from 1900 shows clearly a very similar invention where a hole is
cut through the neck, and any violin maker knows that the most simple, if somewhat
ineffective, method of repair is to put a dowel through the neck. Even if there were any doubt
about the want of novelty of this claim, it is obvious to a person skilled in the art of violin
making that a dowel which strengthens a break in a join would also strengthen the same join
if inserted before it has given way. That said, a properly fitted neck is already as strong as the
materials that went together to make it, and a dowel is simply in ordinary circumstances
neither essential nor desirable. From the description,

Over a period of time the tightened strings gradually weaken the glued joint between the neck block and the
neck. This force amounts to about 66 pounds of pull.

If efficient glue is used, it does not weaken over time. Further, the modern neck join is
designed so that the forces will actually pull the button off the back before the joint gives

3see Batchelar ibid. Journal of IMIT, patent 1613 Jan 25 1900 L von Lubbe
4see e.g. Violin Restoration Weisharr-Shipman USA 1988

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way. This invention again wants what old patent attorneys would have called "utility", in addition to wanting novelty and being obvious.

The prior art does not seem to have been adequately researched by John Hogue in patent number GB2247766 for

*A process for testing stringed wooden instrument components during manufacture to improve and make uniform the component vibrational performance. The wooden component is tapped lightly to produce an audible vibrational response that is measured against a standard response. If necessary, material is removed from the component to enable the response to match the standard.*

There are many editions of the Journal of the Catgut Acoustical society of America which deal with this phenomenon, and certainly these were known to the writer as early as 1973, when such techniques were part of the syllabus of the Certificate in Violin-Making at the London College of Furniture. The claims merely confirm that there is nothing new in the invention:

1. *A method of manufacturing and tuning a plate for a wooden violin comprising the steps of: a. forming the plate to a predetermined plan configuration and curvature, having a relatively thinner outer periphery and a relatively thicker central axis portion, with an overall thickness slightly greater than the desired thickness of the tuned plate; b. holding the plate in a manner to avoid completely dampening the vibrational action of the plate; c. tapping the surface of the plate at a selected location remote from the holding location, starting at the relatively thinner sections near the outer periphery of the plate, to produce an audible sound; d. controllably*

*Snow part of the London Guildhall University. See also Sacconi, *op cit.*
removing material in proximity to the tapping location where the audible sound is higher than the desired audible sound, thereby lowering the audible sound; e. working inward from the outer periphery of the plate as the desired audible sound is produced, starting with the thinnest sections of the plate and gradually working towards the central axis portion of the plate where the thicker sections of the plate are located, to manufacture and tune a wooden violin plate to the desired audible sound.

2. The method of claim 1 wherein the tapping step is performed with a person's knuckle.

3. The method of claim 2 wherein the lapping step is performed with the person's hand gripping an edge area of the plate at a point remote from the tap point.

4. The method of claim 3 wherein the tapping step is performed with the person's ear in close proximity to the tap point.

5. The method of claim 1 wherein the step of removing material from the plate is performed on the inner face of the backplate.

6. The method of claim 1 wherein the step of removing material from the plate is performed by sanding the inner face of the backplate.

7. The method of claim 1 wherein steps c and d are performed first at points on the backplate designed for maximum flexure, and thereafter at points on the backplate designed for minimum flexure.

8. A method of manufacturing and tuning a violin having a back plate, a front plate, and rib means between the front plate and the back plate, comprising the steps of: a. forming a wooden back plate, a wooden front plate, and wooden rib means according to a predetermined plan configuration and curvature, with a thickness slightly greater than the desired thickness of the back plate, the front plate and the rib means; b. holding one of said front plate, back plate, or rib means in a manner to avoid completely dampening the vibrational action of said one of said front plate, back plate, or rib means; c. tapping the formed front plate at a selected location to produce a vibrational movement and audible sound; d. removing material in proximity to each tapping point, when the audible sound is higher than the desired audible sound, and gradually working inward from the outer
periphery of the front plate to achieve the desired audible sound; e. tapping the formed back plate at a selected location, starting with the relatively thinner portions of the back plate; f. controllably removing material from the back plate in proximity to the tapping location where the audible sound is higher than the desired audible sound, thereby lowering the audible sound as material is removed, and working towards the central axis of the back plate until the desired audible sound is achieved; g. tapping the rib means at a selected location, to produce an audible sound; and selectively removing material from the rib means in proximity the tapping location, to lower the audible sound.

A very fine microscopic plasticizing coat of a drying oil such as boiled linseed oil may be applied to the final top coat. Other drying oil may be employed. The oil coat application preferably comprises one or two drops of the oil placed on a soft cloth, and rubbed over the entire violin exterior.

Any French polisher knows that this is not only a way, but the only way to stop a rubber from sticking to previous coats of shellac. This is merely to pick several examples of want of novelty, before one even starts to consider inventive step. Then there is the further objection that the claims are far too wide - this patent would prevent any other violin maker from using the most common vehicle (alcohol) to carry the most common varnish constituent (gum lac) and suspending or dissolving two of the most common dyes, gamboge and alizarin, in the mixture. What makes the patent even more bazarre is the detailed description that essentially provides any objector with more than enough ammunition to destroy the patent anyway.

Leaving aside the possible objections that may be made against this patent, one wonders

6 see e.g. French Polishing, free guide published by Geddes, London, circa 1950.
whether the patentee has ever stopped to think whether an infringement action could ever succeed. How would he ever prove that the materials had been applied using his detailed method, giving that they are already so commonly used in the trade? His method is at best nothing more than a minor variant on a common method. It cannot even be described as a new use of an existing substance.

Similar problems may be observed by looking at US4836077, a patented invention which claims:

*a violin having a wooden sound box, including a wooden belly board and a wooden back board, a wooden neck connected to the sound box, and string means, first means connecting one end of the string means to the sound box and second means connecting the opposite end of the string means to the neck, and a neck block mounted in the sound box and attached to the neck, the improvement comprising: the neck block having a first dowel-receiving opening; the neck having a second dowel-receiving opening; a wooden dowel tightly received in the first opening in the neck block and the second opening in the neck to reinforce the joint between the neck and the sound box in response to a force applied by the string means.*

2. *An improvement as defined in claim 1, in which the dowel is disposed at an acute angle with respect to the belly board, and aligned with the neck.*

3. *An improvement as defined in claim 1, in which one end of the dowel is disposed adjacent the back board of the sound box.*
Reference to a GB patent from 1900 shows clearly a very similar invention where a hole is cut through the neck, and any violin maker knows that the most simple, if somewhat ineffective, method of repair is to put a dowel through the neck. Even if there were any doubt about the want of novelty of this claim, it is obvious to a person skilled in the art of violin making that a dowel which strengthens a break in a join would also strengthen the same join if inserted before it has given way. That said, a properly fitted neck is already as strong as the materials that went together to make it, and a dowel is simply in ordinary circumstances neither essential nor desirable. From the description,

Over a period of time the tightened strings gradually weaken the glued joint between the neck block and the neck. This force amounts to about 66 pounds of pull.

If efficient glue is used, it does not weaken over time. Further, the modern neck join is designed so that the forces will actually pull the button off the back before the joint gives way. This invention again wants what old patent attorneys would have called "utility", in addition to wanting novelty and being obvious.

The prior art does not seem to have been adequately researched by John Hogue in patent number GB2247766 for

A process for testing stringed wooden instrument components during manufacture to improve and make uniform the component vibrational performance. The wooden component is tapped lightly to produce an audible vibrational response that is measured against a standard response. If necessary, material is removed from the

7see Batchelor ibid. Journal of IMIT, patent 1613 Jan 25 1900 L von Lubbe
8see e.g. Violin Restoration Weisharr-Shipman USA 1988

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component to enable the response to match the standard.

There are many editions of the Journal of the Catgut Acoustical Society of America which deal with this phenomenon, and certainly these were known to the writer as early as 1973, when such techniques were part of the syllabus of the Certificate in Violin-Making at the London College of Furniture9. The claims merely confirm that there is nothing new in the invention:

1. A method of manufacturing and tuning a plate for a wooden violin comprising the steps of: a. forming the plate to a predetermined plan configuration and curvature, having a relatively thinner outer periphery and a relatively thicker central axis portion, with an overall thickness slightly greater than the desired thickness of the tuned plate; b. holding the plate in a manner to avoid completely dampening the vibrational action of the plate; c. tapping the surface of the plate at a selected location remote from the holding location, starting at the relatively thinner sections near the outer periphery of the plate, to produce an audible sound; d. controllably removing material in proximity to the tapping location where the audible sound is higher than the desired audible sound, thereby lowering the audible sound; e. working inward from the outer periphery of the plate as the desired audible sound is produced, starting with the thinnest sections of the plate and gradually working towards the central axis portion of the plate where the thicker sections of the plate are located, to manufacture and tune a wooden violin plate to the desired audible sound.

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9now part of the London Guildhall University. See also Sacconi, op cit.
5. The method of claim 1 wherein the step of removing material from the plate is performed on the inner face of the backplate.

6. The method of claim 1 wherein the step of removing material from the plate is performed by sanding the inner face of the backplate.

7. The method of claim 1 wherein steps c and d are performed first at points on the backplate designed for maximum flexure, and thereafter at points on the backplate designed for minimum flexure.

8. A method of manufacturing and tuning a violin having a back plate, a front plate, and rib means between the front plate and the back plate, comprising the steps of: a. forming a wooden back plate, a wooden front plate, and wooden rib means according to a predetermined plan configuration and curvature, with a thickness slightly greater than the desired thickness of the back plate, the front plate and the rib means; b. holding one of said front plate, back plate, or rib means in a manner to avoid completely dampening the vibrational action of said one of said front plate, back plate, or rib means; c. tapping the formed front plate at a selected location to produce a vibrational movement and audible sound; d. removing material in proximity to each tapping point, when the audible sound is higher than the desired audible sound, and gradually working inward from the outer periphery of the front plate to achieve the desired audible sound; e. tapping the formed back plate at a selected location, starting with the relatively thinner portions of the back plate; f. controllably removing material from the back plate in proximity to the tapping location where the audible sound is higher than the desired audible sound, thereby lowering the audible sound as material is removed, and working towards the central axis of the back plate until the desired audible sound is achieved; g. tapping the rib means at a selected location, to produce an audible sound; and selectively removing material from the rib means in proximity the tapping location, to lower the audible sound.

and so on. This particular patent illustrates the point, if there was ever any doubt, that to give
a patentee a monopoly over a method or product that is well used in the art would work to the
detriment of every other member of the trade or profession. This patent makes the letter
patent granted to George Langdale in 1683 seem positively justified in granting him a
monopoly over the repairing of trumpets and sackbutts in London! It is simply absurd to even
contemplate such an application. This can only be considered an abuse of the patent system,
the prevention of which should be the obligation of the relevant national patent office.
The description is peppered with well-known violin-making characteristics and facts e.g.

In my work as a violin maker I have come to the conclusion that wood of a given tree species is not
homogeneous or uniform. I have concluded that wood of a given species, e.g. maple, can vary in hardness, from
place to place in a given piece of wood, or from one piece of wood to another. Soft areas in the wood tend to
adversely affect the resilience of the wooden piece (e.g. a violin backplate).

Again, Simone F Sacconi\textsuperscript{10} has all this and much more in great detail in his seminal work.

Against these several completely unjustified patent claims, number US5033351 may be
compared:

1. A fingerboard for an electronic musical instrument, comprising: a plurality of pitch designating means for
designating a pitch of a musical sound to be generated; a belt-like fingerboard member to which said plurality
of pitch designating means are connected; a rigid fret member arranged on said fingerboard member and
having a plurality of rigid frets extending in a direction substantially perpendicular to a longitudinal direction
of said fingerboard member so as to be spaced apart from each other in the longitudinal direction of said
fingerboard member; and a flexible sheet comprised of a slippery material and fitted on said rigid fret member

\textsuperscript{10}ibid.
between said plurality of rigid frets, and defining a slippery fingering surface on an outer side of said fingerboard member.

5. A fingerboard for an electronic musical instrument, comprising: a belt-like fingerboard member having an upper surface on which a plurality of fret-positioning projections are mounted, said fret positioning projections being spaced apart from each other in a longitudinal direction of the fingerboard member; a plurality of pitch designating means, arranged under the fingerboard member and corresponding in location to the fret-positioning projections, for designating a pitch of a musical sound to be generated; and a flexible sheet formed of a slippery material, said flexible sheet fitted on the upper surface of the fingerboard member and on upper portions of the fret-positioning projections; said flexible sheet defining a slippery fingering surface on an outer side of the fingerboard member.

6. A fingerboard for an electronic musical instrument, comprising: a belt-like circuit board; a plurality of stationary contacts mounted on the belt-like circuit board, said stationary contacts being spaced apart from each other in a longitudinal direction of the belt-like circuit board; a belt-like flexible insulating member mounted on the belt-like circuit board and extending in the longitudinal direction of the circuit board; a plurality of movable contacts mounted to a lower surface portion of the belt-like flexible insulating member, with a predetermined space defined above the plurality of stationary contacts; and a slippery flexible sheet fitted on an upper surface of the flexible insulating member and having a plurality of frets which are located in correspondence to the plurality of movable contacts, said flexible sheet defining a slippery fingering surface on an outer side of the fingerboard.

This invention appears to the writer to be genuinely new and innovative, proving an electronic means for producing a given pitch from an electronic violin in a completely novel way, and not making any attempt to gain a monopoly over the use of established principles of the known art. The description explains one of the technical problems that are solved by the
According to the above-described conventional or proposed electronic musical instruments, however, a fingerboard on which fingering is performed is made of a frictional material, such as silicone rubber and fibrous cloth. For this reason, when a sliding performance (a fingertip is moved along the longitudinal direction of a fingerboard while the sound source of an electronic musical instrument generates a musical sound) or a pitch bend performance (in an electronic musical instrument with strings, a finger is pressed on the strings, which are vibrated to generate musical sounds, along the upper surface of a fingerboard in its widthwise direction, thereby changing the pitches of the generated musical sounds) is to be performed, smooth movement of a finger on the fingerboard may be interfered by the frictional force of the finger with respect to the fingerboard. As a result, the above-described special fingering performances cannot be smoothly and quickly performed.

The present invention has been made to solve the above-described technical problem of the conventional and proposed electronic musical instruments used in place of acoustic stringed instruments. It is, therefore, an object of the present invention to provide a fingerboard and a neck for an electrical musical instrument, which allow smooth and quick fingering.

Clearly therefore this patent advances the state of the art of violin-making, and as such demonstrates the beneficial use rather than attempted abuse of the patent system. Another novel, useful and ingenious invention is patent number US3656187 for

An artificial hand with a cuff-like sleeve adapted to be attached to the stub of the forearm and having a forwardly extending strut and artificial hand and with the strut extending into the palm of the artificial hand. On the end of the strut and pivotable in the palm of the artificial hand is a clamp holder to which the violin bow is releaseably attached. Means are provided between the bow and adapted for attachment to the upper arm of the
player for keeping the bow pivoted as the upper arm of the player is lifted and perpendicular and across the
strings of the violin as the violin is being played. This means for pivoting the bow holder takes the form of a
combined spring biasing the bow outwardly from the strut and a string connected between the bow and the
upper arm of the player for maintaining the bow in parallelism with the upper arm of the player and also in the
form of articulated links connected between the bow and the upper arm of the player and wherein the links
pivotly connected together and held with this pivot connection located adjacent to the outer side of the elbow of
the player's arm.

The patent agent who drafted this claim is presumably assuming that a purposive construction
will be applied to terms such as "perpendicular" and "parallelism". This is one of those
inventions that, with the benefit of hindsight, seems obvious enough. However, the
application of existing technology to a problem that has simply not attracted any attention
from violin bow makers using a thorough and well thought out means is ingenious. For
example, Claim 4:

An artificial hand with an adapter for use in holding a violin bow, as defined in claim 1, and said means for
moving the bow with movement of the upper arm comprising a spring extending outwardly from the forward cuff
strut and adapted to be connected to the bow, a cable having means for connecting to the bow, and means
adapted to connect the cable by way of said strut to the upper arm of the player so that the bow is worked
against the action of the spring to pivot the bow and maintain the same in parallelism with the movement of the
upper arm.

Clearly this thesis cannot afford the allocation of enough space to analyse more than a small
selection of modern patents of invention, even though the writer has many more on file. From
this small selection of violin related patents chosen by an expert in the field, it has been shown that in spite of all the difficulties and expense of obtaining a patent in GB and/or the EPC, the limited monopoly offers benefits perceived to be worthwhile, both for those who have a genuinely new and ingenious invention which is useful to the industry, and for those who apparently seek to use the system, albeit misguidedly, to gain a monopoly over known means to the disadvantage of other manufacturers in the field.

EPO BOARD OF APPEAL DECISION T 0547/94

This is a particularly interesting case, both from the patent law point of view, dealing as it does with the Technical Board of Appeal's approach to the vexed question of whether a new application of a known process to a different technical application wants novelty or is obvious to a person skilled in the art, and from the musical instrument technologist's viewpoint, which is how to produce a synthetic equivalent of elephant ivory, which is no longer available due to conservation measures.

The Examining Division had rejected an application by Yamaha Corporation for:

"An artificial key material in which ceramic whiskers are dispersed in and throughout a matrix resin ... arranged in clusters ... each of ... [which] includes a plurality of sub-micron size interspaces left between said ceramic whiskers."

11Claim 1, Applcn. No. EP89850405.5
"Use, in a keyboard musical instrument, of an artificial key material, in which

- the whiskers are arranged in the form of clusters of filaments
- the material is in the form of a shaped piece having a surface to which polishing has been applied to remove the surface skin
- the clusters of whiskers appear on the polished surface of the shaped piece, and
- submicron size interspaces are left between whiskers in the clusters."

The Examining Division had rejected the application, chiefly on the grounds that the invention had been anticipated by a document in the prior art which referred to the artificial key material consisting of composite synthetic products. However, the applicant argued successfully that the prior art made no mention of musical instruments, nor of providing a texture close to that of natural key materials, let alone of absorbing human sweat. The prior disclosure had nothing to do with the problem addressed by the applicant. On the contrary, since the prior art sought to reduce friction by preventing the clusters from rising to the surface of the material, the opposite tendency occurred. In the claimed invention, the clusters rising to the surface increased the friction properties of the material, so preventing slippage of the player's fingers on the keys, and promoting the "natural" feel of the synthetic key surface. Further, the Board held that since neither the problem nor the solution contained in the prior art document was closely oriented to the claim in suit, the teaching contained therein did not provide an obvious route to obtain the features contained in the applicant's claim. The Board upheld the applicant's appeal, and set aside the decision of the Examining Division, remitting
the case with an order to grant a patent.

It is submitted that this is clearly a good decision in the sense that a very real technical problem has been addressed by a major musical instrument manufacturer, and a significant advance in the state of the art with large research and development costs could have been lost by an objection on the grounds of prior disclosure that simply did not teach the claimed invention. This case is clearly distinguishable from, say, the old case concerning using scotch glue to make sticky paper to stick stamps in a photo album\textsuperscript{12}. At the same time, it represents much more of a technical advance than, say, the mere recognition of a new use of a rust inhibitor as a lubricant, when frankly it was already used in a lubricant anyway\textsuperscript{13}. Further, here there is, it is submitted, no attempt to obtain a monopoly over an existing technical application, as has been seen in many of the patents above which have been fortunate in that they do not appear to have been challenged.

\textsuperscript{12} Adhesive Dry Mountings v Trapp, (1910)27 RPC 134.
\textsuperscript{13} Mobil Oil [1990] OJ EPO 93.
CONCLUSION

The empirical search has shown that there is a lack of awareness in the industry of the potential value of intellectual property rights generally. The high cost of patents puts a lot of firms off, some sadly giving up after preliminary publication because they had not anticipated the high maintenance costs, others because they could not afford even to get started. The complexity and uncertainty of the system combine to present hurdles which most firms either shy away from, or fall in the attempt to clear them. Sadly awareness of the patent system is not high, and it is not generally considered by the SMEs in this survey as a routine part of their overall property portfolio. Very few were even aware of design right, which means that even though the right subsists without any form of registration, very few rely on it. The registered design system did, however, have some appeal. For the reasons stated in chapter seven (ante) those systems do not adequately protect innovation in the musical industry in any case. Registered designs have only limited appeal, not the least reason being that they are limited to the United Kingdom and only protect items that appeal to the eye. They are complicated, unfamiliar and specialised. Design right should theoretically have been popular, if only because of its flexibility and complete lack of any registration requirement, but there is a sever lack of awareness which, combined with the confusion that arises with its overlap with registered designs, means that it is virtually ignored by the industry. Unfortunately, all the right does is prevent copying of the article. This is the gap that can be filled with a utility model system, the most important distinction being the grant of a monopoly right under the latter system.
Overall there was a clear need for a simplified, low cost and reasonably predictable certain system with a high degree of certainty for protecting ideas, both in the U.K. and throughout the European Union, which could ideally be used by inventors with little or no reliance on professional advice and administration.

It is suggested that the most potentially suitable, and sadly neglected, system for protecting the ideas and inventions of the mainly small and medium-sized enterprises that constitute the musical instrument industry in the United Kingdom would be the proposed Community Utility Model. It combines a simplified search for novelty and possibly inventive step, could be readily harmonised since most Member States' systems are either in their infancy or do not yet exist, the registration requirements could be kept to a bare minimum, and consequently the applicant should be able to file his own claim without the need for expensive lawyers and professional agents. The new system should be on-line from its inception, enabling instant and up to date information to be available twenty-four hours a day. Ideally Crown Copyright should be relaxed so that the enabling U.K. legislation could be downloaded on-line in the same way that EU legislation can. It is suggested that the new system should incorporate a dispute resolution procedure that is independent of the courts, and that is binding, similar to that used in domain name disputes, though with more safeguards. Duration to be six years, renewable at two yearly intervals to a maximum of ten years. The system should also be looked upon as potentially a first step to applying for a patent, priority right from the date of filing giving the possibility of dual protection and eventual granting of a patent in specified Member States. From this aspect the progression from Utility Model to Patent might be said to be similar to that of a Trade Mark from the old Part A to Part B of the U.K. Trade Marks Register under the 1938 Act.
## Abbreviations

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<th>Abbreviation</th>
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<tr>
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<td>HL</td>
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<td>HMSO</td>
<td>HER MAJESTY'S STATIONARY OFFICE</td>
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Table of Statutory Instruments

Patent Rules 1968, Schedule 4

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<td><strong>Adhesive Dry Mountings v Trapp, (1910)27 RPC 134.</strong></td>
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<td><strong>Asahi Kasei Kogyo KK’s Application [1991] RPC 485</strong></td>
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<td><strong>Chiron Corporation v Organon Teknika [1994] FSR 202</strong></td>
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<td><strong>Cloth workers of Ipswich (1615) Godb. R. 252</strong></td>
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<td><strong>Collard v Allison HPC 3 (1839) 352</strong></td>
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<td><strong>Darcye v Allin (1602) 1 WPC 1, 11 Co. Rep. 84b, Moore K.B. 671, Noy 173</strong></td>
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<td><strong>Edison Bell Phonograph Co v Smith &amp; Young (1894) 11 RPC 398</strong></td>
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<td><strong>General Tyre and Rubber Co v Firestone Tyre and Rubber Co [1972] RPC 457 CA</strong></td>
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<td><strong>Merrell Dow Pharmaceuticals Inc. and Others v HN Norton &amp; Co Ltd, 33 IPR 1 HL</strong></td>
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<td><strong>O’Reilly v Morse (1854) 56 US (15 How) 62, Sup Ct of US</strong></td>
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<td><strong>Pioneer Electronics Capital Ltd. v Warner Music Manufacturing Europe GMBH CA (1997) 37 IPR 585.</strong></td>
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Kraftfahrzeugtechnik AG 1995 No. 3274 [1995] 7 EIPR 341
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Appendix A

The George Langdale Patent

of 1583
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Appendix B

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Compilation: T G Batchelor.
| Stringed, wind, keyed, and other instruments. | 1840-1849 = 9 | 1801 - 5 |
| Up to 1769 = 0 | 1850 - 2 | 1802 - 1 |
| 1774 - 2 | 1851 - 1 | 1803 - 1 |
| 1770-1779 = 2 | 1850-1852 = 3 | 1807 - 1 |
| 1788 - 1 | Pianofortes, organs, and similar instruments. | 1808 - 1 |
| 1780-1789 = 1 | 1810 - 2 |
| 1792 - 1 | 1811 - 3 |
| 1790-1799 = 1 | 1814 - 1 |
| 1800 - 1 | 1816 - 3 |
| 1808 - 2 | 1817 - 1 |
| 1800-1809 = 3 | 1810-1819 = 10 |
| 1811 - 3 | |
| 1813 - 2 | |
| 1814 - 1 | |
| 1818 - 1 | |
| 1810-1819 = 7 | |
| 1822 - 1 | |
| 1823 - 1 | |
| 1825 - 1 | |
| 1826 - 1 | |
| 1827 - 1 | |
| 1829 - 2 | |
| 1820-1829 = 7 | |
| 1833 - 1 | |
| 1835 - 1 | |
| 1836 - 1 | |
| 1838 - 2 | |
| 1839 - 2 | |
| 1839-1839 = 7 | |
| 1840 - 2 | |
| 1843 - 2 | |
| 1845 - 2 | |
| 1846 - 1 | |
| 1847 - 1 | |
| 1848 - 1 | |
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Up to 1779 = 0

Flutes, clarionets and similar instruments.

Performance on musical instruments

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### TABLE OF PATENT APPLICATIONS FOR BRASS INSTRUMENTS AND THE LIKE IN ENGLAND 1854 - 1924

Compiled from the Patent Abridgements by Timothy Batchelor.

**CLASS 88: MUSIC ETC. 1855-’908**

**CLASS 88(ii) MUSICAL INSTRUMENTS OTHER THAN AUTOMATIC 1909-1930**

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**1915-1924 total 13**

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**1915-1924 total 11**
Appendix C

Questionnaire, graphs and spreadsheet of responses
SURVEY OF THE APPLICATION OF INTELLECTUAL PROPERTY RIGHTS IN THE MUSICAL INSTRUMENT INDUSTRY.

QUESTIONNAIRE

Most of the questions require a simple response, usually ticking the appropriate box or entering a number. Where the answer requires a written answer, please feel free to continue on a separate sheet if there is insufficient room for your answer. [see Rothwell p15]

If you do not wish to answer part or all of a question, please simply leave it blank and go on to the next.

BACKGROUND.

B1 Year business was established ..............................................

B2 Aspect of the musical instrument industry:
[Please tick one or more boxes as appropriate]

Manufacturer ☐ Retailer ☐
Repairer ☐ Wholesaler ☐
Other ☐ Please specify..............................................................

B3 Type of business

plc [Public Limited Co] ☐ Ltd [Limited Co] ☐ Partnership ☐
Unlimited Company ☐ Co ltd by Guarantee ☐ Sole Trader ☐

B4 If your company is, or is part of, a group of companies, please specify whether a:
Parent Company ☐ OR Subsidiary company ☐

Note: if your company is a large multinational group, it would be very helpful if each subsidiary company could fill in one questionnaire each, with one extra one for the group.

B5 Turnover £000:
up to £50 ☐ £51 - 250 ☐ £251 - 1,000 ☐ Over £1 million ☐

B6 Number of employees [includes partners, directors, shop floor, office, sales etc.]:
1 ☐ 2 - 5 ☐ 6-20 ☐ 21 - 50 ☐ 51 - 250 ☐
251 - 500 ☐ 501 - 1000 ☐ more than 1001 ☐
QUESTIONS RELATING TO INTELLECTUAL PROPERTY RIGHTS GENERALLY

The following is a list of intellectual property rights. You are asked whether you have ever had an interest in, or been affected in any way by, one or more of the different types of property right. Please tick the "yes" box even if, for example, you have only considered the possibility of registering something like a design, and gone on to dismiss the idea. You should also tick the "yes" box if you have merely been threatened with legal action, for example because of an alleged infringement of a patent.

You should then go on to the section(s) if the questionnaire that relates to particular intellectual property rights. You should complete all the sections that you think are appropriate.

PROPERTY RIGHT

<table>
<thead>
<tr>
<th>PROPERTY RIGHT</th>
<th>COMPLETED</th>
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</thead>
<tbody>
<tr>
<td>PATENTS</td>
<td>□ P</td>
</tr>
<tr>
<td>REGISTERED DESIGNS</td>
<td>□ RD</td>
</tr>
<tr>
<td>DESIGN RIGHT (UNREGISTERED DESIGNS)</td>
<td>□ DR</td>
</tr>
<tr>
<td>UTILITY MODELS</td>
<td>□ UM</td>
</tr>
</tbody>
</table>

Please note that this survey forms [part of a doctoral thesis being prepared by Timothy Batchelor, who is a registered student at De Montfort University School of Law, Leicester. Completed questionnaires will not bear the names of contributors, but will remain anonymous. The names of contributors will not be linked to individual answers in any way, and in that sense the answers that you give will remain confidential. The information will only be used for the furtherance of thesis academic research.
PATENTS

P1 Are you familiar with the essential principles of patent law [e.g. monopoly rights to protect your invention, procedural requirements such as novelty and inventive step, compulsory licensing rights, infringement, duration, different international patent conventions etc.]

not at all familiar □ familiar □ very familiar □
[stop here and go to [continue] [continue] section C]

P2 Would you potentially consider the patent system to be a suitable way of protecting your inventions?

no □ possibly □ probably □ almost certainly □ yes □

P3 Have you ever applied to register a patent of invention? yes □ no □

P4 If so, under which patent system?

NATIONAL □ PCT/WIPO □ EPO/EPC □

P5 How many applications have you made under each system to date?

NATIONAL ..... PCT/WIPO ..... EPO/EPC ..... 

P6 How many searches led you to abandon the application?

NATIONAL ..... PCT/WIPO ..... EPO/EPC ..... 

P7 What type of musical instruments were these applications for? Please tick as many classifications as are appropriate.

Stringed □ woodwind □ brass □ keyboard [non-electronic] □ electronic □ software □ other □ please specify ...........................

P8 Costs of obtaining a patent. Would you describe the fees charged by the following as:

Excessive About Cheap Don't know Right

Professional Fees:

Patent Agent/Attorney □ □ □ □ □ [specify which country] ....... ....... ....... .......

Internal Costs [i.e. your own staff] □ □ □ □
Official Fees:

National Patent Office [specify which country] ............ ............ ............ ............
PCT/WIPO [does not lead directly to patent grant] □ □ □ □
EPC/EPO □ □ □ □
Translations □ □ □ □

P9  Duration.

Would you say that the present term of 20 years is: too short □ about right □ too long □

If too short or too long, what should it be? ........................................

Strongly Agree Strongly Dis-
Agree Dis-
Agree Neither agree agree

P12  ANY OTHER COMMENTS that you might like to add about PATENTS generally.

........................................
QUESTIONNAIRE - REGISTERED DESIGNS

RD1 Are you familiar with the essential principles of design law? [e.g. exclusive rights to protect your invention, procedural requirements such as eye appeal, infringement and duration]

not at all familiar ☐ familiar ☐ very familiar ☐
[stop here and go to] [continue] [continue] next section

RD2 Would you potentially consider the system for registering designs to be a suitable way of protecting your designs?

no ☐ possibly ☐ probably ☐ almost certainly ☐ yes ☐

RD3 Have you ever applied to register a design? yes ☐ no ☐

RD4 How many applications have you made to date? ☐

RD5 How many preliminary examinations or searches have led to abandon the application?

RD6 What type of musical instruments were these applications for? Please tick as many classifications as are appropriate.

Stringed ☐ woodwind ☐ brass ☐ keyboard [non-electronic] ☐
electronic ☐ software ☐ other ☐ please specify ....................

Of these, how many applications have led to the grant of a registered design? ☐

RD7 Costs of obtaining a registered design.

Would you describe the fees charged by the following as:

<table>
<thead>
<tr>
<th>Excessive</th>
<th>About Right</th>
<th>Cheap</th>
<th>Don't know</th>
</tr>
</thead>
</table>

Professional Fees:

Patent Agent/Attorney [specify which country] ☐ ☐ ☐ ☐

Internal Costs [i.e. your own staff] ☐ ☐ ☐ ☐

Official Fees:

U.K. Patent Office ☐ ☐ ☐ ☐
RD8 Duration.

Would you say that the present term of 5 years renewable up to 25 maximum is: too short about right too long?

If too short or too long, what should it be?

RD9 Requirements for Registration

Would you describe the requirements for registration under the Registered Designs Act 1949 as:

Too Stringent About Right Too Simple Too Stringent

RD10 ANY OTHER COMMENTS that you wish to make about REGISTERED DESIGNS:
QUESTIONNAIRE - DESIGN RIGHT

DR1 Are you familiar with the essential principles of Registered Designs? [Design right is a new right for functional designs, and subsists in any aspect of shape or configuration of an article which is not commonplace, and is automatic, requiring no form of registration]

not at all familiar □ familiar □ very familiar □
[stop here and go to [continue] [continue]
next section]

DR2 Would you potentially consider design right as being potentially suitable for protecting any aspect of the shape or configuration of any of your mass produced products [note that design right does NOT protect the article itself]

no □ possibly □ probably □ almost certainly □ yes □

DR3 Design right lasts for 15 years from the end of the calendar year when the design was first recorded in a design document. Is this duration

Too Long □ About Right □ Too Short □

DR4 Primary infringement. The owner of a design right has in essence the exclusive right to reproduce the design for commercial purposes by making articles to the design, which is similar to copyright. Is this satisfactory, or should the level of protection be:

Higher [more of a monopoly right as in a patent] □
About right □
Lower [specify if you wish] □ ............................................

DR5 The design must be recorded in a design document. Should there be some form of registration, or is recording in a tangible form sufficient?

There should be a requirement that the design be registered □
Recording in a tangible form is sufficient □
Not sure / other [please specify] □ ............................................

DR6 The design must be new in that it must not be commonplace in the design field at the time of its creation. Is this requirement:

Too strict □ About right □ Not strict enough □

DR7 ANY OTHER COMMENTS that you wish to make about REGISTERED DESIGNS:

........................
QUESTIONNAIRE - UTILITY MODELS.

UM1 Are you familiar with the essential principles of utility models? [i.e. a registered right which is in some respects similar to a patent, but which is granted without a prior search as to the requirements of novelty and inventive step, thus providing monopoly protection which is less secure than a patent]

- not at all familiar ☐
- familiar ☐
- very familiar ☐

[stop here and go to] [continue] [continue] next section]

UM2 Do you think that there should be a registered system which provides monopoly protection for inventions which DOES NOT REQUIRE A PRIOR SEARCH to establish the requirements of novelty and inventive step?

- yes ☐
- no ☐
- not sure ☐

UM3 Do you think that the requirements of novelty and inventive step [obviousness] should be:

- As strict as that required for a patent? ☐
- Less strict than that required for a patent? ☐
- Not sure ☐

UM4 If there was a Utility Model System in the U.K., would you use it to protect a new invention in circumstances where you would otherwise consider a patent application to be appropriate?

- yes ☐
- no ☐
- not sure ☐

UM5 Should the invention be embodied in a three dimensional form?

- yes ☐
- no ☐
- not sure ☐

UM6 Harmonisation of Utility Models within the EU. YES NO NOT SURE

a) Should there be a single EU Utility Model system?

- yes ☐
- no ☐
- not sure ☐

b) Should the European Patent Office [EPO] administer a Utility Model Scheme?

- yes ☐
- no ☐
- not sure ☐

c) Should there be a World Utility Model system?

- yes ☐
- no ☐
- not sure ☐

UM8 ANY OTHER COMMENTS that you wish to make about UTILITY MODELS:

...
EPO patent applications.
- PATENTS
  Are you familiar with them?
  1 = not at all, 3 = familiar, 5 = very familiar
  [Chart P1]

- PATENTS
  Use to protect inventions?
  1 = no, 3 = probably, 5 = yes
  [Chart P2]

- PATENTS
  How many applications/grants?
  [Chart P3 total]

- PATENTS
  Costs
  1 = excessive, 2 = about right
  [Chart P4]

- PATENTS
  Duration
  1 = too short, 5 = too long
  [Chart P5]
registered designs
familiarity with reg. designs

registered designs
suitability for musical instruments?

registered designs
have you ever applied for one?

registered designs
costs

registered designs
duration

1=not at all, 3=familiar, 5=very

1=no, 3=probably, 5=yes

1=yes, 2=no

1=excessive, 2=about right, 3=cheap

1=too short, 3=about right, 3-too long
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<th>Design Right</th>
<th>Familiarity with Design Right</th>
<th>1 = not at all, 3 = familiar, 5 = very</th>
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| DR1          |                               | 1
|              |                               | 2
|              |                               | 3
|              |                               | 4
|              |                               | 5

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| DR2          |                                   | 1
|              |                                   | 2
|              |                                   | 3
|              |                                   | 4
|              |                                   | 5

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<tr>
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<th>Duration</th>
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</table>
| DR3          |          | 1
|              |          | 2
|              |          | 3
|              |          | 4
|              |          | 5

<table>
<thead>
<tr>
<th>Design Right</th>
<th>Should Design Right be Registered?</th>
<th>1 = yes, 3 = design document is enough, 5 = don't know</th>
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| DR5          |                                    | 1
|              |                                    | 2
|              |                                    | 3
|              |                                    | 4
|              |                                    | 5

<table>
<thead>
<tr>
<th>Design Right</th>
<th>Requirement</th>
<th>1 = too strict, 3 = about right</th>
</tr>
</thead>
</table>
| DR6          |              | 1
|              |              | 2
|              |              | 3
|              |              | 4
|              |              | 5

- DR1: Bar chart showing familiarity with design right.
- DR2: Bar chart showing suitability for musical instruments.
- DR3: Bar chart showing duration.
- DR5: Bar chart showing whether design right should be registered.
- DR6: Bar chart showing requirement.
utility models
familiarity with utility models?

utility models
prior search requirement?

utility models
harmonisation within EU

utility models
novelty & inventive step should be:

utility models
would you use the system?