



The EPPIC eye

Protecting Innovation with Patents



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There are numerous ways of protecting an innovation and the *Intellectual Property* (IP) surrounding it and many important points to consider when implementing a strategy of protection to get the best out of the innovation. IP can be protected using *patents*, *trademarks*, *design rights*, *copyright* and *trade secrets*. Sometimes considered the most effective of these, when managed correctly, are trade secrets.

A trade secret is a piece of information, a technique or a method of doing something that differentiates and gives advantage to one organisation over another. Trade secrets are generally more applicable to information or know-how than to tangible products or services as it is often the case that a third party can reverse-engineer an invention by carefully examining the results or the product arising from the invention. Sometimes it is also just not possible to keep an invention secret. But if you can, then there are no limitations as to the validity as we shall see with patents later.

Patents

If a trade secret is not appropriate to your invention, then a patent may well be.

Governments originally introduced patents to encourage innovation. Patents are granted to give inventors the right of monopoly over their inventions, for a limited period (20 years from filing), in exchange for disclosing that invention to the public. The intention is to encourage further development of ideas and technology.

When a patent is granted, that invention is registered as being the inventor's (or inventors') property and it can be used in the same way as any other property – it can be traded, sold or otherwise exploited.

Points to consider before filing a patent

It is good practice for a company to have an IP policy that can be adhered to easily. This should cover all aspects of IP generation, development and exploitation including:

- **IP ownership:** all IP generated by an employee or sub-contractor should be assigned to the company. Under UK law, default ownership of IP is with the company if an employee creates IP during the normal course of employment, however, the contract of employment (terms of work etc.) should contain a clause that assigns IP to the company to prevent any misunderstanding and unwanted litigation. In the case of a sub-contract or service contract, the ownership of IP should be clear and acceptable to both parties.
- **Record keeping:** all R&D should be fully documented and *reduction to practice* should be encouraged as much as possible – filing patents is expensive!
- **Non-disclosure & confidentiality:** in most countries, if an idea or invention has been disclosed and made public, then it probably cannot be patented. If disclosure to a third party is unavoidable, then confidentiality and non-disclosure agreements should be used to protect the IP.

Points to consider when filing a patent

- **Working with a patent agent:** make sure the patent agent is well briefed when constructing the claims and specification of the patent. The claims and specification should be thoroughly reviewed to ensure that they adequately cover the invention. The invention should work as it has been claimed (some countries require this) and the claims are sufficiently broad to ensure that the maximum coverage is obtained. This will help to prevent straightforward work-arounds and encompass as much anticipated development as possible, avoiding additional filing or re-filing.
- **Country coverage:** consider what country coverage is required for the invention – patenting can be expensive and there are several different routes for obtaining protection.
- **Maintaining patents:** make sure you have a reliable system in place for maintaining your patents & arranging for fees to be paid.
- **Defensive publication:** consider a defensive publication strategy (see below) to prevent third-party patent filings.

Recording of R&D – good practice

During the course of work, notes and records are often made. Different workers and organisations have different methods of keeping track of developments, including hand-written and computer-based records. Keeping a good, authenticated record of development work can help trace the conception of an invention, assist in disputes and litigation. It is especially important in the US, where a “first to invent” rule is applied to patent awards, rather than the “first to file” rule applicable throughout most of the rest of the World. In a dispute over inventive rights, lab notebooks, records, computer printouts and other forms of media may be used as legal evidence so organisations should attempt, where possible, to implement a good code of practice regarding record keeping.

There are several points to consider:

- Hard backed, rugged and permanently bound notebooks should be used to avoid the suspicion that pages have been removed or added.
- Page dating and numbering should be encouraged.
- Any additional drawings, data, illustrations, computer printouts and related materials should be referenced, clearly identified and permanently attached to the notebook.
- Any significant break in dates and times in the record should be backed up by clear records of holidays, sickness etc.
- Information and data contained in any record or notebook should be reviewed on a regular basis, preferably by someone with the knowledge of the technological area. This helps to ensure that patentable or protectable IP is recognised as soon as possible.

- If possible, individual notebook pages and other relevant material (illustrations, data print-outs etc.) should be signed by a witness. It is helpful if the witness is not directly involved in the work or area of research (eg not a co-inventor)
- All records of research, including notebooks should be stored safely and securely, and be clearly identifiable.

Patent agents

Patent agents are a very important part of protecting innovation and a good working relationship and understanding with a patent agent is essential when protecting innovation through patenting.

Patent agents are professionals who have been trained and are qualified in the art of patent drafting and IP. They are also known as patent attorneys although solicitors who have no formal examined training in IP can also hold this title. Most of the 1400 registered patent attorneys in the UK are represented by The Chartered Institute of Patent Agents (CIPA), which is the professional and examining body for patent agents. CIPA maintains a list of registered patent agents in the UK, many of which can also act before the European Patent Office (EPO).

Patent agents provide advice and services with respect to all spheres of IP protection and can facilitate the registering of patents, designs, copyrights and trademarks. They can also assist in IP negotiation and litigation matters. CIPA holds regular patent clinics, accessible to the public, at a number of sites around the United Kingdom. These clinics give free basic advice to inventors who are at the early stages of developing an idea.

Useful information regarding CIPA, patent agents and patent clinics can be found at <http://www.cipa.org.uk/home.html>.

A searchable database of European Patent Attorneys can be found at <http://www.european-patent-office.org/reps/search.html>.

Preparing information for a patent agent

The interaction between the inventor and the patent agent is heavily dependent on the type and complexity of the invention and the personal styles of the people involved, although the following areas should be considered when preparing information for a Patent Agent.

- **Technical area and application of the invention:** a detailed description of why the invention is suited to the technical area.
- **Current state of the market:** a brief rundown of the products already available in the technical area of the invention should be given, along with thoughts on where the invention will fit in. If the invention is completely new, then a comparison of existing products that perform a roughly comparable function should be included.
- **The invention:** the invention should be described using examples, simple diagrams, drawings (clear referencing helps) with mention of the relevant and important features. It is important to highlight what makes the invention better than current technology and why. Also, attempt to explain if there is any reason why the invention

was not previously thought of, including technical problems and the inventive step (as far as can be discerned) that has been taken.

- **Further development of the invention and possible modifications:** as wide and comprehensive examination of the possible applications of the invention is necessary as is a consideration of the possible modifications that the inventor or a competitor may make (also see publications, below). It is a good idea to attempt to include these to prevent the formation of '*daughter*' patents, that is, patents that, though dependent on the 'parent' or original patent, introduce a new application or modification.

When considering the above points, it is often helpful to study a few granted patents in the field of the invention to see what sort of information other inventors and patent agents have included.

Patent process overview

There are several routes to gaining patent protection for an invention, with the process being quite lengthy and expensive if patent applications are submitted internationally. For a UK-based company, a common route (and, probably, the best route) starts with a UK filing, which will give protection purely in the UK.

If patent protection is to be pursued internationally, then the UK filing forms the basis and the *priority date* for all subsequent international filings. A priority date is the date at which the patent is assessed for novelty. Most countries have a 'first to file' rule and, if several patent filings are received for the same or very similar inventions, the application with the earliest priority date is considered novel. The US has a 'first to invent' rule, where proof of invention is considered above filing date – this places importance on keeping good record of R&D.

A typical route for gaining international patent protection is to file a *Patent Cooperation Treaty (PCT)* application. This simplifies the international patenting process, as it performs several tasks that would otherwise be performed by each country's own patent office and can include an international *novelty search*, where the originality of the invention is compared against existing publications (*prior-art*). This PCT application can then be converted into national filings in the territories of choice.

Most industrialised nations are members of the PCT, although some important ones such as Taiwan and Malaysia are not – these applications have to be filed at the same time as the PCT application.

Patent timescales

Approximate timescales for the patenting process, taking the route of UK to PCT filings:

Time from UK Filing Date	UK Action
	File UK application & description (priority date)
Up to 1 year	File full claims and request for novelty search or re-file if developments have moved outside original description. Additions to the patent are allowed up until this point as long as they fall within the original description.
Up to 1 year	International Filings (see table below) – at this point, the UK application can be halted and superseded by European or PCT applications, if desired.
Under 15 months	Receive & study the UK search report.
Approx. 18 months	UK application published (Publication Date).
Approx. 2 years	Request full examination of UK patent and amend claims if necessary.
2½ - 3½ years	UK Examiner's report – file response within 6 months.
Up to 4½ years	Further actions & UK grant (Grant Date).

When international applications are made, the UK filing can be converted into European and/or World (PCT) applications with the UK as a designated territory rather than continuing on to UK grant. Progressing the UK filing can be useful as it is relatively cheap and leads to an early search report, which, although not as detailed as the international search, can be a useful indicator with regard to novelty.

Time from International Filing Date	International Action
	Submit PCT application (International Filing Date) and other international non-PCT applications.
4 – 5 months	Receive & study the international search report (likely to be more detailed and have greater coverage than a UK search report)
Approx. 6 months	International application published (International Publication Date)
Approx. 18 months	Choose individual territories to file in, pay national fees and supply translations (convert PCT application into national filings; can include an European Patent (EP) and have the UK as an EP state)

Time from International Filing Date	International Action
2½ - 3½ years	Examination report – this can be speeded up if examination is formally requested and extra fees are paid
4 – 6 years (territory dependent)	National patent grants
	Further actions, which in Europe can include patent oppositions up to 9 months from the date of grant

Patent offices and the patent process

Patent offices are generally responsible for the examination, granting and publication of patents together with the management and registration of other forms of IP. They are not, however, responsible for the enforcement of patents in case of infringement – this is the job of the legal system of each territory.

European Patent Office (EPO)

The *EPO* is a good example of an international patenting authority, and is widely considered the most rigorous and unbiased of the World's patent offices. Manuals of patent practice are generally available from the larger patent offices, including the UK patent office (<http://www.patent.gov.uk/>).

The procedures that a patent application must go through can be considered as several separate steps:

The application is filed with the EPO, or one of the 'competent national authorities' – most of the contracting states (states who are members of the EPO) patent offices - and must designate one or more of the states.

The EPO (or relevant authority) then starts the formal examination process while at the same time carrying out a novelty search (if necessary – one may already be available from a PCT application), which is forwarded to the applicant prior to publication.

The application and search report are then published by the EPO (not necessarily at the same time)

The application then undergoes a substantive examination by the EPO, with numerous actions and communications between the EPO and the applicant, during which time the patent may be altered considerably.

If the application stands up to the rigorous examination and is novel, then a European patent is granted, valid in the contracting states as designated by the applicant.

The granted patent specification is then published by the EPO.

Within 9 months of the publishing of a granted patent, any 3rd party may, anonymously if desired, give notice of opposition and put forward a case. Opposition can be an expensive and lengthy process during which the patent may be amended or revoked.

Maintenance payments must be made in each designated contracting state throughout the lifetime of the patent. Various companies provide patent maintenance services, where they will keep track of the payments that need to be made and give notice accordingly.

United States Patent and Trademark Office (USPTO)

The USPTO is the administrative body that deals with the application, examination and granting of patents and registering of trademarks in the US. The USPTO operates different policies concerning patents than the patent authorities throughout most of the world.

The USPTO uses a “first to invent” rule rather than the “first to file” rule applicable elsewhere and this means that, if several inventors file applications for the same invention, the applicant who can prove that they invented it first (a good R&D record may help) is most likely to be granted a patent, assuming of course that the application meets the requirements of the rest of the patenting process.

The USPTO also allows patent grants when limited disclosure has been made. A patent may be granted in the US if a patent applicant can prove that they invented something before it was publicly disclosed or used anywhere in the world as long as they file an application within one year of the disclosure. In this case, patent applications in other territories that claim priority from a US application may run into difficulty due to prior-art.

Unlike in the EU, there is no opposition period for patents granted in the US. Once a patent has been granted, all opposition and infringement action is carried out through the legal system.

Costs of protection – typical patenting route

Filing and maintenance

An initial filing in the UK is relatively cheap, and, on average, costs between £500 and £1500 including the patent agent’s fees.

Costs start to increase around 12 months after filing, when decisions regarding international applications have to be made. Typically, organisations apply for patent protection in the main industrialised countries, examples being the US, Japan, Germany, France, Italy, Sweden and the UK. The filing costs are about £4,000 each for US and Japan, and about £2,000 each for the European countries. For this example, the total is £18,000. If one or two other countries in Europe are added, and Norway, Australia and Korea are added, the total cost can be around £34,000.

The prosecution of the various patent applications can take anywhere between 2 to 6 years, dependent on the complexity and novelty of the patent and on what exists as prior-art. Further legal costs are likely to appear at this stage, while the various patent offices examine and

question the validity of the patent. If a patent successfully proceeds to grant, more costs arrive in the form of grant and issue fees. Costs associated with patent granting can rise to £50,000 or more.

Maintenance fees are due at regular intervals during the life of a patent. These occur at different times, and are variable in amount for each country, but average out at around £300 per year per country. For the countries suggested above, this could total around £54,000 over the remaining 15 years of the patent. In total, the cost of acquiring and maintaining international patents to protect an invention can be around £100,000.

These figures may seem intimidating at first sight and the value of a particular invention may or may not justify such large expenditures. In particular, small companies and universities may find it difficult to fund international patents. However, it is a business decision as to whether it is worthwhile providing wide coverage. It is worth remembering that the cost of patent protection is *incremental* depending on the number of countries in which coverage is obtained. For example, a company that operates only in the UK market would be unwise to pursue patent protection worldwide unless it had a policy and a mechanism for exploiting the patent worldwide. By carefully choosing the countries in which protection is obtained, costs can be kept within an amount that is justified by the likely return. It is worth remembering, of course, that if you choose not to patent within the time allowed in a particular country, then there is no going back should you subsequently decide that you have an exploitation route in that country.

Patent protection insurance

There is little point in patenting an invention if the organisation holding the patent cannot afford to defend it against potential infringement. The legal costs of the defence of patents can be considerable and many companies may be forced to abandon the defence before obtaining a favourable ruling even though they have a very good case. An alternative is to take out insurance against being sued and/or to allow the patent holder to sue potential infringers. The cost of such insurance depends upon the insurance company's assessment of the risk that they are bearing and they will often carry out "due diligence" to determine this. However, for a modest level of protection, premiums in the region of a few hundred to a few thousand pounds per annum might be expected.

In forming a strategy for the exploitation of any IP, it is essential to factor in all of the costs including patent protection insurance.

Publications

Publishing articles in the public domain on minor improvements to an invention is a relatively inexpensive alternative to filing patent applications for each incremental development made and is an important part of managing an innovation. These articles should typically address issues that third parties may attempt to exploit with 'daughter' patent applications and help to build a platform of prior-art which future patent applications must prove novelty above.

Daughter patents are dependent on the parent application for the major technological step but introduce relatively minor process variations, applications or characteristics to attempt to fence-off a niche in the market for the applicant. This type of patent can reduce the market

available to the original inventor and, in some instances, licensees of the invention may need access rights to a number of patents in order to implement the technology and this can prove to be so difficult and expensive that the licensees are deterred.

Publications can take many forms and are effective as prior-art only when they are publicly disclosed, so publications with a restricted circulation (e.g. a newsletter available only to certain organisations) may not truly be 'public' and may not be regarded as prior-art by patent offices. However, true publications are an alternative to filing defensive patents on every application, improvement or modification of an invention, which can be very expensive. They are also a good way of advertising an invention to a wide audience. Sometimes it is necessary to publish for prior-art while still not giving all the best ideas away. Articles in niche periodicals (with a limited but not restricted circulation) can be a good way of having public disclosure while keeping the ideas within a small readership.

Another important part of a defensive publication strategy is to keep good records and copies of public disclosures made, with corroboration of date and circulation. Therefore, if any of the prior-art is needed, when opposing a patent or taking legal action, a clear record is available.

Glossary

<i>‘Daughter’ patent</i>	a patent that, although novel (maybe describing an application or minor modification), is dependent on a ‘parent’ patent for the major inventive step
<i>EP</i>	European Patent
<i>EPO</i>	the European Patent Office
<i>Intellectual Property (IP)</i>	creations of the mind. Includes inventions, works of a literary or artistic nature, and marks (symbols, names, images) and designs used in trade and commerce
<i>Novelty search</i>	search for evidence regarding the novelty of a patent application. If the matter in the application has been publicly disclosed elsewhere before the priority date then it is not novel
<i>Paris Convention</i>	the Convention for the Protection of Industrial Property, signed on March 20 th 1883 and currently standing at 166 member states
<i>Patent (or Letters Patent)</i>	a right granted by a government giving the assignee (“owner”) the exclusive right or ownership of an invention. Also refers to the document that confers the rights and describes the invention. In the profession, the word patent is pronounced pa-tent not pay-tent
<i>Patent Cooperation Treaty (PCT)</i>	an international treaty for rationalising parts of the patent process, specifically the filing of a single international application in one language that can proceed through formal examination by a single patent office and carry out a highly accepted international novelty search, all of which can be used by the designated patent offices when granting patents. A PCT application does not lead to the granting of an “international patent”. Patents must still be granted by each territory’s office
<i>Prior art</i>	broadly speaking, prior art is the entire body of available human knowledge since the beginning of time. More specifically, prior art is generally taken as an invention that is or has been in public use, on sale, patented (by yourself or by anyone else) or described in a printed publication
<i>Priority date</i>	the effective patent filing date. If a patent is filed in a <i>Paris Convention</i> country, then all subsequent patent applications filed in other Paris Convention countries in a single year by the same applicant and relating to the same subject matter can be given the same effective date of filing. This effective date of filing is important when considering if the invention in the patent application is novel and inventive
<i>Reduction to practice</i>	refining an invention or idea into a working process or product. In some countries a patent must be proven to work before being granted

Further Information and Resources

A primary source of help for issues associated with protecting your intellectual property is the EPPIC Faraday Partnership. We can be contacted on +44 (0)1223 892730 or by email at info@eppic-faraday.com. The website is www.eppic-faraday.com.

Useful information regarding patents and intellectual property can be found at the following websites:

<http://www.intellectual-property.gov.uk/>

<http://www.patent.gov.uk/>

<http://www.wipo.int/>

<http://www.european-patent-office.org/>

<http://www.uspto.gov>

<http://www.cipa.org.uk/home.html>