

Guide to Getting A Patent

The Ultimate Guide To Being Awarded and Maintaining a Patent



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So What is a Patent?

People have been inventing things for thousands of years. Invention and creation are the reasons we're able to sustain ourselves in the world today. Believe it or not, the power of invention and utilitarian object use actually transcends humans and can be found in a variety of other species such as chimps who use crudely made wooden tools to hunt for insects and other animals or a rare species of tropical ants that farm fungus from a particular tree in order to feed the colony. For us humans, however, invention is a way of improving everyday life, carving out history with monumental adaptations and often times it's a source of wealth and popularity.

That's every inventor's dream isn't it? We all either want to become wealthy or at least well known for our positive contributions to society. But what's to stop somebody who has seen your invention from making their own and dipping into the profits without considering you? That very scenario is why we have patent laws in the U.S. and all over the world. When you invent a marvelous new contraption that makes life easier or changes the world, you can patent it and no one else can steal your idea and profit without your permission.

A patent is a set of exclusive rights granted by a government to an inventor or their assignee for a limited period of time in exchange for a public disclosure of an invention. You may have heard of copyrights for works of art. Copyrights protect artistic work from being copied without the creator's permission. Patents are very much like copyright laws except copyright laws are exclusive to works of art whereas patents are exclusive to utilitarian things (and patents include a variety of things from everyday objects to sets of specific standards and procedures which aren't tangible but can still be protected).

The procedure for granting patents, the requirements placed on the patentee, and the extent of the exclusive rights vary widely between countries according to national laws and international agreements. Typically, however, a

patent application must include one or more claims defining the invention which must be new, non-obvious, and useful or industrially applicable. In many countries, certain subject areas are excluded from patents, such as business methods and mental acts. The exclusive right granted to a patentee in most countries is the right to prevent others from making, using, selling, or distributing the patented invention without permission. It is just a right to prevent others' use. A patent does not give the proprietor of the patent the right to use the patented invention, should it fall within the scope of an earlier patent.

Under the World Trade Organization's (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights, patents should be available in WTO member states for any inventions, in all fields of technology, and the term of protection available should be the minimum twenty years. Different types of patents may have varying patent terms (i.e., durations).

The term patent usually refers to a right granted to anyone who invents or discovers any new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof. The additional qualification utility patent is used in the United States to distinguish it from other types of patents (e.g. design patents) but should not be confused with utility models granted by other countries. Examples of particular species of patents for inventions include biological patents, business method patents, chemical patents and software patents.

Some other types of intellectual property rights are referred to as patents in some jurisdictions: industrial design rights are called design patents in some jurisdictions (they protect the visual design of objects that are not purely utilitarian), plant breeders' rights are sometimes called plant patents, and utility models are sometimes called petty patents or innovation patents. This article relates primarily to the patent for an invention, although so-called petty patents and utility models may also be granted for inventions.

Certain grants made by the monarch in pursuance of the royal prerogative were sometimes called letters patent, which was a government notice to the public

of a grant of an exclusive right to ownership and possession. These were often grants of a patent-like monopoly and predate the modern origins of the patent system. For other uses of the term patent see notably land patents, which were land grants by early state governments in the USA, and printing patent, a precursor of modern copyright. These meanings reflect the original meaning of letters patent that had a broader scope than current usage.

In 500 BC, in the Greek city of Sybaris (located in what is now southern Italy), "encouragement was held out to all who should discover any new refinement in luxury, the profits arising from which were secured to the inventor by patent for the space of a year."

The Florentine architect Filippo Brunelleschi received a three-year patent for a barge with hoisting gear, that carried marble along the Arno River in 1421. In 1449, King Henry VI granted the first patent with a license of 20 years to John of Utynam for introducing the making of colored glass to England.

Patents in the modern sense originated in 1474, when the Republic of Venice enacted a decree that new and inventive devices, once put into practice, had to be communicated to the Republic to obtain the right to prevent others from using them.

England followed with the Statute of Monopolies in 1623 under King James I, which declared that patents could only be granted for "projects of new invention." During the reign of Queen Anne (1702–14), the lawyers of the English Court developed the requirement that a written description of the invention must be submitted. The patent system in many other countries, including Australia, is based on British law and can be traced back to the Statute of Monopolies.

In France, patents were granted by the monarchy and by other institutions like the "Maison du Roi". The Academy examined novelty. Examinations were generally done in secret with no requirement to publish a description of the invention. Actual use of the invention was deemed adequate disclosure to the public. The modern French patent system was created during the Revolution in

1791. Patents were granted without examination since inventor's right was considered a natural one

In the United States, during the so-called colonial period and Articles of Confederation years (1778–89), several states adopted patent systems of their own. The first Congress adopted a Patent Act, in 1790, and the first patent was issued under this Act on July 31, 1790 (to Samuel Hopkins of Vermont for a potash production technique).

A Brief History of the Patent

Most people believe that the history of patent laws began in Italy with a Venetian Statute of 1474 which was issued by the Republic of Venice. They issued a decree by which new and inventive devices, once they had been put into practice, had to be communicated to the Republic in order to obtain legal protection against potential infringers. The period of protection was 10 years.

Patents, however, existed before the law. In England, grants in the form of "letters patent" were issued by the sovereign to inventors who petitioned and were approved: a grant of 1331 to John Kempe and his Company is the earliest authenticated instance of a royal grant made with the avowed purpose of instructing the English in a new industry. The first Italian patent was actually awarded by the Republic of Florence in 1421, and there is evidence suggesting that something like patents was used among some ancient Greek cities. In 500 BC, in the Greek city of Sybaris (modern-day southern Italy), "encouragement was held out to all who should discover any new refinement in luxury, the profits arising from which were secured to the inventor by patent for the space of a year."

Patents in the U.S.

During the period of America's Thirteen Colonies a few inventors were able to obtain monopolies (i.e. "patents") to produce and sell their inventions. These monopolies were granted by petition to a given colony's legislature.

In 1646, for example, the Province of Massachusetts Bay granted inventor Joseph Jenks Sr. the exclusive right to set up water mills using a speedier engine

he had developed for making edged tools, such as scythes. His monopoly was to run for 14 years.

The Patent and Copyright Clause of the US Constitution was proposed in 1787 by James Madison and Charles Cotesworth Pinckney. In Federalist No. 43, Madison wrote, "The utility of the clause will scarcely be questioned. The copyright of authors has been solemnly adjudged, in Great Britain, to be a right of common law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of the individuals."

The first Patent Act of the U.S. Congress was passed on April 10, 1790, titled "An Act to promote the progress of useful Arts". It empowered (section 1) "the Secretary of State, the Secretary for the department of war, and the Attorney General, or any two of them" to approve the grant of a patent to an inventor fulfilling the appropriate formalities "if they shall deem the invention or discovery sufficiently useful and important". The first three members of this Patent Commission were Secretary of State Thomas Jefferson, Secretary of War Henry Knox, and Attorney General Edmund Randolph.

The first patent was granted on July 31, 1790 to Samuel Hopkins of Philadelphia for a method of producing potash (potassium carbonate), an essential ingredient used in making soap, glass, and gunpowder (Carnegie Library of Pittsburgh,). The method involved heating ashes from a wood fire to burn off any residual soot, thus making a more concentrated chemical.

The earliest law required that a working model of each invention be submitted with the application. Patent applications were examined to determine if an inventor was entitled to the grant of a patent. The requirement for a working model was eventually dropped.

The Patent Law was revised in 1793. The rate of patent grants had grown to about 20 per year and the time burden on the Secretary of State was considered to be too burdensome. Patent applications were no longer examined. Patents were granted simply by submitting a written description of an invention, a model of the

invention, if appropriate, and paying a fee of \$30 (\$1000 in 2006 US dollars). Currently, (35 U.S.C. Sec. 112) requires a written description of the invention only. The Commissioner of the USPTO may ask for additional information, patent drawings, or diagrams if the description is not clear.

The Patent Board was replaced by a clerk in the Department of State. James Madison, Secretary of State, created a separate Patent Office within the State Department and he appointed Dr. William Thornton as its first superintendent in May 1802. On May 5, 1809 Mary Dixon Kies became the first woman to be awarded a U.S. patent. In that same year a Philadelphia court ruled that all patent holders were "in violation of public rights." The ruling was overturned a short time later. In 1810, the Patent Office moved from the Department of State to Blodgetts Hotel. In the same year, they opened the patent model storage to the general public.

The patent laws were again revised in 1836. The examination of patent applications was reinstated. The number of patents granted per year had grown to about 700. Also in 1836 the government began construction of what is now called the Old Patent Office Building, where the offices and models were housed from 1840 until 1932. The Patent Office is now housed in its own complex of buildings in Alexandria, Virginia.

The first 10,000 patents issued by the USPTO from July 1790 to July 1836 were destroyed in a fire in December 1836. About 2800 of them were later recovered, but the majority of them are still missing. The recovered patents are now called X-Patents because their patent numbers end with an "X."

In 1870 Congress passed "An Act to revise, consolidate, and amend the Statutes relating to Patents and Copyrights" (16 Stat. 198). This law mainly reorganized and reenacted existing law, but also made some important changes, such as giving the commissioner of patents the authority to draft rules and regulations for the Patent Office.

From 2005-2009, three consecutive US congressional sessions have debated a patent reform act that would shift the US to a first-to-file rule, limit damages for

patent violations, and provide patent defendants more methods for defense. The most recent is the Patent Reform Act of 2009.

A patent is not a right to practice or use the invention. Rather, a patent provides the right to exclude others from making, using, selling, offering for sale, or importing the patented invention for the term of the patent, which is usually 20 years from the filing date subject to the payment of maintenance fees. A patent is, in effect, a limited property right that the government offers to inventors in exchange for their agreement to share the details of their inventions with the public. Like any other property right, it may be sold, licensed, mortgaged, assigned or transferred, given away, or simply abandoned.

The rights conveyed by a patent vary country-by-country. For example, in the United States, a patent covers research, except "purely philosophical" inquiry. A U.S. patent is infringed by any "making" of the invention, even a making that goes toward development of a new invention—which may itself become subject of a patent.

A patent being an exclusionary right does not, however, necessarily give the owner of the patent the right to exploit the patent. For example, many inventions are improvements of prior inventions that may still be covered by someone else's patent. If an inventor takes an existing, patented mouse trap design, adds a new feature to make an improved mouse trap, and obtains a patent on the improvement, he or she can only legally build his or her improved mouse trap with permission from the patent holder of the original mouse trap, assuming the original patent is still in force. On the other hand, the owner of the improved mouse trap can exclude the original patent owner from using the improvement.

Some countries have "working provisions" that require the invention be exploited in the jurisdiction it covers. Consequences of not working an invention vary from one country to another, ranging from revocation of the patent rights to the awarding of a compulsory license awarded by the courts to a party wishing to exploit a patented invention. The patentee has the opportunity to challenge the

revocation or license, but is usually required to provide evidence that the reasonable requirements of the public have been met by the working of invention.

Patent Enforcement (Lawsuits)

Patents can generally only be enforced through civil lawsuits (for example, for a U.S. patent, by an action for patent infringement in a United States federal court), although some countries (such as France and Austria) have criminal penalties for wanton infringement. Typically, the patent owner will seek monetary compensation for past infringement, and will seek an injunction prohibiting the defendant from engaging in future acts of infringement. To prove infringement, the patent owner must establish that the accused infringer practices all the requirements of at least one of the claims of the patent. (In many jurisdictions the scope of the patent may not be limited to what is literally stated in the claims, for example due to the "doctrine of equivalents").

An important limitation on the ability of a patent owner to successfully assert the patent in civil litigation is the accused infringer's right to challenge the validity of that patent. Civil courts hearing patent cases can and often do declare patents not valid. A patent can be found invalid on grounds that are set out in the relevant patent legislation that vary between countries. Often, the grounds are a subset of requirements for patentability in the relevant country. Although an infringer is generally free to rely on any available ground of invalidity (such as a prior publication, for example), some countries have sanctions to prevent the same validity questions being relitigated. An example is the UK Certificate of contested validity.

The vast majority of patent rights, however, are not determined through litigation, but are resolved privately through patent licensing. Patent licensing agreements are effectively contracts in which the patent owner (the licensor) agrees to forgo their right to sue the licensee for infringement of the licensor's patent rights, usually in return for a royalty or other compensation. It is common for companies engaged in complex technical fields to enter into dozens of license agreements associated with the production of a single product. Moreover, it is

equally common for competitors in such fields to license patents to each other under cross-licensing agreements in order to share the benefits of using each other's patented inventions.

Stipulations on Ownership

In most countries, both natural persons and corporate entities may apply for a patent. In the United States, however, only the inventor(s) may apply for a patent although it may be assigned to a corporate entity subsequently and inventors may be required to assign inventions to their employers under a contract of employment. In most European countries, ownership of an invention may pass from the inventor to their employer by rule of law if the invention was made in the course of the inventor's normal or specifically assigned employment duties, where an invention might reasonably be expected to result from carrying out those duties, or if the inventor had a special obligation to further the interests of the employer's company.

The inventors, their successors or their assignees become the proprietors of the patent when and if it is granted. If a patent is granted to more than one proprietor, the laws of the country in question and any agreement between the proprietors may affect the extent to which each proprietor can exploit the patent. For example, in some countries, each proprietor may freely license or assign their rights in the patent to another person while the law in other countries prohibits such actions without the permission of the other proprietor(s).

The ability to assign ownership rights increases the liquidity of a patent as property. Inventors can obtain patents and then sell them to third parties. The third parties then own the patents and have the same rights to prevent others from exploiting the claimed inventions, as if they had originally made the inventions themselves.

Patent Laws and Treaties

The grant and enforcement of patents are governed by national laws, and also by international treaties, where those treaties have been given effect in national laws. Patents are, therefore, territorial in nature.

Commonly, a nation forms a patent office with responsibility for operating that nation's patent system, within the relevant patent laws. The patent office generally has responsibility for the grant of patents, with infringement being the remit of national courts.

There is a trend towards global harmonization of patent laws, with the World Trade Organization (WTO) being particularly active in this area. The TRIPs Agreement has been largely successful in providing a forum for nations to agree on an aligned set of patent laws. Conformity with the TRIPs agreement is a requirement of admission to the WTO and so compliance is seen by many nations as important. This has also led to many developing nations, which may historically have developed different laws to aid their development, enforcing patents laws in line with global practice.

A key international convention relating to patents is the Paris Convention for the Protection of Industrial Property, initially signed in 1883. The Paris Convention sets out a range of basic rules relating to patents, and although the convention does not have direct legal effect in all national jurisdictions, the principles of the convention are incorporated into all notable current patent systems. The most significant aspect of the convention is the provision of the right to claim priority: filing an application in any one member state of the Paris Convention preserves the right for one year to file in any other member state, and receive the benefit of the original filing date. Because the right to a patent is intensely date-driven, this right is fundamental to modern patent usage.

The authority for patent statutes in different countries varies. In the UK, substantive patent law is contained in the Patents Act 1977 as amended. In the United States, the Constitution empowers Congress to make laws to "promote the Progress of Science and useful Arts..." The laws Congress passed are codified in

Title 35 of the United States Code and created the United States Patent and Trademark Office.

In addition, there are international treaty procedures, such as the procedures under the European Patent Convention (EPC) , and the Patent Cooperation Treaty (PCT) (administered by WIPO and covering more than 140 countries), that centralize some portion of the filing and examination procedure. Similar arrangements exist among the member states of ARIPO and OAPI, the analogous treaties among African countries, and the nine CIS member states that have formed the Eurasian Patent Organization.

The Patent Application

A patent application is a request pending at a patent office for the grant of a patent for the invention described and claimed by that application. An application consists of a description of the invention (the patent specification), together with official forms and correspondence relating to the application. The term patent application is also used to refer to the process of applying for a patent, or to the patent specification itself (i.e. the content of the document filed with a view to initiating the process of applying for a patent).

In order to obtain the grant of a patent, a person, either legal or natural, must file an application at a patent office with jurisdiction to grant a patent in the geographic area over which coverage is required. This will often be a national patent office but could be a regional body, such as the European Patent Office. Once the patent specification complies with the laws of the office concerned, a patent may be granted for the invention described and claimed by the specification.

The process of "negotiating" or "arguing" with a patent office for the grant of a patent, and interaction with a patent office with regard to a patent after its grant, is known as patent prosecution. Patent prosecution is distinct from patent litigation which relates to legal proceedings for infringement of a patent after it is granted.

National, Regional and International

National applications

National applications are generally filed at a national patent office, such as the United Kingdom Patent Office, to obtain a patent in the country of that office. The application may either be filed directly at that office, or may result from a regional application or from an international application under the Patent Cooperation Treaty (PCT), once it enters the national phase.

Regional applications

A regional patent application is one which may have effect in a range of countries. The European Patent Office (EPO) is an example of a Regional patent office. The

EPO grants patents which can take effect in some or all countries contracting to the European Patent Convention (EPC), following a single application process.

Filing and prosecuting an application at a regional granting office is advantageous as it allows patents in a number of countries to be obtained without having to prosecute applications in all of those countries. The cost and complexity of obtaining protection is therefore reduced.

International Applications

The Patent Cooperation Treaty (PCT) is operated by World Intellectual Property Organization (WIPO) and provides a centralized application process, but patents are not granted under the treaty.

The PCT system enables an applicant to file a single patent application in a single language. The application, called an international application, can, at a later date, lead to the grant of a patent in any of the state's contracting to the PCT. WIPO, or more precisely the International Bureau of WIPO, performs many of the formalities of a patent application in a centralized manner, therefore avoiding the need to repeat the steps in all countries in which a patent may ultimately be granted. The WIPO coordinates searches performed by any one of the International Searching Authorities (ISA), publishes the international applications and coordinates preliminary examination performed by any one of the International Preliminary Examination Authorities (IPEA). Steps such as naming inventors and applicants, and filing certified copies of priority documents can also be done centrally, and need not be repeated.

The main advantage of proceeding via the PCT route is that the option of obtaining patents in a wide range of countries is retained, while the cost of a large number of applications is deferred.

Types of Applications

Patent offices may define a number of types of applications, each offering different benefits and being useful in different situations. Each office utilizes different names for the types of applications, but the general groups are detailed below. Within each group there are specific type of applications, such as utility patents, plant patents, and design patents, each of which can have their own substantive and procedural rules.

Standard application

A standard patent application is a patent application containing all of the necessary parts (e.g. a written description of the invention and claims) that are required for the grant of a patent. A standard patent may or may not result in the grant of a patent depending upon the outcome of an examination by the patent office it is filed in. In the U.S., a standard patent application is referred to as a "non-provisional" application.

Provisional applications

Provisional patent applications can be filed at many patent offices, such as the USPTO in the U.S. A provisional application provides an opportunity to place an application on file to obtain a filing date (thereby securing a priority date), but without the expense and complexity of a standard patent application. The disclosure in a provisional application may, within a limited time (one year in the U.S.), be incorporated into a standard patent application if a patent is to be pursued. Otherwise, the provisional application expires. No enforceable rights can be obtained solely through the filing of a provisional application.

Continuation applications

In certain offices a patent application can be filed as a continuation of a previous application. Such an application is a convenient method of including material from a previous application in a new application when the priority year has expired and further refinement is needed. Various types of continuation application are possible, such as continuation and continuation-in-part.

A continuing patent application may be a continuation, divisional, or continuation-in-part application, three types of patent applications. While continuation and continuation-in-part applications are generally available in the U.S. only, divisional patent applications are available in other countries, too, as such availability is required under Article 4G of the Paris Convention.

A "continuation-in-part" application ("CIP" or "CIP application"), claiming priority based on the filing date of the parent application, is one in which the applicant adds subject matter not disclosed in the parent, but repeats substantial portion of the parent's specification, and shares at least one inventor with the parent application. The CIP application is a convenient way to claim enhancements developed after the parent application was filed. It is the successor to the earlier "additional improvement" patents mentioned above.

Divisional applications

A divisional application is one which has been "divided" from an existing application. A divisional application can only contain subject matter in the application from which it is divided (its parent), but retains the filing and priority date of that parent. A divisional application is useful if a unity of invention objection is issued, in which case the second (and third, fourth, etc) inventions can be protected in divisional applications.

The Application Process

The process of obtaining the grant of a patent begins with the preparation of a specification describing the invention. That specification is filed at a patent office for examination and ultimately a patent for the invention described in the application is either granted or refused.

Step 1: The Patent Specification

Patent in a Timely Manner

Remember, in the U.S. you have to file for a patent within 1 year of the date in which the invention was in *public* use or was sold in the states. If you have an invention that's been sitting in your garage for 20 years you can still file a patent as long as it hasn't been in public use and you haven't sold it in the states. Specifically your application for a patent will be dismissed if your invention has been described in any publication around the world or has been sold by anyone in the United States more than 1 year before you file your application. Bear that in mind before you continue.

A patent specification is a document describing the invention for which a patent is sought and setting out the scope of the protection of the patent. As such, a specification generally contains a section detailing the background and overview of the invention, a description of the invention and embodiments of the invention and claims, which set out the scope of the protection. A specification may include figures to aid the description of the invention, gene sequences and references to biological deposits, or computer code, depending upon the subject matter of the application. Most patent offices also require that the application includes an abstract which provides a summary of the invention to aid searching. A title must also generally be provided for the application.

Each patent office has rules relating to the form of the specification, defining such things as paper size, font, layout, section ordering and headings. Such requirements vary between offices.

Since a description cannot generally be modified once it is filed (with narrow exceptions), it is important to have it done correctly the first time.

Specification Claims

The claims of a patent specification define the scope of protection of a patent granted by the patent. The claims describe the invention in a specific legal style, setting out the essential features of the invention in a manner to clearly define what will infringe the patent. Claims are often amended during prosecution to narrow or expand their scope.

The claims may contain one or more hierarchical sets of claims, each having one or more main, independent claim setting out the broadest protection, and a number of dependent claims which narrow that protection by defining more specific features of the invention.

In the U.S., claims can be amended after a patent is granted, but their scope cannot be broadened beyond what was originally disclosed in the specification. No claim broadening is allowed more than two years after the patent issues.

Very Important: Your Filing Date

The filing date of an application is important as it sets a cutoff date after which any public disclosures will not form prior art (but the priority date must also be considered), and also because, in most jurisdictions (notably, not the U.S.) the right to a patent for an invention lies with the first person to file an application for protection of that invention (See: first to file and first to invent). It is therefore generally beneficial to file an application as soon as possible.

To obtain a filing date, the documents filed must comply with the regulations of the patent office in which it was filed. A full specification complying with all rules may not be required to obtain a filing date. For example, in the U.K., claims and an abstract are not required to obtain a filing date, but can be added later. However, since no subject matter can be added to an application after the filing date, it is important that an application disclose all material relevant to the application at the time of filing. If the requirements for the award of a filing date are not met, the patent office will notify the applicant of the deficiencies. Depending upon the law of

the patent office in question, correction may be possible without moving the filing date, or the application may be awarded a filing date adjusted to the date on which the requirements are completed. A filed application generally receives an application number.

Step 2: Patent Prosecution

Patent prosecution describes the interaction between applicants and their representatives, and a patent office with regard to a patent, or an application for a patent. Broadly, patent prosecution can be split into pre-grant prosecution, which involves negotiation with a patent office for the grant of a patent, and post-grant prosecution, which involves issues such as post-grant amendment and opposition.

Don't confuse patent prosecution with patent litigation. I know it sounds like someone's on trial but that's not exactly what patent prosecution is about. When you need to sue someone for infringing on your patent it's called patent *litigation*.

The rules and laws governing patent prosecution are often laid out in manuals released by the Patent Offices of various governments, such as the Manual of Patent Examining Procedure (MPEP) in the United States, or the Manual of Patent Office Practice (MOPOP) in Canada.

Application Preparation

To obtain patent rights for an inventor, the practitioner typically first drafts an application by interviewing the inventor to understand the nature of the invention and help clarify its novel features. Practitioners need to ascertain what is already known to people familiar with the general field of the invention—such already-known material is termed the prior art, and to obtain drawings and written notes regarding the features of the invention and the background.

During this initial phase, sometimes termed "patent preparation", the practitioner may also seek to determine precisely who contributed to the making of the invention. An incorrect listing of inventors may incurably invalidate any patent that might result from an application. This determination is particularly important in the United States, but may be considered less important in other jurisdictions. The

practitioner may also seek to find out whether any publications, offers for sale, or other such public disclosures of the invention were made. Under the laws or regulations of some jurisdictions, public disclosures or offers to sell an invention prior to filing an application for a patent may prevent the issuance of the patent. In the U.S. these laws are laid out in Title 35 of the United States Code, §102.

After drafting an application for patent, complying with any further rules (such as having the inventor or inventors review the application prior to filing), and obtaining the applicant's permission, the practitioner files the patent application with the patent office. Usually, the practitioner seeks to file the application as soon as possible, because in a majority of jurisdictions including Europe and Japan, if two or more applications on the same subject matter are filed, only the party who filed first will be entitled to a patent under the "first-to-file rule". In other jurisdictions such as the United States, which follows a first-to-invent rule, early filing may prevent the use of certain materials from being applied against the patent application as prior art while the patent application is pending before the patent office. However, three consecutive congressional sessions in the United States from 2005-2009 have attempted to change the United States to the first-to-file rule with the Patent Reform Act of 2005, the Patent Reform Act of 2007, and the Patent Reform Act of 2009.

Filing an application

As we talked about previously, most patent applications have at least two components, including a general, written description of the invention and at least one "embodiment" thereof, and a set of "claims," written in a special style that defines exactly what the applicant regards as the particular features of his or her invention. These claims are used to distinguish the invention from the existing prior art, and are compared by the patent office to the prior art before issuing a patent.

Patent applications in most jurisdictions also usually include (and may be required to include) a drawing or set of drawings, to facilitate the understanding of the invention. In some jurisdictions, patent models may also be submitted to demonstrate the operation of the invention. In applications involving genetics, samples of genetic material or DNA sequences may be required.

Search and examination

Search and examination is the principal part of the prosecution of a patent application leading to grant. A search is conducted by the patent office for any prior art that is relevant to the application in question and the results of that search are notified to the applicant in a search report. Generally the examiner conducting the search indicates in what aspect the documents cited are relevant (novelty, inventive step, background) and to what claims they are relevant. The materials searched vary depending on the patent office conducting the search, but principally cover all published patent applications and technical publications. The patent office can provide a preliminary, non-binding, opinion on patentability, to indicate to the applicant its views on the patentability and let the applicant decide how to proceed at an early stage.

The search report is typically published with the patent application, 18 months after the earliest priority date, or if it is not available at that time it is published once it is available. The examination of patent applications may either be conducted at the same time as the search (as in the US, where a search report is not issued), or at a later date after the Applicant has requested examination (as, for example, under the EPC).

Examination is the process by which a patent office determines whether a patent application meets the requirements for granting a patent. The process involves considering whether the invention is novel and inventive, whether the invention is in an excluded area and whether the application complies with the various formalities of the relevant patent law.

If the examiner finds that the application does not comply with requirements, an examination report (Office action in the US) is issued drawing the examiner's objections to the attention of the applicant and requesting that they be addressed. The applicant may respond to the objections by arguing in support of the application, or making amendments to the application to bring it in conformity. Alternatively, if the examiner's objections are valid and cannot be overcome, the application may be abandoned.

The process of objection and response is repeated until the patent is in a form suitable for grant, the Applicant abandons the applications, or a hearing is arranged to resolve the matter.

The rate at which patent applications are allowed can vary significantly from one technology to another. US patent applications in the field of electrical connectors, for example, get one allowance for every two rejections. Business method patent applications, however, only get one allowance for every 20 rejections.

In some jurisdictions, substantive examination of patent applications is not routinely carried out. Instead, the validity of invention registrations is dealt with during any infringement action. The search and examination process is principally conducted between the patent office and the applicant. However, in some jurisdictions, it is possible for interested third parties to file opinions on the patentability of an application. Such opinions may take the form of a formal pre-grant opposition inter partes procedure or it may simply be an opportunity of filing observations as a third party. Reform legislation is set to create an opposition system in the United States.

An applicant is free to abandon an application during the search and examination process. An application may be abandoned if, for example, prior art is revealed which will prevent the grant of a patent and the applicant decides to save cost by terminating the application. An application may be deemed abandoned by the patent office if the applicant fails to meet any of the requirements of the application process, for example replying to an examination report.

In some jurisdictions (such as Japan and Korea), after filing an application, examination is optional, and only on request, rather than automatic. This is called "Deferred examination." For example, in Japan, an application is published at 18 months after the priority date, but otherwise the application lays fallow until the applicant demands examination, up to 7 years after filing. This gives the applicant time to evaluate which applications are worth spending money on, and which

should simply be abandoned. Only a portion of the total number of filed applications is selected for examination by the applicants.

Invention registration

Some jurisdictions including Bermuda, South Africa, and Germany (in the case of Gebrauchsmusters (utility model)) go one step further, in that an application is passed to issue and publication as an enforceable patent in short order, with no substantive examination. Questions of novelty and non-obviousness/inventive step are not reviewed until litigation may arise concerning the issues. Obviously, such a patent does not carry the same presumption of validity as a patent that has been fully examined. Such systems are known as "invention registration" regimes, and have the benefit of reduced costs, because applicants may postpone or completely forego the expensive process of examination for inventions that are of small or speculative value in the applicant's field of endeavor. Another advantage is that a patent is granted relatively fast. A patent in South Africa, for example, is granted approximately 8 months after the date of filing, whereas in examining countries, it is highly unusual for a patent to be granted in less than 3 years. At the same time, simply filing an application usually preserves the applicant's right to subsequently seek full examination and protection for his invention, if a competitor or a pirate is later discovered to infringe the invention.

Optional: Reissuance & Reexamination

In some jurisdictions, once a patent is issued, the patent holder may request a "reissue" of the patent to correct mistakes in the issued patent. Such "reissue applications" must typically be filed within a particular period of time following issuance of the original patent. In some jurisdictions, such as the United States, the patent holder may even seek to broaden the scope of the invention defined in the claims by filing a reissue application, although a broadening reissue in the USA must be filed within 2 years from grant. Also, in the United States, only the patent holder may file for reissue. The case of *Ex Parte Tanaka* established the principle that a patentee cannot simply add narrow dependent claims to an issued patent through the reissue process. In order to avail herself of the process, the patentee

must identify errors in the original claims, thereby surrendering some of the broad claims she already has in return.

In the United States, "reexamination" refers to the process of requesting that the patent office once again subject an issued patent to further examination, accompanied by patents or printed publications showing that there is a substantial new question of patentability ("SNQ"), and/or an explanation of the relevance of the prior art to the claimed invention. Unlike other invalidity considerations, only patents and printed publications will be considered in re-examination. Unlike reissue, reexamination may be requested not only by the patent holder or inventor, but by anyone, although whoever requests reexamination must also submit a fee, which is as high as the full cost of filing a new patent application. A benefit of reexamination is that issued patents may be either invalidated or once again deemed valid, without the considerable cost and lengthy time required for a full infringement lawsuit or declaratory judgment action.

Also, in the United States, if two patent applications are filed which set forth claims directed to the same subject matter, the patent office may declare an "interference" and require that each of the parties appear before the patent office to determine who was the earliest to discover the claimed invention. This "interference practice" is not followed in most other jurisdictions, because it is obviated by the "first-to-file" system used in most countries. During an interference, parties may submit evidence supporting their contention to be the earliest inventor, and the patent office issues a decision following the trial-like interference process.

Appeals and Abandonment

If the examiner and the applicant cannot reach agreement regarding the patentability of the application, the applicant may file an appeal to either the patent office or a court of law, asserting that his patent application was wrongly rejected. For such an appeal to be successful, the applicant must prove that the patent office was incorrect in applying the law, interpreting the claims on the patent application, or interpreting and applying of the prior art vis a vis the patent application. If the

appeal is successful, the patent office or court may order that a patent be issued based on the application, or that the patent office correct its examination of the application if the patent office is found to have been incorrect. Otherwise, if the applicant is not found convincing, the rejection of the patent application may be upheld.

In the United States, appeals are fairly rare. The Board of Patent Appeals and Interferences adjudicates only about 1 - 2% of all issued patents. For controversial areas such as business method patents, however, the appeals rate is much higher. About 10% of the business method patents issued in 2006 were appealed. In some areas, such as insurance patents, the rate is as high as 30%.

Abandonment

Generally, an applicant is free to abandon his or her patent application at any time, and in many jurisdictions may "disclaim" his or her patent even after the patent is issued. Such abandonment may occur during the prosecution process, such as when the applicant is unable to convince the patent office to withdraw a rejection of his or her patent application. Further, abandonment is often held to have occurred if the applicant fails to respond within a certain time period to an office action issued by the patent office, or if the applicant specifically expresses his or her intention to abandon the application.

The rate at which patent applications are abandoned can vary significantly from one technology to another. In the US, patent applications in the field of electrical connectors, for example, are abandoned at a low rate of only one abandonment for every 18 office actions (e.g. rejections). Business method patent applications, however, are abandoned at a much higher rate of one abandonment for every 5 office actions.

Following abandonment, in most jurisdictions, an applicant is usually barred from later seeking patent protection for the same subject matter which was earlier abandoned by the applicant.

Maintain Your Patent

Most of the time your patent won't simply be good for the entire length of time. You'll have to pay maintenance fees. Maintenance fees or renewal fees are fees that are paid to maintain a granted patent in force. Some patent laws require the payment of maintenance fees for pending patent applications. Not all patent laws require the payment of maintenance fees and different laws provide different regulations concerning not only the amount payable but also the regularity of the payments. In countries where maintenance fees are to be paid annually, they are sometimes called patent annuities.

Maintenance fees on utility patents in the United States are due 3½, 7½ and 11½ years after grant of the patent. No maintenance fees are due while an application is pending. Design patents and plant patents are not subject to maintenance fees at all.

Consider a Patent Attorney

In some jurisdictions only authorized practitioners can act before the patent office, although applicants (i.e. inventors) can generally represent themselves. It is usually not recommended to represent yourself, as an attorney or agent will know how the process goes from previous experience. A pro-se case is usually much more difficult and can be costly if the applicant doesn't respond to the office appropriately and within the time frames set forth. Authorization is usually obtained by passing examinations set by the appropriate patent office, thereby proving that the representative is competent in the relevant laws and processes. Due to the highly complex nature of patent prosecution it is generally advisable to employ a professional representative when applying for a patent. Many firms specialize in patent law and are often called "IP Boutiques".

A patent attorney is an attorney who has the specialized qualifications necessary for representing clients in obtaining patents and acting in all matters and procedures relating to patent law and practice, such as filing an opposition. The term is used differently in different countries, and thus may or may not require the same legal qualifications as a general legal practitioner. The titles patent agent and patent lawyer are also used in some jurisdictions. In some jurisdictions the terms are interchangeable, in others the latter is generally used only if the person qualified as a lawyer.

In the United States, a practitioner may either be a patent attorney or patent agent. Both patent attorneys and patent agents have the same license to practice and represent clients before the Patent Office, part of the United States Patent and Trademark Office (USPTO). Both patent agents and patent attorneys may prepare, file, and prosecute patent applications. Patent agents and patent attorneys may also provide patentability opinions, as noted by the U.S. Supreme Court in *Sperry v. Florida*. However, the USPTO Rules of Ethics and Professionalism, effective as of September 15, 2008, specifically clarifies that patent agents may not provide an "opinion of validity of another party's patent when the client is contemplating litigation and not seeking reexamination" because such activity "could not be

reasonably necessary and incident to the preparation and prosecution" of a client's patent.

Patent attorneys must also be admitted to the practice of law in at least one state or territory of the U.S. In the time since the USPTO issued the first patent in 1790, approximately 65,000 citizens have passed the USPTO registration examination, allowing them to be registered to prosecute patent applications. (This total does not include current patent examiners, who are not allowed to serve as patent attorneys or agents and thus do not appear on the list of enrolled practitioners.) Today, roughly 40,000 people are on the list of registered patent attorneys and agents, with about 30,000 of them also licensed to practice law. Of the states, California has the most patent attorneys (and agents), followed by New York and Texas. Per capita, Delaware has more patent attorneys (and agents) than any state (not including DC). Both Patent Attorneys and Patent Agents are generally required to have a technical degree (such as engineering, chemistry or physics) and must take and pass the USPTO registration examination (officially titled Examination for Registration to Practice in Patent Cases Before the United States Patent and Trademark Office). Since patent attorneys are admitted to practice law in a state or territory, they can additionally provide legal services outside the Patent Office if practicing within the jurisdiction they are admitted to practice or if the law of the jurisdiction otherwise permits them to practice although not admitted in that jurisdiction. These legal services include advising a client on matters relating to the licensing of the invention; whether to appeal a decision by the Patent Office to a court; whether to sue for infringement; whether someone is infringing upon the claims of a client's issued patent; and conversely, whether a client is infringing the claims of someone else's issued patent. Patent agents cannot provide legal services of this nature, nor can they represent clients before the Trademark Office part of the USPTO.

In order to be registered as a patent agent or patent attorney, one must pass the USPTO registration examination. This exam, commonly referred to as the "patent bar," tests a candidate's knowledge of patent law and USPTO policies and procedures as set forth in the Manual of Patent Examining Procedure (MPEP). Upon

successful completion of the examination, one will be labeled as a "patent attorney" if he/she has already been admitted to a state or territorial bar. However, engineers, scientists and any other science based majors, as well as law students and law graduates who are not admitted to a bar, will be labeled as "patent agents" since they cannot give legal advice nor represent clients in court. The latest exam result statistics are from June 9, 2005 through October 17, 2006: during that time, 58.2% of the 4,165 candidates passed the exam, which was based upon MPEP, 8th Edition, Revision 2. The current exam is based on MPEP, 8th Edition, Revision 4, as of October 19, 2006. (No tests were given based upon MPEP, 8th Edition, Revision 3.) Applicants who are not United States citizens and do not reside in the U.S. are not eligible for registration except as permitted by 37 CFR § 11.6(c). None of the world's countries except Canada reciprocates to U.S. citizens the right which the U.S. grants to their citizens.

A candidate must also have an adequate scientific and technical background or education to understand a client's invention. The educational requirement can be met by a bachelor's degree in a specifically enumerated major, such as Biology, Computer Science, Chemistry, Biochemistry, Microbiology, Physics, and Biomedical, Chemical, Civil, Electrical or Mechanical Engineering. This is known as Category A qualification. One can also meet the scientific and technical training requirement by qualifying under Category B or Category C. Category B provides four distinct qualification options, where each option sets a requisite number of semester hours in physics, biology, chemistry, computer science, and/or engineering. One can qualify under Category C by showing that he or she has taken and passed the Fundamentals of Engineering (FE) examination. Specific details of the ways in which one can qualify for the USPTO registration examination are outlined in the USPTO Registration Statement. Degrees in the social sciences, mathematics, or philosophy by themselves do not meet this requirement. A candidate must also possess "good moral character and reputation." If practicing outside the United States, a patent agent or patent attorney must be a U.S. citizen.

Think Before You Patent

Patents have been criticized both in principle and in implementation. In principle, patents have been criticized as a restraint of trade, for conferring a negative right upon a patent owner, permitting them to exclude competitors from using or exploiting the invention, even if the competitor subsequently develops the same invention independently. This may be subsequent to the date of invention, or to the priority date, depending upon the relevant patent law (see First to file and first to invent).

As state-granted monopolies, patents have been criticized as inconsistent with free trade. On that basis, in 1869 the Netherlands abolished patents, and did not reintroduce them until 1912. In implementation, patents have been criticized for being granted on already-known inventions. In 1938, R. Buckminster Fuller wrote of the patent application process in the United States:

At present, the files, are so extraordinarily complex and the items so multitudinous that a veritable army of governmental servants is required to attend them and sort them into some order of distinguishable categories to which reference may be made when corresponding with patent applicants for the purposes of examiner citation of "prior art" disclosure. This complexity makes it inevitable that the human-equation involved in government servants relative to carelessness or mechanical limitations should occasion the granting of multitudes of "probably" invalid patent claims.

Patents may hinder innovation as well in the case of "troll" entities. A holding company, pejoratively known as a "patent troll", owns a portfolio of patents, and sues others for infringement of these patents while doing little to develop the technology itself. Other commentators suggest that patent trolls are not bad for the patent system at all but instead realign market participant incentives, make patents more liquid, and clear the patent market.

Another theoretical problem with patent rights was proposed by law professors Michael Heller and Rebecca Sue Eisenberg. Based on Heller's theory of

the tragedy of the anticommons, the authors argued that intellectual property rights may become so fragmented that, effectively, no one can take advantage of them as to do so would require an agreement between the owners of all of the fragments.

Pharmaceutical patents prevent generic alternatives to enter the market until the patents expire, and thus maintains high prices for medication. This can have significant effects in the developing world, as those who are most in need of basic essential medicines are unable to afford such high priced pharmaceuticals. Critics also question the rationale that exclusive patent rights and the resulting high prices are required for pharmaceutical companies to recoup the large investments needed for research and development. One study concluded that marketing expenditures for new drugs often doubled the amount that was allocated for research and development. Other articles shed light on the problems of today's medical research. It sets wrong priorities in research and pricing, and pushes the state-run healthcare systems even of rich nations to their limits.

In one response to these criticisms, one review concluded that less than 5 percent of medicines on the World Health Organization's list of essential drugs are under patent. Also, the pharmaceutical industry has contributed US\$2 billion for healthcare in developing countries, providing HIV/AIDS drugs at lower cost or even free of charge in certain countries, and has used differential pricing and parallel imports to provide medication to the poor. Other groups are investigating how social inclusion and equitable distribution of research and development findings can be obtained within the existing intellectual property framework, although these efforts have received less exposure.

Brazil filed a proposal in 2010 with the WIPO Standing Committee on the Law of Patents about the imbalance of rights between IP title holders and the society as a whole with emphasis on the imbalance of benefits from strong IP rights between the few developed countries and the majority of member states. Such imbalance is also recognized between freedom rights and exclusion rights by the computing profession.

Concerns of a similar order have also been documented elsewhere, showing that public campaigns have had a concern for "preventing the over-reach" of IP protection including patent protection, and "to retain a public balance in property rights" of this kind. The same source also noted the shift that had taken place away from the historical classification of such rights as "grants of privilege", towards referring to them in terms of property and rights; a change that encouraged a change of view of the relation of sovereign governments towards them, away from something that the government "may grant" towards a "duty to uphold them".

As an inventor on a personal level you will probably not run into a lot of issues where getting a patent has a seriously negative effect. The goal here is generally to protect your invention and allow you to profit from it without being sidelined by a major company who can produce it fast and easy without giving you a dime. When you have a patent you have the ability to control who is allowed to mass produce your inventions so you can make sure that you're a part of the economic process; at least for around twenty years or so. All the same it's important to see all sides of the story and be fully educated on the subject before jumping in.

After your patent is granted you're free to sell your patent rights. This could be useful if you know you have a wonderful idea but no practical way of producing your product. You might be able to sell your patent rights to a major company for a large lump sum and be done with it. Whether or not this is a good choice depends upon how profitable the invention could be. You might regret selling the patent rights of a product for \$50,000 and then later finding out that it made the company you sold it to a few million dollars.

Consider the Costs

Just remember that the patent process can become quite expensive, sometimes costing as much as \$15,000 depending on the situation. Make sure that your invention is noteworthy and profitable before you begin the patent process. You don't need to patent every last gizmo that you create in your garage any more than an artist needs to register copyrights for every single little doodle in his or her sketchbook.

Hopefully this text has given you a comprehensive explanation of how the patent application process works. May your future inventive endeavors produce prosperity and success!