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Patent Law Basics: An Overview of Patent Law and Avoiding the Loss of Rights

John S. Pratt, Cynthia B. Rothschild, Kristin M. Crall, and Alyson L. Wooten

The patent process can be complicated and convoluted, and patent laws are confusing and complex. Even the most sophisticated companies, inventors, and researchers have questions on subjects such as what is patentable, what is required to obtain a patent, how does the patent system work, and what rights does a patent confer. We have compiled some of the most frequently-asked questions about patent law to serve as an introduction to the patent system, or for those who already have some knowledge of the patent system, to serve as a refresher, and we hope to provide a fresh perspective.

I. General Aspects of Patent Law

Q: What is patentable subject matter?

Almost any product, process, or ornamental design that is new, useful, and nonobvious is patentable. What we normally think of as a patent is known as a "utility" patent, because it covers the usefulness of a product—the way it operates, what it produces, what it does, *etc.* A utility patent protects the useful or functional aspects of a product, process, or method. A few examples of products and processes that may be protectable by utility patents include medical devices, tools, machines, furniture parts, automobile or machine parts, software, electrical circuits, microprocessors, computers, toys, pharmaceuticals, chemical compounds, methods of treatment, manufacturing processes, and certain types of methods of doing business.

There are two other types of patents. Design patents protect the ornamental design or appearance of an article (*i.e.*, they do not protect aspects of a product that are functional).[1] A few examples of designs that may be protected by design patents include the ornamental aspects of furniture, packaging, shoes, game boards, and fonts. The United States Patent and Trademark Office ("PTO") also provides for protection of some types of plants under the plant patent statute.[2] Because these two types of patents are used less often, however, we will be using the term "patent" in this article to mean a "utility patent" unless specifically indicated otherwise.

Examples of inventions that are not patentable include: (1) printed matter;[3] (2) naturally occurring articles;[4] (3) scientific principles;[5] (4) mental steps; and (5) aggregations of elements where the aggregation does not produce

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1 35 U.S.C. §§ 171-73 (2000).

2 The plant patent statute states that:

> [w]hoever invents or discovers and asexually reproduces any distinct and new variety of a plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 161 (2000).

3 Printed matter is unpatentable where the invention relates merely to the arrangement of the printed matter, or to the printed matter per se. However, where there is cooperation between the printed matter and a structure, as for example, in the case of a slide rule, the invention may be patentable. *See, e.g.*, *In re Gulack*, 703 F.2d 1381 (Fed. Cir. 1983); *In re Miller*, 418 F.2d 1392 (C.C.P.A. 1969).

4 An article or composition that occurs naturally in nature is not patentable unless it is given a new form, quality, property, or combination. However, a DNA sequence may be patentable if it is claimed as an "isolated" nucleotide having a specific sequence. *See, e.g.*, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (holding that microorganisms produced by genetic engineering are not excluded from patent protection under 35 U.S.C. § 101); *see also J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Intern., Inc.*, 534 U.S. 124 (2001) (holding that newly developed plant breeds are patentable subject matter).

5 For example, Einstein could not have patented his discovery that $E=mc^2$. One can, however, patent the application of a law of nature or a scientific principle to a practical purpose producing a new and useful result, as for example, making rubber. *See, e.g.*, *Diamond v. Diehr*, 450 U.S. 175 (1981); *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (holding that a business method or process claim is patentable subject matter if it (1) is tied to a particular machine or apparatus or (2) transforms a particular article into a different state or thing). One cannot, however, patent process claims at directed to "laws of nature, natural phenomena, and abstract ideas." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. ___, slip op. at 2 (2012). Similarly, the Supreme Court ruled (1) that isolated genomic DNA (gDNA) is not patentable, but (2) cDNA is. *Association for Molecular Pathology v. Myriad Genetics*, 569 U.S. __ (2013).

a synergistic or cooperative result, for example, a washing machine with a telephone mounted to it, where there is no interaction between the phone and the washing machine other than their physical connection.

Q: What other requirements have to be met for patentability?

The invention must be (1) new and (2) not obvious. The invention must also be considered "useful."[6] Examples of a non-useful invention would be a chemical compound that does not have a known function or a perpetual motion machine or other invention that violates the laws of mechanics or physics and therefore cannot function. Because novelty and nonobviousness are the most common stumbling blocks for obtaining a patent, we will discuss these concepts in more detail.

1. The Invention Must be "New" as Compared to the Prior Art

First, in order to be patentable, the claimed invention cannot be disclosed, either expressly or inherently, in a single "prior art" reference. Generally, "prior art" is knowledge that is already known to the public and may include the inventor's own activities or the activities of others.[7] (Because the Leahy-Smith America Invents Act ("AIA"), which was signed into law in September 2011, changed the U.S. patent system from a first-to-invent to a first-to-file regime for all applications filed on or after March 16, 2013, this article addresses only the effect of prior art under the current law. We note that applications filed on or before March 15, 2013 are subject to the pre-AIA prior art rules. A comparison of the old and new laws is the subject of a separate article published in this Desk Reference, *see America Invents Act: Race to the Patent Office, Where More Prior Art Awaits*).

The general rule is that if the claimed invention was patented, described in a printed publication, in public use, on sale, or otherwise available to the public before the effective filing date of the invention, a person is not entitled to a patent.[8] One change this new law made was to eliminate geographic restrictions on prior art. Published or known information outside the U.S. may now be prior art. It is also important to note that inventorship is important to the prior art determination now. This is because of certain exceptions that the law provides for disclosures made one year or less before the effective filing date of the application. Disclosures by the inventor (or joint inventor or another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor) less than one year before the filing date will not operate as prior art. This means that the one-year grace period for the inventor's own disclosure is still in effect. However, non-inventor public disclosures (i.e., disclosures that were not made by any inventor nor another who obtained the subject matter directly or indirectly from any inventor) are an immediate bar to patentability, which means that the race to the patent office is "on."

The one-year grace period that is still afforded to the inventors' own disclosures is intended to strike a balance between two competing interests: the inventor's interest in having an opportunity to test the invention and assess its commercial potential before incurring the expense of a patent application, versus the public interest in the prompt disclosure of inventions. Most foreign countries do not provide this one year grace period and require that a patent application for an invention be filed *before* the invention is made publicly known or offered for sale. Thus, time is of the essence in patent protection: If an inventor publicly discloses the invention before filing a patent application, most international rights will be lost, and if an inventor waits more than one year after offering for sale or publicly using an invention, U.S. patent rights will be lost as well. (Even for pre-AIA applications, establishing an earlier date of invention will not overcome a rejection under this category of art. If it happens more than a year before the filing date of the application, it does not matter when the invention was conceived or reduced to practice—patent rights are still lost.) Some specific actions to avoid are discussed in more detail in Section V.

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[6] This requirement stems from 35 U.S.C. § 101, which states that to be patentable, a process, machine, manufacture, or composition of matter must be "useful." This requirement may pose a problem for inventions claiming a new composition of matter of unknown function. For example, chemical compounds for which the mechanism of action is the subject of ongoing research may not be patentable under § 101. Also, a nucleotide sequence that is homologous to a gene may be found to be unpatentable under § 101 if the function of the gene is unknown. The lack of patentability of such sequences has significantly hindered efforts to patent small sequences of DNA known as expressed sequence tags ("ESTs"), which are short DNA sequences isolated from the human genome.

[7] The U.S. patent system changed in 2013 from first-to-invent to first-to. Any patent having an effective filing date on or after March 16, 2013 will not be permitted to claim an earlier priority date by establishing that the invention occurred prior to the filing date. However, for applications filed *before* March 16, 2013, the old rules apply, which provided that a patent applicant may be entitled to an earlier date of invention if s/he can establish an exact date of conception (*i.e.*, the mental process of coming up with the idea) and reduction to practice (the physical part of making the invention and proving it useful for its intended purpose). For this reason, it has traditionally been important for inventors to keep track of and document activities relating to research that could lead to a patent application in order to help prove that the invention was actually conceived earlier than a particular reference date or activity, so that the reference or activity could not be used as prior art against the application. It is still important to document such efforts, albeit for other reasons now.

[8] 35 U.S.C. § 102(a) (2013).

2. The Invention Must not be Obvious in View of the Prior Art

The next requirement for patentability is that the invention cannot be merely an obvious modification of something that is already known to the public. If there are products, processes, or designs that are "new" in the sense that the exact thing is not already known to the public, the invention is still not patentable if the differences between the invention and the prior art are such that the claimed invention as a whole would have been "obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains."[9] Although this is an aspect that is typically heavily debated during prosecution of the application (discussed below), some questions to consider are:

(1) What is the scope and content of the prior art?
(2) What are the differences between the prior art and the claims at issue?
(3) What is the level of ordinary skill in the pertinent art?[10] (If the person of ordinary skill in the art holds a Ph.D., more things are likely to be obvious to him or her than if the person of ordinary skill had only a high school education.)
(4) Has the invention been a commercial success or filled a long felt but previously unsolved need? Have others previously tried but failed to solve the problem that the invention addresses? Have competitors copied the invention or taken licenses from the patent applicant? Has there been praise by others in the field for the inventor's innovative approach? Have there been earlier suggestions by others that the approach taken by the applicant would not work?[11] If the answer to any of these questions is "yes," that is evidence that the invention is not obvious; otherwise someone would have done it already.
(5) Does the invention achieve a better or different result than the prior art?
(6) Does the invention offer advantages, such as being cheaper or easier to make than the prior art?
(7) Is there any reasonable expectation that combining the teachings of two pieces of prior art would lead to this invention?

While considering these questions, it is important to also keep in mind that nonobviousness should not be judged with hindsight.[12] Obviousness must be determined from a time just before the applicant's filing date, and one cannot therefore use the applicant's own disclosure as a roadmap for combining the teachings of several prior art references. That said, a few years ago, the Supreme Court made proof requirements for finding that an invention is obvious more flexible and thus, it is can be easier than it had previously been to invalidate a patent or certain patent claims as being obvious.[13] Still, inventors may needlessly be deterred from filing a patent application by thinking that "if I came up with the invention, it must be obvious." That is often not the case.

Q: With what other rules does the patent application need to comply?

The patent must adequately describe the invention, enable others to make and use it, and disclose the best way known to the inventor for practicing the invention. Specifically, it should:

> contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.[14]

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[9] 35 U.S.C. § 103 (2013).

[10] In *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983), the Federal Circuit established six factors to which courts should look in determining the level of ordinary skill in the art. Those factors are "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field."

[11] *See Graham v. John Deere Co.*, 383 U.S. 1 (1966); *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376 (Fed. Cir. 1983); *see also Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309 (Fed. Cir. 1985) (discussing objective factors); 2 PETER D. ROSENBERG, PATENT LAW FUNDAMENTALS § 9.02 (1999).

[12] *See Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566 (Fed. Cir. 1996); *see also Mintz v. Dietz & Watson, Inc.,* 679 F.3d 1372 (Fed. Cir. 2012) (indicating that even the statement of the problem to be solved can represent a form of prohibited reliance on hindsight).

[13] *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) ("KSR"). In *KSR*, the Supreme Court held that a patent claim can be proven obvious without any explicit teaching, motivation or suggestion in the prior art to combine the references or teachings of others.

[14] 35 U.S.C. § 112 (2000). Although the AIA did not eliminate the best mode requirement, it does provide that failure to disclose the best mode is no longer a basis for holding a patent invalid or unenforceable. *See* 35 U.S.C. § 282.

1. Written Description

The patent application must convey to those skilled in the art that the inventor was in possession of the invention at the time of filing the patent application. The applicant cannot get a patent on details of his invention that were not disclosed in the application as originally filed.

2. Enablement

The patent is also required to teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation,[15] but the description need not disclose what is well known in the art.[16]

3. Best Mode

The specification must also disclose the "best mode" for practicing the invention, if one exists. In other words, in exchange for the government's grant of exclusive rights to the inventor for a limited period of time, the inventor agrees to share with the public the best way he or she knows to practice the invention (which will be dedicated to the public once the patent rights expire). A patent applicant cannot disclose inferior ways of practicing his invention to get a patent, while holding back the "good stuff" for his own use.[17] If disclosure of confidential information is a concern, protection of the invention as a "trade secret" should be considered.[18]

Q: What rights does a patent provide?

A patent closes with a series of numbered paragraphs, called "claims," that define the scope of protection to which the patent owner is entitled. The claims are analogous to the property description in a deed in that they define the boundaries of the invention.

A utility patent gives its owner the right to exclude others from making, using, selling, offering to sale, or importing the invention claimed in the patent anywhere in the United States for the life of the patent. To establish infringement of a patent, every element of a claim must be found in the accused device, product, or process, either exactly ("literal infringement") or by a substantial equivalent under the "doctrine of equivalents."[19]

Instead of preventing others from practicing, selling, or otherwise using the patented invention in the United States, a patent owner may wish to license the patent to others by charging a royalty or licensing fee for allowing others to make, use, or sell the invention. Patents may also be used by a corporation as a bargaining tool, either when faced with a patent suit by a competitor or when entering marketing or other negotiations.

II. Preparing and Filing the Patent Application

Q: How is a patent obtained?

Before preparing a patent application, it may be advisable to conduct a prior art search to determine whether it is worthwhile to move forward. A searcher looks at databases that contain prior art to determine whether the invention, or similar inventions, are already known. A search provides two primary functions: (1) it helps the inventor decide whether to invest in the expense of a patent application by giving him or her an idea of what is already in the art and what type of claim coverage might likely be obtainable, and (2) it helps ensure that if a patent application is filed, the claims are as broad as possible, while also avoiding the prior art.[20]

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[15] *See Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997).

[16] *See Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986).

[17] Failure to comply with the best mode requirement is no longer a basis for invalidation, but it remains a requirement of law.

[18] *See generally* UNIF. TRADE SECRETS ACT § 1, 14 U.L.A. 537 -38 (2005). If trade secrets are of interest, refer to the trade secret article in this Desk Reference edition, which outlines various strategic decisions to consider between patent and trade secret protection.

[19] *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997). The Supreme Court set forth the "function, way and result" test in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950). The Federal Circuit announced the "insubstantial differences" test in *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1517 (Fed. Cir. 1995). The doctrine of equivalents allows a patent owner to prevent others from avoiding infringement of the patent by designing something that is not identical to the claimed invention, but is structurally and/or functionally equivalent to the claimed invention.

[20] Relevant art located during this search must be cited to the PTO to comply with the duty of disclosure. *See* 37 C.F.R. § 1.56 (2008).

As discussed previously, the inventor has only a year after his first public use or offer for sale of the invention within which to file a patent application. If an application is not filed within that period, a valid patent for what was disclosed cannot be obtained.

Q: What government fees must be paid to apply for and obtain a patent?

When an application is filed, the applicant must pay the basic filing fee, $280 at the end of 2014, an additional fee for the examiner to conduct the search (without which there can be no examination), which is currently $600, and yet another fee for the examiner to examine the application, currently $720 for a total of at least $1,600.[21] If the application contains a large number of claims or a lengthy disclosure, additional surcharges may apply. After 18 months, the application will be published. If the patent examiner allows your application, there is an additional $960 fee to have the patent issued. On the bright side, if the company that owns the rights to the invention is a "small entity," *i.e.*, has fewer than 500 employees, a 50% reduction in the amount of each fee usually applies (except for the publication fee). There is also an option for a "micro entity" fee if the applicant meets all of the requirements of a small entity, has filed no more than 4 previous applications (applies to all inventors), and whose gross income does not exceed three times the median household income for the preceding calendar year (as most recently reported by the Bureau of the Census).[22] Further, the applicant cannot grant rights to the application to another person or entity who does not meet the requirements of a micro entity. Micro entity status can also be established if the (1) the applicant's employer, from which the applicant obtains the majority of the applicant's income, is an institute of higher education as defined in section 101(a) of the Higher Education Act of 1965; or (2) the applicant has assigned, granted, conveyed, or is under an obligation by contract or law, to assign, grant, or convey, a license or other ownership interest in the application to an institute of higher education. Micro entities receive a 75% reduction in most USPTO fees.

These fees are current as of September, 2014. The PTO generally increases filing fees every October.[23] Please see http://www.uspto.gov/about/offices/cfo/finance/fees.jsp for information on current fees.

Q: How does the examination process work?

Once the inventor files the patent application with the PTO, it is assigned to a patent examiner who is responsible for patents in the particular technology area of the application. Examiners typically handle applications on a "first in, first out" basis, so it is likely that the patent application will be pending for a year or more awaiting its turn to be examined. The examiner then conducts a search of the PTO's libraries and databases, looking for disclosures of products, processes, or designs that are the same as or similar to the claimed invention.

The examiner reviews the claims of the application to determine whether the invention is new and nonobvious in light of the prior art, and prepares an "Office Action" summarizing which claims are allowable, which claims are rejected and why, and outlining any formal corrections that need to be made to the application. Although sometimes appalling for new inventors, it is typical for the first Office Action to reject all or most of the claims as unpatentable over the prior art. The applicant (through his/her patent attorney) then has the opportunity to respond to the Office Action by either amending the claims to add features not shown in the prior art, presenting arguments about why the examiner is incorrect and how the prior art is different, or both.

Usually the second Office Action is a final Office Action. At that point, the applicant has the option (1) to accept the allowed claims (if any); (2) to file a Request for Continued Examination ("RCE"), thereby re-opening the prosecution of the application to allow further discourse with the examiner (upon payment of an additional fee); or (3) to appeal the examiner's decision to the Board of Patent Appeals. The Board may affirm or reverse the examiner's decision.

If the applicant agrees to go forward with claims that have been allowed by the examiner, the applicant pays the issue fee, and the PTO will issue a United States patent.

Q: What if my application contains more than one invention?

Patent applications will often disclose more than one way to practice an invention and include more than one invention. For example, the application may include claims directed toward a product, a machine for making the

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[21] Note that the Patent Office periodically increases its fees, so the fees outlined in this article will change.

[22] Changes to Implement Micro Entity Status for Paying Patent Feed, 77 Fed. Reg. 75019-75033 (Dec. 19, 2012).

[23] You may access information about the PTO's fees at http://www.uspto.gov/about/offices/cfo/finance/fees.jsp (last visited October 16, 2014).

product, the process that the machine performs in making the product, and even the chemical composition of the product. The examiner may conclude at an initial stage that the application contains more than one invention. Because searching for multiple inventions requires the examiner to search in multiple areas, bundling inventions in this manner can require additional work by the examiner. The examiner may then issue a "restriction requirement" or an "election of species" requirement, which states that the application contains multiple inventions and that the applicant will need to select one invention for examination and withdraw claims directed toward the others. If the applicant wishes to pursue patent protection for the non-elected inventions, he or she will need to file additional applications, known as "divisional" applications (i.e., applications that are divided out of the original), that will be entitled to the effective filing date of the first (or "parent") application.

Q: What rights are conferred by a patent?

A U.S. patent permits its owner to *prevent others* from making, using, selling, or offering to sell an invention covered by the patent. Note that this is a right to *exclude others* that does not give the inventor an affirmative right to practice his own invention. It is entirely possible to have a patent for an invention that the patent owner himself cannot use without infringing someone else's patent. Note also that the patent rights are generally limited to acts that take place within this country. If you need patent protection in other countries, you will need to obtain patents in those countries.

Q: What is the duration of a patent?

A U.S. patent expires 20 years from its earliest filing date, subject to any extensions or adjustments for reasons such as PTO delays.[24]

Q: What does "Patent Pending" mean, and when should I use it?

After the applicant files a patent application, the applicant can mark the corresponding product as "Patent Pending." This marking does not provide any enforceable rights in the invention, and you cannot prevent your competitors from copying your product unless and until your patent issues. It may serve as a psychological deterrent to your competitors, however, who may be discouraged from copying your product because of the possibility that you could obtain a patent in the near future.

Q: How should I mark my product after a patent issues?

After your patent has issued, you should immediately begin marking your product as patented. The preferred marking is "Patented" or "Pat." followed by your patent number, *e.g.*, "Patented 7,654,321." If the article cannot be marked, then the packaging that contains the article should be marked. The patent owner must mark substantially all of the articles covered by the patent and released to the public during the period of the patent, or otherwise the patentee may not be able to recover damages for infringement during the period of time when marking was improper.

The America Invents Act amends 35 U.S.C. § 287(a) to provide that patent owners may satisfy the marking requirement "by fixing thereon the word 'patent' or the abbreviation 'pat' together with an address of a posting on the Internet, accessible to the public without charge for accessing the address, that associates the patented article with the number of the patent." This "virtual marking" provision allows a patent owner to provide constructive notice by marking the product with a URL, and maintaining the web page associated with that URL such that it identifies the patented product and associated patent numbers. This may be a cost-effective way to satisfy the marking requirement because any changes to the list of associated patent numbers may be easily modified on the relevant webpage, eliminating the need to modify labels and packaging.

Only products actually covered by one or more claims of the patent should be marked, and only during the period of time the patent is in force.

Q: How long can I expect from the time I file the application to when a patent will issue?

One of the biggest complaints about the patent process (aside from the expense) is that it is slow. It can take three to five years or longer for a patent application to ultimately issue as a patent. The PTO has attempted to

[24] Utility patents filed after June 8, 1995 confer rights for 20 years from the date of filing. Patents issuing on applications filed before June 8, 1995 confer rights for 17 years from the date of issuance or 20 years from the date of filing, whichever is longer. Design patents confer rights for 14 years from issuance, and like utility patents, plant patents last 20 years from the filing date.

address this problem under the American Inventor's Protection Act of 1999 ("AIPA"), which places limits on the time that the PTO has to respond to the applicant during the course of prosecuting a patent application.

Under the AIPA, the time for the PTO to mail a first Office Action to the applicant is 14 months, and the time period from filing the application to receiving an issued patent is three years or less.[25] If the PTO does not respond within the required time period, the term of the patent may be extended for a period equal to the PTO's delay.[26] Note that this provision does not necessarily speed up the patent process, it only compensates the applicant by adjusting the term of the patent after it issues. The extension may be of scant benefit in a technological area where innovation is rapid, and the patented technology may be obsolete before the end of the patent term, but can be very important in fields such as pharmaceuticals, where each day of patent term provides protection for a product that may have resulted from years of research and development.

Q: That can be a long time. Is there anything I can do to speed up the process?

Yes. One of the more recent (and less onerous) ways to expedite patent prosecution is to file a Track One request upon filing of the application.[27] There are fees involved (about $4000 in addition to the regular filing fees) and there are certain requirements and limitations to be met, but if granted, the Track One request can drastically expedite the examination process. The current PTO goal is to issue a final disposition within twelve months of prioritized examination being granted.

Q: How long will my patent application remain "secret?"

Patent applications are initially maintained in confidence by the PTO, but they are published 18 months from the earliest priority date (which is often the application filing date). There is an option to "opt out" of this publication by filing a non-publication request. The applicant may only file this request, however, if she certifies that she will not file a foreign application in a country that requires publication of applications 18 months after filing.[28]

Q: Once my patent issues, what do I have to do to keep it in force?

Once your utility patent has issued, you must pay periodic maintenance fees to keep the patent in force. Maintenance fees are due 3-$^1/_2$, 7-$^1/_2$, and 11-$^1/_2$ years after the patent issues, the amounts of which increase at each interval. As of December 2014, the maintenance fees due at each interval are $1,600, $3,600, and $7,400, respectively for a large entity. Design patents do not require payment of maintenance fees.

Q: What are the "claims" of a patent application and why do I need to focus on them?

The claims of a patent describe the product or process to which the patent owner has exclusionary rights.[29] The claims are the numbered paragraphs at the end of an application, and they act like the metes and bounds in a real-property deed. The claims lay the boundary of the rights granted by a patent. Because the claims define the scope of the inventor's rights, they are the most important part of a patent.

In a patent infringement case, infringement is determined by reviewing each element of the claims and finding the same or equivalent element in the accused device. This is the number one reason to pay close attention to the claims in the application draft that your patent attorney sends you – no matter what is disclosed in the rest of specification (the written description of the invention), a patent covers only what is recited in the claims. In other words, if a particular feature is disclosed in the specification and not claimed in the current application or a continuing application, then there is no patent coverage for that feature.

Q. If the claims define the invention, and if I have only invented one thing, why is there more than one claim in the patent application?

Normally, each utility patent application includes several claims that vary in scope. Broad claims define the invention in terms of only a few "elements" or parts, and preferably include the fewest elements that are needed to make the invention work. Every element of a particular claim must be found in an accused product or process for

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[25] 35 U.S.C. § 154(b) (2006).

[26] *Id.* The extension of term for PTO delay may be reduced, however, for delay caused by the applicant during prosecution, as for example, in filing tardy responses or continuing applications.

[27] United States Patent & Trademark Office, Prioritized Patent Examination Program, Track One (12/20/2012 4:12:22 PM), http://www.uspto.gov/patents/init_events/Track_One.jsp

[28] *35 U.S.C.* § 122(B)(i)(2006).

[29] Drawings serve as the claim in a design patent.

it to be found to infringe, so the fewer elements that need to be found in the accused device, the easier it is to prove infringement. Conversely, narrow claims include more elements, and the omission of any of those elements will avoid infringement.

On the other hand, a broad claim is usually more likely to be unpatentable because the examiner only needs to find prior art references that include a few elements. It is more unlikely that a patent examiner will be able to find the numerous elements of a narrower claim in the prior art, and the narrower claim is thus more likely to withstand scrutiny.

For example, an automated saw may be defined broadly as including (A) a blade and (B) a moving arm. A narrower claim might include additional elements: (C) a cutting table and (D) a switch. The broad claim (A+B) is more easily infringed, as any product having a blade and a moving arm will infringe the claim. By contrast, the narrower claim (A+B+C+D) will be infringed only by products having all four elements. Thus, while a narrow claim may describe the invention in more detail, it is usually not as powerful as a broad claim. Narrow claims can still be useful, however, because they can be allowable even if prior art is found that will prevent the broader claim from being allowed.

III. Infringement of Patents

Q: If my patent issues and someone is found to infringe, what happens? Or if I am found to infringe someone else's patent, what are the consequences?

Patents are not self-enforcing and are not enforced by the government. They do give the patent owner an enforcement right. Along with the right to stop others from making, using, selling, offering for sale, or importing the invention claimed in the patent, a patent owner may also recover damages from others who are found to infringe the patent. The damages may be the profits lost by the patent owner as a result of an infringement or, at a minimum, a reasonable royalty from the infringer.[30]

In addition, if the infringement is "willful," the patent owner can recover up to treble damages (triple the amount) and even attorneys' fees. There is a duty to avoid infringing the valid patent rights of another. Thus, once a person or entity becomes aware of a patent that it allegedly infringes, the person or entity has a duty to seek advice from patent counsel about infringement and/or validity of the patent. A well-reasoned opinion of counsel that the patent is invalid or not infringed can help shield against such treble damages and an award of attorneys' fees.

Q: How can I ensure that I am not infringing someone else's patent?

Injunctive relief—an order by the court to stop doing something or to stop selling something—may be even more devastating than monetary damages assessed against the infringer. If your company has to take a major product off the market as a result of patent infringement, the future financial damage, as well as the public relations damage, can be significant.

So how can your company avoid the possibility of being found liable for patent infringement? If you are about to launch a new product, or if there is reason to believe that there may be patents covering the technology, consider contacting a patent attorney to discuss the advisability of a clearance study. It may be particularly important to do this if the new product is one that is outside the company's normal area of technology. A clearance study will attempt to identify patents that might pose an infringement issue with respect to the new product. The patent attorney will review the patents located during a patent search and render an opinion as to whether the manufacture, use, sale, or offer for sale of the proposed new product will infringe any of those patents. If the patent attorney is unable to clear the proposed product over one or more of the patents identified during the search, he or she can work with you to try to "design around" the problematic patents so that you can get a competing product to market without infringing the patents.

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[30] 35 U.S.C. § 284 (2000). For example, if the defendant's sales of an infringing product were sales that the patent owner would have made, the patent owner can recover the profit that would have resulted from those sales, in addition to price erosion damages. Even if the patent owner did not lose profits as a result of the infringement, the infringer must, at a minimum, pay a reasonable royalty for using or selling the patented product, which is determined at market rates. Some of the factors to be considered in determining a reasonable royalty are set forth in *Georgia Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970), *modified*, 446 F.2d 295 (2d Cir. 1971).

It can be particularly useful to involve a patent attorney during the early stages of product design and development. By identifying potential problematic patents early, a company can make the appropriate design changes before it incurs significant expenses in developing the product and tooling up for manufacture.

Q: I can see that my competitor has a published application, and I do not think there is any way they can/should get a patent. Is there any way I can communicate something to the patent office?

One way to communicate information to the patent office relating to a competitor's patent application is to submit art that is relevant to the patentability of their claims to the patent office yourself. The general rule is that a third party may submit prior art in another party's application, although only within certain time limits.[31] The art can be submitted anonymously and must include a concise description of the asserted relevance of the documents.

Q: On a related note, is there anything I can do to challenge a competitor's patent?

Although beyond the scope of this article, we do note that there are options available for challenging a competitor's patent, which include the new post grant review process and *inter partes* review, as well as re-examination and traditional litigation. If these topics are of interest to you, we recommend reviewing the other articles in this Desk Reference that elaborate on these options in detail.

IV. International Patents and "Place-Holder" Options

Q: I have heard that a single international application can be filed as a "place-holder" of sorts. How does that work?

Often, the value of a patent portfolio may depend in part upon the geographical scope of protection. One way to begin obtaining protection in a number of international countries, while delaying (although not avoiding altogether) expensive filing fees and translation costs, is to file an application under the Patent Cooperation Treaty ("PCT"). A PCT application can designate more than a hundred countries, as well as the European Patent Office, for a relatively small investment. The application can keep the options of pursuing international protection alive for up to 30 months after the date of filing. This can give inventors and companies time to determine the importance of the invention, time to secure financing, time to determine whether the invention will be commercially viable, and time to determine whether international protection is warranted and in what countries. At the end of the 30-month period, however, the applicant must select the countries in which to pursue patent protection and must actually file an application in those countries.

Q: Are there any other place-holder options?

Yes. A U.S. provisional patent application acts as another type of place-holder. The filing fee for a provisional application is relatively small, and because the provisional application does not require claims, it is possible to prepare and file an application relatively quickly. Provisional applications must still disclose the invention, enable one skilled in the art to make and use the invention, and disclose the best mode known to the inventor for practicing the invention, just as in the case of a "regular" or non-provisional application. Failure to meet these requirements can result in a later non-provisional application being unable to claim the filing date of the provisional application. Provisional applications are not examined, and they are only effective as a placeholder for one year. To benefit from the filing or "priority" date of the provisional application, the applicant must file a regular utility application that claims priority to the provisional application within that year. Particular uses of provisional applications are discussed at the end of the next section.

V. Protecting Patent Rights: When Certain Acts May Cause Loss of Patent Rights

Q: Can others render my patent invalid if they have made my compound or practice my method, but did not realize it?

Inherent (as opposed to express) anticipation occurs where the invention has been practiced before, even though the individuals practicing the invention did not recognize it as such.[32] Thus the claiming of a new use, new

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[31] *See generally* United States Patent & Trademark Office, Preissuance Submissions (4/12/2013 5:18:33 PM), *http://www.uspto.gov/aia_implementation/faqs-preissuance-submissions.jsp*

[32] "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. IRECO Inc*., 190 F.3d 1342, 1347 (Fed. Cir. 1999).

function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable.[33] Also, there is no requirement that a person of ordinary skill in the art would have recognized the inherent disclosure at the time of invention, but only that the subject matter is in fact inherent in the prior art reference.[34] The fact that a certain result or characteristic *may* occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic, however.[35]

Q: Why is it important to be able to establish my date of invention?

Unlike most other countries in the world, for patent applications filed or having an effective filing date before March 16, 2013, the U.S. awards a patent to the first to invent, not the first to file a patent application. If you conceived your invention before a competitor and were diligent in making your invention and showing it useful for its intended purpose, you may be awarded a patent over your competitor who invented his product after you, but filed a patent application before you. (But only for applications filed under the old pre-AIA rules.) But since the PTO presumes that your date of invention is the date you filed your patent application, the presumption will be that your competitor was the first inventor, and it will be up to you to establish to the satisfaction of the PTO that you came up with the idea first.

Even for applications that are filed under the current AIA rules, there are still advantages to maintaining good records. For example, the AIA has added new derivation proceedings (which are proceedings intended to ensure that the person obtaining the patent is the true inventor and did not derive the invention from another), in which lab notebooks and evidence of invention dates will still be important.

Q: Why is it important to consider events that happen after I make an invention?

The United States patent laws require that an inventor file a U.S. patent application within one year after a number of specified events, including the date the invention was first publicly disclosed. Furthermore, virtually all commercially important foreign countries do not provide the one-year grace period but require that a patent application be filed in that or another country before the first "public use" or "printed publication." The purpose of these laws, both foreign and domestic, is to ensure that an inventor is diligent in applying for a patent.

Q: What is a "public use?"

For most inventions a "public use" is virtually self-explanatory. A public use occurs if an invention is used in its natural and intended manner where the public could see the invention if it wanted. If the public cannot see your invention but can see the results of your invention, it is a public use. For example, an inventive engine may be enclosed in a locked shed, but have belts running from it to drive a ferris wheel. In that case, even though the public cannot see the actual invention, the results of the invention are public, and it is considered a "public use."

Q: What is the test for whether a paper or other work is a "printed publication?"

Whether a particular document or tangible work is a "printed publication" is more esoteric under the patent laws. According to the courts, a work becomes a "printed publication" when it is "sufficiently accessible, at least to the public interested in the art, so that such a one by examining the reference could make the claimed invention without further research or experimentation."[36]

Q: When is a tangible work "sufficiently accessible" to the public?

The issue of whether a document is sufficiently accessible to the public frequently turns on a combination of two elements, including (1) the number of people having access to the manuscript and (2) their scientific or technical skill. If the work is made available to a large segment of the public, the fact that few of those exposed would be able to practice the invention successfully is of little consequence. Conversely, if a document is disclosed to but a

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[33] *See, e.g., In re Best*, 562 F.2d 1252 (C.C.P.A. 1977).

[34] *Schering Corp. v. Geneva Pharms., Inc*., 339 F.3d 1373, 1377 (Fed. Cir. 2003). *See also SmithKline Beecham Corp. v. Apotex Corp*., 403 F.3d 1331, 1343-44 (Fed. Cir. 2005) (holding that a patent to a previously unknown compound may be invalidated as inherently anticipated if the compound is later discovered to be a metabolite of another compound in the prior art).

[35] *See, e.g., In re Rijckaert*, 9 F.3d 1531 (Fed. Cir. 1993) (reversing rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82 (C.C.P.A. 1981) (stating that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient).

[36] *In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986).

few individuals, they almost certainly must be trained in the field of the invention before the manuscript would constitute a printed publication. A single copy of a thesis can constitute a printed publication if it is available in a library and properly cataloged so that someone looking for it would be able to find it.

Q: If I do not put any information in writing, can I show the invention to my colleagues at the institution or company where I work without risking loss of foreign rights and causing the one-year time period in the U.S. to commence running?

The answer to this question may depend on how well you retain control over the use of the invention and the distribution of information concerning it. If you legitimately expect your colleagues to keep the invention confidential and at least informally restrict their ability to disseminate information concerning the invention to others outside your institution or company, no "public use" should occur. This general rule may not apply in all foreign jurisdictions, however.

Q: Would it help if I persuade my colleagues to sign a confidentiality agreement before I show them the invention?

Although an express confidentiality agreement certainly would support a conclusion that you intended to keep the information out of the public domain, such an agreement is neither necessary nor necessarily sufficient. Instead, the presence of a written or express agreement is merely a factor to be considered together with the other facts.

Q: What if I wish to send a copy of my invention report to other professors or researchers at other schools or companies for review?

Sending the paper to a few outside peers for review or comments with the understanding that their review is to be confidential likely should not pose a significant problem; however, if you send the paper to a larger number of outside colleagues, a court might consider your activities sufficient to make the paper publicly accessible. When proposing to send the paper outside the company or university, you should consider obtaining a signed confidentiality agreement whenever possible in advance of the mailing.

Obviously, trade secret and competitive considerations come into play if you are employed by a for-profit organization. In this situation, consulting your supervisor or corporate counsel is prudent before any outside disclosure occurs.

Q: I may want to approach commercial companies to determine if they are interested in licensing the invention. Can I do this before the patent application is filed?

Distributing information concerning your invention to commercial companies without restricting their use of the information is strong evidence that the invention was either "on-sale" or publicly used, and thus within the public domain if a patent application is not filed within the one-year grace period. To protect patent rights in this circumstance, a written, signed confidentiality agreement should always be in place before the information is disclosed.

Q: In some cases, I may need corporations to conduct further testing on the invention before I can be sure that it performs as intended. How can I approach companies for testing, which itself may take more than one year, without forfeiting patent rights?

If the invention is not yet sufficiently complete for someone to make and use it successfully, it may be tested without the statutory period commencing to run. Once the testing establishes that the invention works or is useful, however, the statutory period may begin if the corporation's use of the invention is not restricted through, for example, a confidentiality agreement as mentioned above. One recommended strategy may be to file a provisional application on the features of the invention that are expected to be important before contacting testing companies, simply to serve as your "stake in the ground" in the patent office.

Q: More and more researchers are announcing important inventions through press conferences and newspaper articles. Are such media presentations sufficient to start the one-year period running in the U.S. and jeopardize foreign rights?

If other researchers would be able to duplicate or practice the invention from what was disclosed in the media, the one-year period in the U.S. would start running, and foreign protection would be unavailable. Newspaper articles in particular present problems in this regard, because they occasionally include relatively detailed descriptions of the inventions. In addition, if you demonstrate to the press a working embodiment of the invention, the demonstration may constitute a public use under the statute, which would also start the one-year clock running.

Q: I wrote a paper and sent it to a conference organizer for publication in symposium proceedings. Is that paper a "printed publication" under the statute as of the date I send it to the conference organizer?

Not yet. Merely submitting a paper to a conference organizer or to a reviewing referee does not make the paper available to the public. Once the paper is published in the proceedings or journal, however, it is a printed publication as of the time it is available to conference participants or subscribers.

Q: What if I merely give a lecture concerning my invention rather than publishing it in conference proceedings?

An oral presentation (without any accompanying written materials) is not a "printed publication," but it could constitute a "public use" of the invention (e.g., if you also demonstrated a working embodiment in conjunction with the lecture). The lecture would also likely be considered as rendering the subject matter "otherwise available to the public" under the new prior art definitions.

Q: Can I distribute copies of my article or invention report at the lecture without ever publishing it?

No. Providing any copies to those in attendance likely will make the paper available to the public. In one case, a researcher at MIT gave a lecture in Birmingham, Alabama, and provided copies of a paper concerning the subject to only six of the more than fifty scientists in attendance.[37] This minimal dissemination was held to invalidate the U.S. patent issued for the invention because the application was not filed within one year. In another case, an advance proof of a paper describing the invention and circulated among a large number of attendees constituted a "printed publication" even though the paper was not completed.[38]

Q: If my company needs funds to continue our research, can we disclose my invention in a government grant proposal before filing a patent application?

Probably not without risk. At least one court has held that a National Science Foundation grant proposal, properly indexed and available to the public under the Freedom of Information Act, is sufficiently accessible to start the one-year period running and jeopardize foreign patent rights.[39]

Q: Filing and prosecuting a patent application can be time-consuming and expensive, and I need to be able to publish my work. Is there anything I can do to preserve my rights until funding becomes available?

Yes. The United States patent law allows you to file a "provisional" application. A provisional application must meet all of the requirements of a regular or "utility" application, except that no claims are required. The filing fee for a provisional application is relatively small, and no costs to prosecute the application are necessarily incurred. On short notice, we have actually filed the publication itself as a provisional application.

Q: Will a provisional application issue as a patent?

No. A provisional application is only maintained for one year, after which it is abandoned. To preserve the filing or "priority" date of the provisional application, you must file a utility application that claims priority to the provisional application within that year. Of course, the utility application must be directed to the same subject matter as the provisional application.

Q: Will the provisional application be a "printed publication" under the statute?

No. A provisional application is maintained in secrecy by the PTO.

Q: What about foreign rights relative to filing a provisional application?

If a utility application is filed within one year of the filing of the provisional application and the disclosure of the provisional application fully supports the claims of the utility application, the utility application can legitimately claim priority to the filing date of the provisional application. This priority is recognized by most foreign countries as well as the United States. Thus, the filing of a provisional application satisfies these countries' requirements that an application be filed before any public use or disclosure of the invention. As a result, any activity taken

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[37] *Mass. Inst. of Tech. v. AB Fortia*, 774 F.2d 1104, 1108-09 (Fed. Cir. 1985).

[38] *Electro-Nucleonics Labs., Inc. v. Abbott Labs.*, 214 U.S.P.Q. 139 (N.D. Ill. 1981).

[39] *E.I. Du Pont de Nemours & Co. v. Cetus Corp.*, No. C-89-2860, 1990 WL 305551, at *10 (N.D. Cal. Dec. 3, 1990).

thereafter, such as publishing your results or marketing the product, will not affect your right to seek patent protection in the U.S. or most other countries.

Q: So what's the catch?

You must make sure that (1) the provisional application is filed before the publication, public use, offer for sale, or other disclosure to the public is made in order to preserve international rights and (2) the provisional application describes the invention, enables persons skilled in the art to practice the invention, and also describes the best mode of practicing the invention. The priority date established by the provisional application is only available for the material that is actually disclosed in the provisional application. Anything new that is added when the utility application is filed (e.g., a year later) is only afforded the priority date of the utility application filing date. Furthermore, within the year in which you conduct these other activities, you need to be certain that any improvements are similarly protected, particularly if the original provisional application does not describe such improvements. Consequently, you must prepare a very complete disclosure and then carefully monitor improvements to ensure that all new matter developed after the provisional application has been filed is properly protected. Some companies find benefit in filing multiple provisionals throughout the one-year period as the development continues and the product matures, and then combining the multiple provisional applications into one large utility application to be filed within one year after the earliest provisional application filing date.

VI. Conclusion

Although patent law can be complicated, the above answers to some of the most commonly-asked questions provide a basic roadmap for those in the beginning stages of developing a patent program or considering the idea of protecting an invention, as well as those well-versed in patent law who are seeking a refresher in the general concepts discussed.