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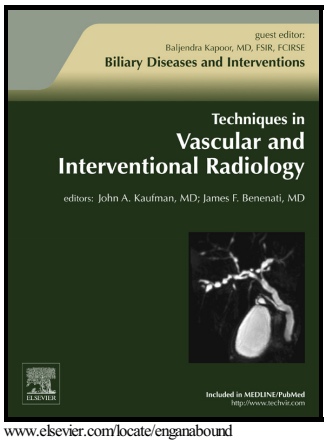

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A Short Introduction to Intellectual Property Rights

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Abstract. Intellectual property (IP) is a term that describes a number of distinct types of intangible assets. IP protection allows a rightsholder to exclude others from interfering with or using the property right in specified ways. The main forms of IP are patents, copyrights, trademarks, and trade secrets. Each type of IP protection is different, varying in the subject matter that can be covered, timeframe of protection, and total expense. While some inventions may be covered by multiple types of IP protection, it is important to consider a number of business and legal factors before selecting the best protection strategy. Some technologies require strong IP protection to commercialize, but unnecessary costs can derail bringing a product to market. IP departments of organizations weigh these various considerations and perform essential IP protection functions. This primer introduces researchers to the main forms of IP and their legal aspects.

Keywords

Intellectual Property, Patent, Copyright, Trademark, Technology Transfer

Introduction

Intellectual property (IP) is a term that describes a number of distinct types of intangible assets. Without a clear understanding of the different types of IP protection, it is easy to confuse them. Further, patents are often written in abstruse language, embedded with both complex scientific material and sophisticated terms with specific legal meaning. An entrepreneurial minded researcher can make costly mistakes when trying to obtain valuable patent protection. These mistakes not only result in the loss of IP rights, but also the loss of potential investors and business partners.

Fortunately, there is help. Most universities, non-profit research institutions and innovative companies have created IP departments to evaluate and protect new technologies. In academic and non-profit research organizations, these departments also license the technologies to companies and are commonly referred to as technology transfer offices (TTOs).

TTOs have experts with legal, scientific, and business backgrounds. Their multidisciplinary background reflects the multiple factors they must consider to properly manage the IP protection and licensing processes. It's simply unreasonable, and unfair, to expect most researchers and clinicians to be experts in their field as well as in business, IP, and contracting. Furthering the issue, most institutions have poorly integrated the business and legal units into research and clinical units. Consequently, IP portfolio development fails to fully meet its potential due to ineffective management of available resources.[1] In most cases, it makes sense to bring in advisors with the specific subject matter expertise throughout the development of the IP to help with the esoteric steps so researchers can focus on their core responsibilities. In addition to an organization's IP department that governs and manages the IP portfolio, in-house general counsel and outside patent and copyright attorneys serve important roles in their specialized areas of expertise.

Protecting IP begins with keeping good records. Lab notebooks or thorough notes can be invaluable in completely describing what is, and is not, included in IP. A thorough description of the creation will allow a clear separation of what needs to be protected and what rights cannot be secured. The level of detail required to write a good patent application is similar to what is required to write a research journal article. In addition to describing the invention, it is important to name all contributors and what they worked on, any publications or public discussions of the ideas, and any funding agencies. Review of potential IP should never prevent or unreasonably delay publishing and disseminating ideas. When planning to publish or otherwise publically disclose research, it's recommended that the materials of concern be evaluated by a professional for potential IP prior to it becoming available to the public to preserve rights. It takes time to properly evaluate inventions and draft materials in support of property protection; involving the IP department several months before a publication generally results in better IP protection.

Intellectual Property Protection

IP protection allows a rightsholder to exclude others from interfering with or using the property right in specified ways. Although the government will not monitor and prevent unauthorized infringers, the owner(s) can use the courts and legal system to obtain monetary damages and injunctive relief. Penalties can be set by the court and can be up to three times the income lost if someone clearly intentionally violated IP rights. The length of time one can assert intellectual property rights is finite, ranging from approximately 15 to 75 years, depending on the type of protection. The main types of IP protection are in the form of a patent, copyright, trademark, or trade secret.

Patents

The United States patent system is based on Article I, Section 8, Clause 8 of the U.S. Constitution, and the first United States Patent Act was passed in 1790. The purpose of the patent system is to promote innovation by granting exclusive rights to inventors. In exchange, inventors must provide a detailed description of how to make and use the invention that is made available to the public; this promotes innovation and competition resulting in technological advancement.

Patentability

To be patentable, an invention must be human made, not something discovered in nature, and must have an actual physical embodiment. It cannot be an abstract idea or one where parts of the process are not understood. Patent Examiners at the United States Patent and Trademark Office ("USPTO") will review the application. They are instructed to issue any patent that does not fail certain tests of patentability. To a certain extent, the Examiner's job is to find a reason to refuse to issue a patent, so the application must be drafted and sometimes amended to overcome rejection from the respective patent authority. In some cases, an invention is not considered to be patentable subject matter, such as European patent applications related to human cloning.

One test of patentability is "Utility". This means the invention must actually do something useful. "Useful" is a somewhat of a broad term in this case. For instance, entertainment is considered a valid use. An example of this is a particularly interesting patent application, found at https://www.google.com/patents/US20060094518, "Manually self-operated butt-kicking machine" (patent application number 10/977,894). SelfOperated ButtKicking Machine." (Figure 1) The abstract of the patent speaks for itself:

> The Manually Self-Operated Butt-Kicking Machine" is in the form of a chair with a hole in the bench. The user sits on the bench with his posterior centered over the hole. A seatbelt holds the user in place. There is a kicking mechanism located below the hole, which has a boot attached to it. When the user or operator pulls the hand-operated lever, the boot kicks the users' posterior through the hole in the bench. This invention is a new, novel, and unique machine with multiple uses, which range from amusement to fundraising and from motivation to discipline. The objectives of this invention are also many, including, but not limited to, teambuilding, self-therapy, to inspire creativity, and to be used as a model for future devices and works of art.

Another test of patentability is "Novelty". The invention must be completely new, never discussed in public or seen anywhere. In the United States, there is a "grace period" afforded to public disclosures made by an inventor within one year of filing the patent application,

thereby preserving novelty. In most other countries, any publication of the details of an invention, even if made by an inventor, releases the invention to the public domain and therefore no longer patentable in those territories. A relatively small change can be enough to consider an invention novel. Often, when patent applications run into issues with novelty, it involves work the inventors themselves have done in the past. In some cases, people working independently can create identical inventions.

The third major test of patentability is "Obviousness." This can be a major hurdle for inventions. If an invention simply consists of putting together aspects of things which already exist with no "inventive step," it's not patentable. A minor change which would make an invention novel is not enough to prove it was not obvious. The test requires that a fictitious person having ordinary skill in the art ("PHOSITA") would not combine the ideas. The PHOSITA can be viewed as someone who has normal skills and knowledge in a particular technical field, but are not experts in the field. It is very common for a patent examiner to argue that one or more patent claims are obvious.

Fortunately, there are several objective indicia of nonobviousness. For instance, evidence of disbelief and incredulity of others that the invention would in fact work, contemporaneous to the time of invention, favors a finding of nonobviousness. The same is true of a) unexpected superior results, b) prior art references teaching away from pursuing innovation likely to result in the invention, and c) long felt but unresolved needs. Sometimes examiners can be convinced an invention was not obvious due to the effort required to develop it. Extensive trial and error to make the invention can strongly support nonobviousness.

In order for a patent to issue, the invention must be described well enough for a PHOSITA to make and use the claimed invention without undue experimentation. This requirement does two things. It shows that the invention is an actual "thing" rather than an idea that has no details. It also allows others to create and build upon the invention after the approximately 20 year exclusive period ends. After the patent has issued, there are fees which must be paid or the patent will be abandoned. In the United States, these must be made at 3.5, 7.5, and 11.5 years after the patent issues.

Patent Application Types

There are several types of patent applications. Many begin with filing a United States provisional patent application. The provisional application is basically a one year placeholder which does not end in an issued patent and is not examined by the USPTO. It does prevent publications from affecting patentability and is inexpensive compared to other patent application types. The provisional application must be followed by a regular patent application,

such as a Patent Cooperation Treaty (PCT) application, United States non-provisional application, or other foreign applications. A PCT Application serves much the same purpose as a provisional application, and lasts for 30 months from the earliest priority date, which may be the filing date of a provisional application or the PCT Application if no provisional application was filed. It does receive some review, but will not result in an issued patent. At the end of the 30 month period, one must file applications in any of 146 member countries of the PCT if one wishes to secure protection in them. Filing in these individual countries can be very expensive, and it can be difficult to enforce a foreign patent, so applications should only be filed in countries where the protection is needed. Because a patent is only valid if an invention is made or sold in that country, selecting the countries to file applications in is an important, and complicated, business decision.

Patent Prosecution

Patent prosecution is the activities between filing a patent application and being informed the patent will issue. Prosecution generally takes several years, and costs from tens to hundreds of thousands of dollars. It often involves a number of "office actions" where the USPTO or foreign patent authority requests a change, "rejections," which can often be argued against at least in part, and "restriction requirements" where an examiner asks the application be split into more than one application. The final version of an issued patent can be very different from the original application. Additional "divisional" or "continuation" applications are sometimes filed to add to the patented invention.

Patents and the Right to Exclude

Most legal scholars liken property ownership to a bundle of rights that can be separated and reassembled. To the extent limited by law, a real estate property owner has numerous rights, such as a) subterranean rights: to dig, excavate, and mine land; b) air rights: to control, occupy or use the vertical space above the land; c) the right of possession and to use the land; and d) the right to exclude others from the property.

It is imperative for inventors to note that, in contrast, "a patent grants only the right to exclude others and confers no right on its holder to make, use, or sell" an invention.[2] Judge Giles S. Rich once explained in a lecture that "[the] right to exclude, without the right to use, is somewhat peculiar to patent law . . . . In contrast [to the patent right], the property right in real property (e.g., land) or personal property (e.g., a car or computer) is a right to use that carries with it a logically subordinate right to exclude. That right to exclude exists to ensure the owner's full enjoyment of the right to use."[3] However, the Supreme Court declared the right to exclude to be "one of the most essential sticks in the bundle of rights that are commonly characterized as property."[4] Further, as intangible property, there are many ways to slice and dice the grant of rights in a patent license: a) exclusivity or extent of non-exclusivity; b) geographic location; c) duration, d) permissible fields of use; and e) transferability. These

different rights can be exercised or licensed, and when properly leveraged, form a significant financial incentive for patent holders.

Copyrights

Copyright protection is associated with written articles, drawings, photos, software, and any tangible creation describing an abstract idea. As soon as something is written, saved on a computer, or drawn, it is automatically granted a certain level of copyright protection. Copyrighted works may also be registered in the U.S. for a small fee. Copyright registration may allow the copyright holder to collect additional damages in a law suit. Software may also use patent rights, which provides additional protection, as well as additional costs. Copyright can be used to prevent copying a software program, artwork, or document, including reproducing parts of it. Copyright does not protect against reverse engineering or works inspired by the original work. If software is written in a new language, or a story is told from a different perspective, the new creation is considered separate and is protected by new copyright rights. There have been some changes in copyright law, but copyright protection generally lasts the life of the author plus 70 years, or 95 years from the first publication, or 120 years from the creation, whichever is shortest. There is no fee or requirement to maintain protection for the life of the copyright.

Trademark

A trademark is a design, sign or expression which is associated with a product. A trademark which identifies a service is known as a service mark. Trademarks may be registered, with either a state or nationally, which may add strength to legal claims. The value of trademark is in the recognition derived from it. For this reason, a trademark is best registered by a company, after it can demonstrate public use.

Trade Secrets/Know-How

To a certain extent, a trade secret is the opposite of a patent. A patent application must describe exactly how to create an invention. A trade secret is commercially important information which is protected by restricting who has access to it. Some famous examples are recipes to internationally sold sodas. Stealing a trade secret is a crime. To enforce a trade secret, a company must take some significant steps to demonstrate they have protected their secret information. For example, the information must never be kept on a computer which could be accessed by anyone who is unauthorized. A company must also show it has a formal trade secret policy to protect its information. In general, although trade secrets can be invaluable in manufacturing, they are considered inimical to universities and academic institutions. Trade secret protection lasts as long as the information is kept secret and properly guarded. There are no fees or additional steps.

Selecting the Best IP Protection

In some cases, an invention can be protected by multiple forms of IP. This may be the case of software which could be used internally as a trade secret, which is automatically protected by copyright, which could have a copyright registered to provide additional protections, and may use a patentable algorithm. The selection of the best protection will be based on a number of factors. If the information cannot be controlled and protected, considering it a trade secret is not appropriate. If the invention is not considered to be patentable subject matter, or there are issues with novelty or obviousness, a patent will not be issued. If commercializing an invention will take years and great expense, it will be nearly impossible to attract investment without a patent to provide an exclusive period of sales to recover development costs. Generally, to justify the cost of a patent or patent portfolio of related inventions, the discounted cost of the patent portfolio should be less than the discounted cash flows generated by the IP at present value. If an invention involves software or other products which can be rapidly brought to market but may produce only moderate sales, the expense of patents may make the commercialization unprofitable. It's also prudent to consider whether there are any workarounds to the patent rights, as the resulting competing products may severely limit the patent holder's market share. Because patents are only valid in the countries where they are issued and are quite expensive, a careful analysis of where to file applications is essential to business success.

Publication and Collaboration and IP

Because publications can affect the novelty of a patent application, it is important to consider publication dates and how they may affect IP. In the United States, but in virtually no other country, there is a one year grace period during which a publication does not count as "prior art" affecting patentability. This can be a concern for researchers, particularly those at universities. The fundamental goal of universities is to disseminate information and education for public benefit. Publications should be reviewed for patentable material prior to publication whenever possible. This is particularly true if a paper is based on collaboration with a company or utilizes materials provided to the organization under contract. The agreements governing such research or use of the materials may give certain rights to the company, including the right to review publications for inclusion of confidential information and/or patentable subject matter. Ideally, the TTO or legal department should be informed of any potentially patentable inventions at least two months prior to publication. Within the academic setting, however, patenting should never prevent publication or conflict with the fundamental mission and values of the institution.

Although collaboration can affect inventors who would be named on an issued patent, collaboration is also firmly in the spirit of universities and academic medical centers. If the

details of an unpatented invention will be discussed, a non-disclosure or collaboration agreement can ensure discussions will not affect patentability or otherwise allow for misappropriation of one's confidential information. In general, discussing or collaborating within an institution will not be considered a public discussion and will not affect patent rights. General discussions of what something does, without providing details of exact mechanisms will be considered non-confidential and may not require any formal agreement requiring confidentiality.

Conclusion

Although IP and its protection are esoteric, they don't have to be daunting. Depending on the nature of an invention or creation, different types of protection may be appropriate. How IP will be commercialized will also directly affect the best and most cost effective protections. Bringing in expert help early in the process can save time, money, and frustration.

Additional Resources

1 Fisher III, William W., and Felix Oberholzer-Gee. "Strategic Management of Intellectual Property: An Integrated Approach." California Management Review 55, no. 4 (Summer 2013): 157–183.

2 Bio-Tech. Gen. Corp. v. Genentech, Inc., 80 F.3d 1553, 1559 (Fed. Cir. 1996).

3 DONALD S. CHISUM ET AL., PRINCIPLES OF PATENT LAW 4 (3d ed. 2004) at 5 (quoting Judge Rich's lecture notes).

4 Kaiser Aetna v. United States, 444 U.S. 164, 176 (1979).

http://www.ohsu.edu/xd/research/techtransfer/upload/Guide-to-TTBD_FINAL-WEB-VERSION-for-4-3-13-presentation-2.pdf The TTBD Guide © 2013 Oregon Health & Science University

https://www.uspto.gov/ The United States Patent And Trademark Office has educational materials, can be used to file a patent application, and to view the status of patents and applications in prosecution

http://www.wipo.int/portal/en/index.html The World Intellectual Property Organization (WIPO) has educational materials and information on patents and applications filed outside the United States.

Figure 1. “Utility” of a patent.