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A Short Overview of Intellectual Property

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Abstract: Intellectual property plays a vital role in protecting the inventions of a human mind, encouraging the creations that solve practical problems in various facets of life, and thereby eventually promoting the overall healthy growth of the economy of a country. This manuscript gives an overview of various topics related to intellectual property including types of intellectual property, patentability of the inventions, prior art, patent applications, and fees. The manuscript provides a general overview, but the details of the topics depend on the local patent laws of the geographical area where the inventor is filing his or her IP application. Therefore, the author suggests the readers to further refer to their local laws.

Keywords: Patents, Copyrights, Trademarks

1.0 Introduction to Intellectual property (IP): IP is a type of property that includes both tangible and intangible creations of the human intellect. There are many types of intellectual properties, and the most common types include patents, copyrights, trademarks, and trade secrets. Figure 1 shows a quick overview of the intellectual property.

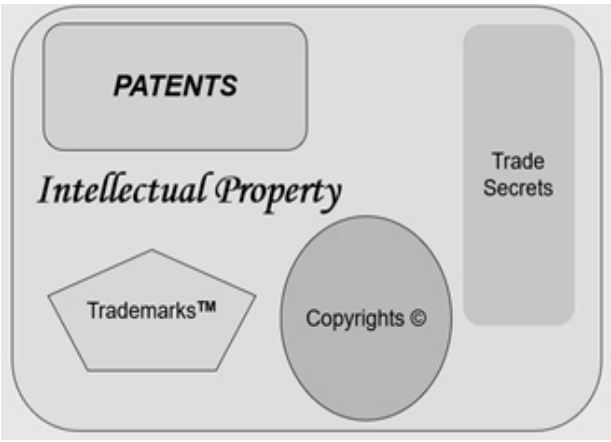


Figure 1: Overview of Intellectual Property

2.0 Patents:

A patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. It is important to remember that what is granted is not the right to make, use, offer for sale, sell, or import, but the right to exclude others from making, using, offering for sale, selling, or importing the invention. One can use the right to stop others from infringing one's patents.

Patents are considered as personal property. Patent rights can be licensed to another company to make, use, or sell the invention in exchange for the payment of fees, called royalty. Anyone regardless of age, nationality, or any other characteristic can apply for a patent so long as he or she is a true inventor of the invention. As per the First Inventor To File (FITF) US law effective March 16, 2013, if another person first discloses the details of the invention to the public by commercialization, publication, or other means, then the applicant is considered to be too late to file a valid patent application on the invention. Therefore, the inventors are advised to file their patent application as soon as the invention is conceived and before relevant disclosures by other people. The inventor has the option to file a provisional patent for a nominal fee which gives him or her one year to file the actual patent application.

There are 3 types of patents namely Utility Patents, Design Patents, and Plant Patents.

2.1 Utility Patent:

A utility patent is the most common type of

patent which covers the invented function. Examples of utility patents include inventions of mechanical machines like printing press, gramophone, bottle opener, electronic circuits like the circuits for security systems, manufacturing process, any gadget to solve a particular problem. Figure 2 shows more examples of utility patents including a broom and a toothpaste tube.

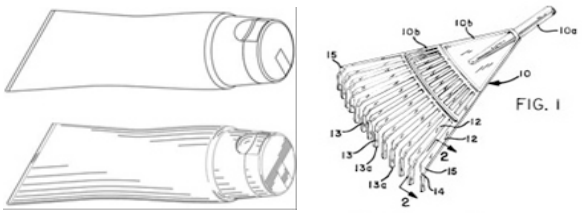


Figure 2: Examples of utility patents
a. Broom b. Tooth paste or a medicine tube.

To obtain a utility patent, the inventor must file a patent application including a detailed description of the invention explaining how to make and use the invention, together with claims that define the invention, drawings of the invention, other paperwork related to the application process, and a filing fee. A utility patent is valid for a period of 20 years from the date of application as long as the maintenance fees are paid in time.

2.2 Design Patent:

A design patent is the second type of patent that covers inventive appearance, unique look, decorative shape, or visible surface ornamentation of an article. A design patent is for the uniqueness of the shape and must be purely ornamental or aesthetic, but not functional. Examples of design patents include innovative shape of a desk, look of a building, shape of a car, shape of icons on smartphones etc. Figure 3 shows more examples of design patents including a design of a footwear and shape of an eyewear.

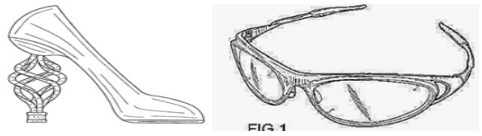


Figure 3: Examples of design patents a. Design of a footwear b. Shape of an eyewear

The design to be patented must be for an article that is different from an object in its natural state; thus, for example, a figure of an animal is not suitable for a design patent. A design patent application consists of drawings and a formal claim to the article of invention "as shown", along with formal paperwork of the application and a filing fee. A design patent is valid for a period of 15 years from the date of application as long as the maintenance fees are paid in time.

2.3 Plant Patent:

A plant patent is the third type of patent that covers the inventions related to plant cultivation. A plant patent can be granted to an inventor who has invented or discovered and asexually reproduced a distinct and new variety of plant, other than a tuber propagated plant or a plant found in an uncultivated state.

A plant patent application has the similar requirements as a utility application, but has a single, formal claim to the plant "as shown and described." A plant patent is valid for a period of 20 years from the date of application as long as the maintenance fees are paid in time.

3. 0 Patentability:

Though an invention seems to have some commercial viability, its inventors need to check for its patentability. For a utility patent to be awarded, there are at least 4 legal requirements that the patents need to meet. Requirements include the Statutory Class, Usefulness, Novelty, and Non-obviousness.

3.1 Requirement 1:

The Statutory Classes: The patent application must fit into one of the five broadly and comprehensively established classes namely process or method, machine, article of manufacture, composition of, improvement on one of the first four. It is widely believed that this requirement is comparatively easier to meet as most of the inventions fall within one or multiple of the considered statutory classes.

3.2 Requirement 2: Utility or Usefulness: To be patentable as a utility patent, the invention

must be functional and useful. Whether an invention is useful or not depends on the explanation provided by the inventor in his or her application and the assessment conducted by the patent examiner. Examples of inventions that fail the utility requirement include drugs that are not proved to be safe, whimsical inventions that claim usefulness by unusual explanations, inventions that are only useful in illegal activities. Further examples, in particular, that cannot be patented include machine used to counterfeit currencies, inventions that can disable safety alarms in a safety critical environment, and non-operable inventions such as perpetual motion machines which claim to defy the laws of physics as shown in Figure 4. Based on the application and the examination in the given context, a patent might be granted but it is to be noted that the fact that a patent is granted does not mean that the underlying invention will work or is useful.

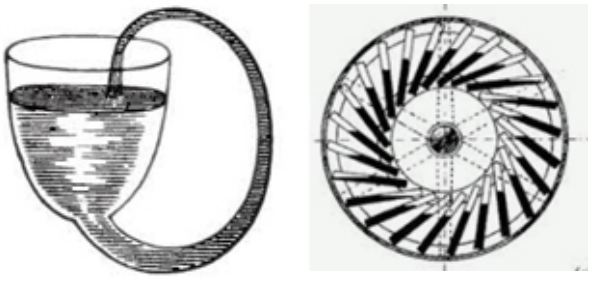


Figure 4: Perpetual motion machines a. Cup fed into itself b. Bhaskara's wheel

3.3 Requirement 3: Novelty: Novelty or newness in an invention is a requirement that an idea of invention must meet to qualify for a patent. The invention must be somehow different from all the prior developments, called prior art or state of the art, that are available to the public. Prior art includes any knowledge that was made publicly available by other people, explanations in printed publications, patent applications of other inventors, prior use, and on-sale activities of the invention. There are three types of novelties including 1. physical (hardware or method) difference, 2. new combination, and 3. new use. The invention can be considered as Novel as long as the patent application can claim the novelty in one of those 3 types.

3.4 Requirement 4: Non-obviousness: The invention must not be obvious to a person having ordinary skill in the art. The invention must not be by making an obvious change to another patent in prior art. Whether an invention is non-obvious in the opinion of a person having ordinary skill in the art or not has been in regular debate. In deciding the non-obviousness of an invention, the examiners usually check including the long-felt but unsolved need, and failure of others to come up with the invention.

Despite the large number of inventions that can be patented, there are inventions and discoveries related to certain fields that the law does not allow patents. Details of the restrictions on patentability of a particular invention depend, sometimes, on the local governing laws. Some of the examples of inventions or discoveries that are not patentable include phenomena of nature such as laws of physics, mental processes, and abstract intellectual concepts including concepts of pure Mathematics as they are the basic tools of scientific and technological work. Figure 5 shows more examples of human DNA and laws of nature. Inventions such as nuclear weapons, and tax avoidance schemes cannot be patented as per USPTO, similar local laws exist in other countries as well.

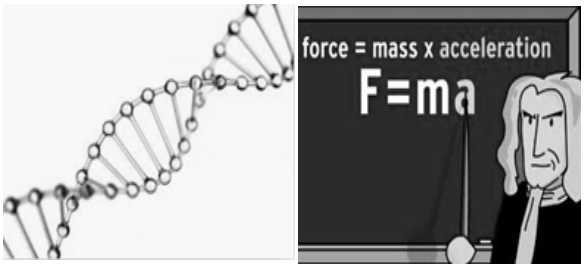


Figure 5 Examples of discoveries or inventions that are not patentable
a. Human DNA, b. Laws of nature

4. 0 Copyrights: A copyright is a right given by law to the artists in creative fields for their creations including but not limited to artwork,

literary work, and music compositions. It empowers the holder of a copyright to sue infringers in court to stop publishing or copying the copyrighted literary, dramatic, musical, or artistic works. Some examples of works that are covered by copyright are books, poems, plays, songs, photographs, movies, drawings, sculpture, and recordings. Figure 6 shows J. K. Rowling's Harry Potter book and Beatles' Abbey Road music record as examples of works that qualify to be copyrighted. A copyright is considered to exist automatically upon creation of the work. It is advised to place the copyright symbol © on each published copy of the literary work and register the work with Copyright office. For art works created after January 1, 1978, copyrights last for 70 years after the death of the author.

Figure 6. Examples of copyrighted works
a. J. K. Rowling's Harry Potter book and
b. Beatles' Abbey Road music record.

5. 0 Trademarks: A trademark is any word or symbol that is consistently attached to a product or its packaging to identify and distinguish it from others in the marketplace. A trademark is a brand identity. Trademarks are believed to recall a particular brand to the customer and make purchase decisions when they notice a symbol that is normally associated with that brand. Like patents and copyrights, trademarks also award rights to the owners to stop others from copying their trademarks. Usually, the trademarks that are more distinctive from the others give stronger rights to stop others from infringing on them. Figure 6 shows examples of popular trademarks Mercedes-Benz and Apple. Sometimes the trademarks are also assisted with the letters TM to indicate that the symbol is trademarked. A U.S. trademark usually lasts as long as the trademark is used in business and defended against infringement.

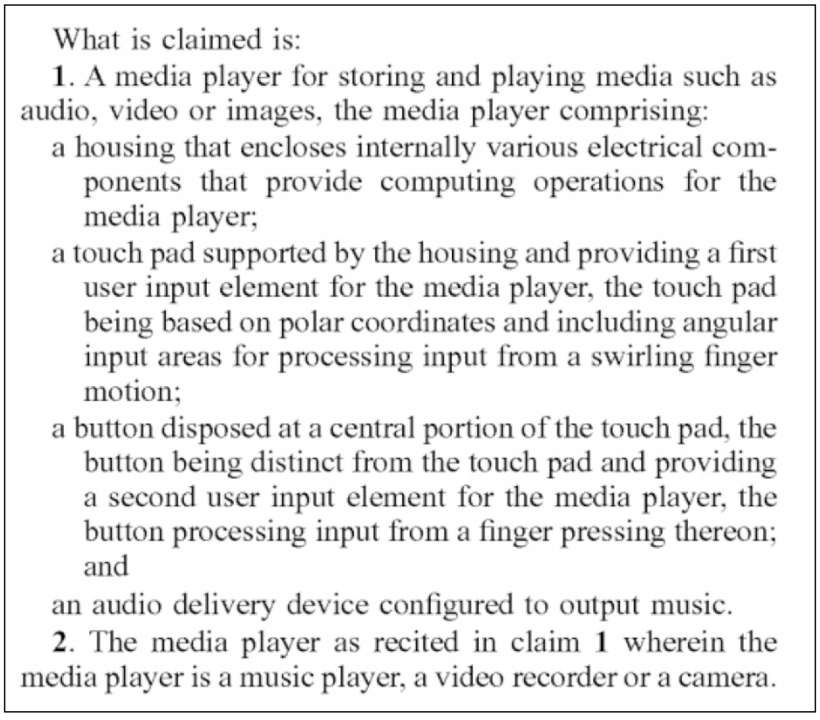
Figure 6: Examples of popular trademarks
a. Mercedes-Benz b. Apple.

6.0 Trade secrets: A trade secret is any proprietary information, design, process, composition, technique, or formula that is not known generally, and that provides its owner a competitive business advantage. Examples of trade secrets include chemical formulae such as the formula for the paper used to make currency bills, manufacturing processes such as the process used to form the eyes in sewing needles, and the process for adhering non-stick coating to a frying pan. The degree of rights that the law will provide to the owner of a trade secret is usually proportional to the business value of the trade secret and how strictly the owner maintained the secret. A trade secret can be protected as long as the owner takes reasonable precautions to maintain its secrecy. Figure 7 shows the examples of popular trade secrets the formula of Coca Cola and formula of Listerine.

Figure 7. Examples of trade secrets
a. Formula of Coca Cola b. Formula of Listerine

7. 0 Claims: Claims are the most important part of a patent application. Claims explain and

define the structure, or acts, of an invention in very precise, logical, and exact terms. They play a key role in determining if an invention is patentable over the prior art or if there is an infringement. Since the claims are vital to the invention, they are usually written by patent attorneys who were trained and experienced in wording the sentences in such a way that the invention is explained very broadly including the possible changes to create another invention. Figure 8 shows a snapshot of only 2 out of 28 claims written in US Patent # US 7046230 B2 "Touch Pad Handheld Device" assigned to Apple Computer Inc.



What is claimed is:

1. A media player for storing and playing media such as audio, video or images, the media player comprising:

a housing that encloses internally various electrical components that provide computing operations for the media player;

a touch pad supported by the housing and providing a first user input element for the media player, the touch pad being based on polar coordinates and including angular input areas for processing input from a swirling finger motion;

a button disposed at a central portion of the touch pad, the button being distinct from the touch pad and providing a second user input element for the media player, the button processing input from a finger pressing thereon; and

an audio delivery device configured to output music.

2. The media player as recited in claim **1** wherein the media player is a music player, a video recorder or a camera.

Figure 8. An example snapshot of claims in an Apple Patent.

8.0 Costs: Inventors need to be aware that in addition to having inventions that pass all the requirements, acquiring intellectual property also requires money to pay the patent office fees. Most common fees include but not limited to application filing fee, search fee, examination fee, maintenance fee etc. A small snapshot of the usual fees is provided in Table 1 for a quick reference.

Table 1. Reference for fees involved in obtaining and maintaining a patent thru United States Trademark and Patent Office (USPTO).

Description	Fee ($)	Small Entity ($)	Micro Entity ($)
Basic filing fee-Utility	320	160	80
Utility Search Fee	700	350	175
Utility Examination Fee	800	400	200
Maintenance at 3.5 years	2000	1000	500
Maintenance at 7.5 years	3760	1880	940
Maintenance at 11.5 years	7700	3850	1925

For more details on the complete fee schedule and requirements to qualify as Small or Micro entities, refer USPTO [7].

9.0 Conclusion: Intellectual property rights play a significant role in safeguarding the inventions of a human intellect. Patents, Copyrights, Trademarks and Trade secrets encourage the individuals to invent articles of use and thereby take advantage in acquiring financial gains thru business ventures. It is important for young inventors to be aware of IP laws and procedures so that they can take the right move in commercializing their invention. This manuscript provided an overview of various types of patents, differences, examples of patentable and nonpatentable inventions, fees involved in IP applications and importance of drafting claims. Since the details of IP including requirements, fee schedules, application procedures depend on the local governing laws, readers are advised to contact their local IP offices for further details.

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