

Patent Infringement Analysis

Project report submitted in partial fulfillment of the requirement for the
degree of Bachelor of Technology

in

Computer Science and Engineering/Information Technology

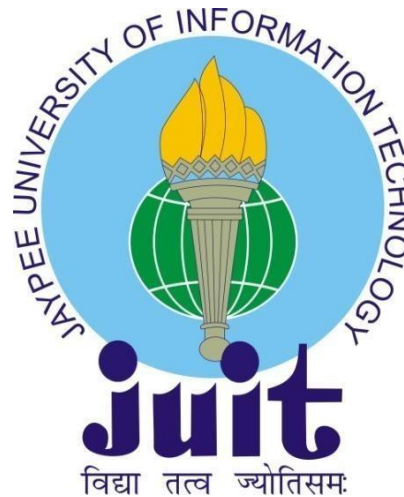
By

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Under the supervision of

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to



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**Jaypee University of Information Technology Wahnaghat, Solan-173234,
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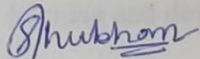
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I

DECLARATION

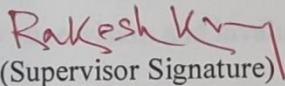
I hereby declare that the work presented in this report entitled "Patent Infringement Analysis" in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering/Information Technology** submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from July 2022 to May 2023 under the supervision of **(Dr. Rakesh Kanji)** (Assistant Professor (SG)). The matter embodied in the report has not been submitted for the award of any other degree or diploma.



(Student Signature)

Shubham Patial, 191250

This is to certify that the above statement made by the candidate is true to the best of my knowledge.



(Supervisor Signature)

Dr. Rakesh Kanji

Assistant Professor (SG)

Department of Computer Science & Engineering

Dated: 16-05-2023

II

ACKNOWLEDGEMENT

This training opportunity at GreyB Services is a great chance for learning and professional development. I would like to express my deepest gratitude and special thanks to the founders and Directors of the company Mr. Deepak Syal and Mr. Chakshu Kalra who in spite of being extraordinarily busy with their duties, took time out to hear, guide and keep me on the correct path of learning and developing.

I express my deepest thanks to Mr. Muzammil Hassan, Group Manager, Patent Monetization Team for taking part in useful decision & giving necessary advices and guidance and arranged all facilities in the office.

I also pay my gratitude to Mr. Swapnajeet Nayak, Team Lead, Patent Monetization Team for her supervision and invaluable guidance.

It is my radiant sentiment to place on record my best regards, deepest sense of gratitude to my mentor, Mr. Sagar Choudhary, Senior Research Associate for his careful and precious guidance which were extremely valuable for my training.

I would like to acknowledge guidance of my institute mentor, Dr. Rakesh Kanji who constantly guide me during my training and suggest me to improve on every aspect.

III

CERTIFICATE OF TRAINING



Date: May 8th, 2023
Ref. No. GB/OP-HR/TRA-090

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Shubham Patial is working as a Trainee Research Analyst with our organization since Feb, 2023 to till date.

During internship with GreyB, Shubham has worked on multiple Patent Monetization Projects but due to confidentiality issues we are unable to disclose project details.

This document is confirming his successful training completion with us.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Pooja Sehgal".

Pooja Sehgal
Sr. Manager HR

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PLAGIARISM CERTIFICATE

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LIST OF ACRONYMS AND ABBREVIATIONS

1. SEP- Standard Essential Patent
2. 3GPP- 3rd Generation Partnership Project
3. DIA- Detailed Infringement Analysis
4. eVTOL- Electronic Vertical Take-Off and Landing
5. ARIB- Association of Radio Industries and Businesses
6. ATIS- Alliance for Telecommunications Industry Solutions
7. CCSA- China Communications Standards Association
8. ETSI- European Telecommunications Standards Institute
9. TSDSI- Telecommunications Standards Development Society of India
10. TTA- Telecommunications Technology Association
11. TTC- Telecommunication Technology Committee
12. IP- Intellectual Property

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CHAPTER 1

INTRODUCTION

Introduction

The United States Patent and Trademark Office (USPTO or Office) is an agency of the U.S. Department of Commerce. The role of the USPTO is to grant patents for the protection of inventions and to register trademarks. It serves the interest of inventors and businesses with respect to their inventions and corporate products, and service identifications. It also advises and assists the President of the United States, the Secretary of Commerce, the bureaus and offices of the Department of Commerce and other agencies of the government in matters involving all domestic and global aspects of “intellectual property.” Through the preservation, classification, and dissemination of patent information, the Office promotes the industrial and technological progress of the nation and strengthens the economy.

In discharging its patent related duties, the USPTO examines applications and grants patents on inventions when applicants are entitled to them; it publishes and disseminates patent information, records assignments of patents, maintains search files of U.S. and foreign patents, and maintains a search room for public use in examining issued patents and records. The Office supplies copies of patents and official records to the public. It provides training to practitioners and it publishes the Manual of Patent Examining Procedure to elucidate these. Similar functions are performed relating to trademarks. By protecting intellectual endeavours and encouraging technological progress, the USPTO seeks to preserve the United States’ technological edge, which is key to current and future competitiveness. The USPTO also disseminates patent and trademark information that promotes an understanding of intellectual property protection and facilitates the development and sharing of new technologies worldwide.

GreyB is a provider of professional services with locations in Singapore and India (Mohali and Gurgaon). In order to help other businesses, maximise the value of their invention and intellectual property (IP), the company uses both off-site and onsite methods of operation. Legal firms, companies, software development companies, R&D divisions, internal IP offices, patent committees, patent attorneys, IP investment houses, venture capital firms, investment firms, and research organisations are just a few of the different categories of clients that GreyB supports.

There are several product consulting professionals at GreyB that are knowledgeable and experienced in data collection, technology management, and effective intellectual property development, management, and monetization. When it comes to effectively using their experience to deliver product management consulting services, these experts are essential. The business also provides several consulting services in the area of product management. These consultants' collective knowledge and experience, especially in the field of new technology investment banking, is crucial for the efficient creation, administration, and monetization of intellectual property assets.

Necessity

Patent prosecution describes the interaction between an applicant, or their representative, and a patent office with regard to a patent, or an application for a patent. Broadly, patent prosecution can be split into pre-grant prosecution, which involves negotiation with a patent office for the grant of a patent, and post-grant prosecution,

which involves issues such as post-grant amendment and opposition. Applications filed in the U.S. Patent and Trademark Office is assigned for examination by an examining group in charge of the area of technology related to the invention. In the examining group, applications are taken up for

examination by the examiner to whom they have been assigned in the order in which they have been filed. Applicants will not be advanced out of turn for examination or for further action except as provided by the rules, or upon order of the Commissioner to expedite the business of the Office, or upon verified showing which, in the opinion of the Commissioner, will justify advancing them. The examination of the application consists of the study of the application for compliance with legal requirements and a search through United States patents, prior foreign patent documents which are available in the Patent and Trademark Office, and available literature to determine whether the invention is novel and nonobvious. A decision is reached by the examiner in the light of the study and the result of the search. If two or more inventions are claimed in a single application and are regarded by the Office to be of such nature that a single patent may not be issued for both of them, the applicant will be required to limit the application to one of those inventions. The other invention may be made the subject of a separate application which, if filed while the first application is still pending, will be entitled to the benefit of the filing date of the first application. A requirement to restrict the application to one invention may be made a further action by the examiner.

Objectives

According to the law, only the inventor may apply for a patent, with certain exceptions. If a person who is not the inventor should apply for a patent, the patent, if it were obtained, would be invalid. The person applying in such a case who falsely states that he/she is the inventor would also be subject to criminal penalties. If the inventor is dead, the application may be made by legal representatives, that is, the administrator or executor of the estate. If the inventor is insane, the application for patent may be made by a guardian. If an inventor refuses to apply for a patent or cannot be found, a joint inventor or, if there is no joint inventor available, a person having a proprietary interest in the invention may apply on behalf of the non-signing inventor. If two or more persons make an invention jointly, they apply for a patent as joint inventors.

A person who makes only a financial contribution is not a joint inventor and cannot be joined in the application as an inventor. It is possible to correct an innocent mistake in erroneously omitting an inventor or in erroneously naming a person as an inventor. Officers and employees of the United States Patent and Trademark Office are prohibited by law from applying for a patent or acquiring, directly or indirectly, except by inheritance or bequest, any patent or any right or interest in any patent.

A patent for an invention is the grant of a property right to the inventor, issued by the Patent and Trademark Office. The term of a new patent is 20 years from the date on which the application for the patent was filed in the United States or, in special cases, from the date an earlier related application was filed, subject to the payment of maintenance fees. US patent grants are effective only within the US, US territories, and US possessions.

The right conferred by the patent grant is, in the language of the statute and of the grant itself, “the right to exclude others from making, using, offering for sale, or selling” the invention in the United States or “importing” the invention into the United States. 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..

Theme

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

patent office to the prior art before issuing a patent. Patent applications in most jurisdictions also usually include (and may be required to include) a drawing or set of drawings, to facilitate the understanding of the invention. Search and examination are the principal part of the prosecution of a patent application leading to grant.

Organization

About Greyb

GreyB is a provider of professional services with locations in Singapore and India (Mohali and Gurgaon). In order to help other businesses, maximise the value of their invention and intellectual property (IP), the company uses both off-site and onsite methods of operation. Legal firms, companies, software development companies, R&D divisions, internal IP offices, patent committees, patent attorneys, IP investment houses, venture capital firms, investment firms, and research organisations are just a few of the different categories of clients that GreyB supports.

There are several product consulting professionals at GreyB that are knowledgeable and experienced in data collection, technology management, and effective intellectual property development, management, and monetization. When it comes to effectively using their experience to deliver product management consulting services, these experts are essential. The business also provides several consulting services in the area of product management. These consultants' collective knowledge and experience, especially in the field of new technology investment banking, is crucial for the efficient creation, administration, and monetization of intellectual property assets.

Goal

GreyB is an expert at supporting its clients by offering specialised research and patent evaluations. The company uses its knowledge of the academic and commercial worlds to help clients assess and reduce the risks associated with

their research investment. The researchers on the GreyB team have backgrounds in a variety of sectors and are highly prepared.

In addition to information technology, electrical and mechanical industrial equipment, material sciences, metal alloys, software development, advanced technologies, consumer goods, bioengineering, medical devices, chemical material science, petroleum and gas, chemistry, medical equipment, healthcare, industrial manufacturing, and microelectronics, the company also excels in these areas.

Team Work at GreyB

The GreyB team has a user experience and a task-delivery process which makes it easy to optimize the execution of data contact. It aims more to explain the company objectives / queries underlying will appraisal, customized specifically to the product kit, also included reviews. All of this mix of consumer engagement, project-based reach of analytical testing and product efficiency allows company to deliver competitive customer services.

Work Culture at GreyB

The firm operates through licensed intellectual property lawyers, software creation marketing personnel, patent law companies (EPO, USPTO protocols), corporate IP, development and product designers, patent departments, code transition departments, compliance consultants, stakeholders and IP traders.

CHAPTER 2

INTELLECTUAL PROPERTY

Definition

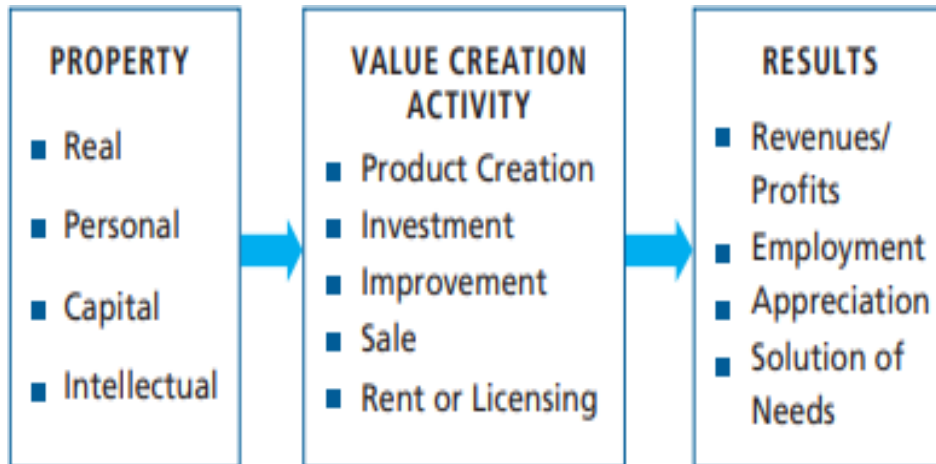


Fig. 2.1 Intellectual Property

Patents, trademarks, copyrights, design rights, and other intangible creations are all included in the category of intellectual property (IP), which also includes a variety of other intangible assets. These assets lack physical actuality and mostly come from artistic works.

The ability of intellectual property to make further earnings through acquisition and use sets it distinct from other assets. IP is acknowledged as a resource that generates returns in a variety of ways. IP relies on human experience, knowledge, and intelligence instead of having a quantitative nature like physical goods do. The presence of diverse intellectual property rights results from the regulation of each type of IP by particular laws and regulations. Manufacturing, business, and trademark improvements are the main topics of intellectual property. Inventions, concept licences, licenced trademarks, and trade secrets are all included. The different kinds of IP are:

Types

- 1. Patent:** It protects the invention which is novel, non-obvious and has some industrial applicability.
- 2. Design:** It upholds the exterior look of an item.
- 3. Copyright:** It preserves the creation of a concept, such as video, publishing or recording cultural, creative or literary content.
- 4. Trade Secret:** This prevents the industrially valued data of the institution which is kept private besides particular purposes.
- 5. Trademark:** It is a word, sign or some symbol legally attached, or established for use of signifying an organisation.

Patent

A patent is a piece of legal documentation that gives the owner the sole authority to manage how their invention is used within a specific geographic area and term, as stated in the patent claims. The ability to prevent anyone from producing, owning, or offering the invention for sale without the patent holder's consent is one of these exclusive rights.

Consider the patents issued for ground-breaking innovations like a smartphone battery with endless life, a vaccine to ward against Covid-19, or a cutting-edge substance that can purify tainted water. In each instance, a patent guarantees that the inventor has the sole right to economically use their idea and guards against unauthorised use or exploitation by third parties.

Patents encourage innovation by establishing exclusive rights that let innovators profit from their hard work and investment. This system stimulates development

and improvement in a variety of human endeavours, including science, technology, and engineering.

Purpose of Granting Patents

In order to get a patent, inventors must submit a thorough description of their invention to the patent office, which is then made available to the public. The goal of this disclosure obligation is to guarantee their safety and the preservation of their work. It is a key component of the patent system since it encourages the sharing of important scientific and technical knowledge in exchange for legal protection with the ultimate goal of promoting advancement.

A patent can be viewed as a privilege given to the inventor or creator, giving them the only authority to bar others from furthering, making use of, manufacturing, or commercialising their discovery. Patentable innovations might be procedures or final products that provide fresh and practical answers to issues. After a patent is approved, it is given legal protection for a period of 20 years starting from that day. Unless the patent owner regularly collects licencing payments or the patent is judged expired, at which point it is no longer considered valid, this period may be extended up to twenty years. This includes new approaches to doing tasks, distinctive product designs, or technology developments that improve the performance of already-existing items.

The patent system acts as a tool for motivating inventors by giving them the drive and exclusive rights to protect their creations. It not only promotes innovation but also makes it easier for people to share knowledge for the benefit of society as a whole.

The Value of a Patent

In addition to preventing others from copying your product's idea, applying for a patent gives you the opportunity to commercialize your creation and earn money by licensing the intellectual property rights to others. This indicates that you can benefit legitimately from your patents.

Reasons for Patent

According to patent organisations, a patent covers five main reasons:

- a) To maintain the status of being the original inventor.
- b) To make the innovation, after it has been created, publicly known.
- b) To put aside the money required for research and development.
- d) Making and selling the invention.
- e) To design and enhance improvements over earlier patents.

Legal Requirement for Patentability

There are a number of prerequisites that must be met in order to receive a patent for an invention. Among these requirements are originality, usefulness, and non-obviousness. Other legal requirements must also be addressed in addition to this, including the necessity for disclosure enablement, among others.

1. Novelty

Novelty is a crucial factor in determining whether a patent will be granted and is important to the criteria for patentability. For an innovation to qualify for patent protection, it must be brand-new. It shouldn't have been communicated to anyone or made public before the patent application was submitted. It is vital to keep in mind that while many countries, including the United States, just require that the invention be unique, several large nations require that it be novel at the time the patent application is submitted. A similar invention's uniqueness can be thrown out the window, making it unprotectable, if it has already been disclosed or published. An innovation cannot be protected by a patent if it lacks originality. But it's important to note that the notion of novelty varies by jurisdiction.

Even small changes might be deemed novel, therefore an innovation need not be ground-breaking to qualify as novel. The bar for novelty is strict in many

nations, which implies the invention must be completely unique. According to this criteria, any disclosure made anywhere in the globe is acceptable prior art for the same patent application. Legal precedent can also be derived from the actual inventor's deeds. Therefore, the innovator must hold back on disclosing their innovation to the general public before applying for a patent. In some nations, getting a valid innovation patent may be less likely if useful and inventive technology is introduced before the patent application.

In nations like the United States, the inventor can satisfy the demands for uniqueness by submitting a patent application within a year of making the invention public knowledge or putting it up for sale. The inventor's own disclosure cannot be used against the patent application as previous art during a certain time frame thanks to this one-year grace period. It does not imply, however, that an innovator must make their invention known to the public. A valid patent application may eventually be submitted in a nation with a longer grace period.

It is clear that different countries have varied standards for novelty, official records, and previous art. Before submitting a patent application, it is essential to carefully review and comprehend the relevant rules and regulations to ensure compliance.

2. Utility or Industrial Applicability

A certain degree of commercial application is required for an invention to be granted a patent. Technically, this is frequently referred to as infrastructure or commercial use, even if the two names have different connotations. If the innovation cannot be used to demonstrate its functioning, a patent may not be granted. In some places, ethical factors might also be taken into account, which might result in the denial of patent rights.

The patentability requirements for utility do not need an invention to show superiority over currently available goods or processes. The only focus of the

usefulness requirement is on carrying out the tasks that the inventor describes in the patent.

When the patent claims follow a specified format, the requirement of industrial applicability is met. An instance will help to illustrate this. Let's say that during the patent examination, the examiner discovers that the innovation stated by the patent applicant can be used in an industrial setting by rearranging the patent claims.

In essence, an invention need not be commercially beneficial to meet the necessary requirements or requirement for usefulness. Imagine that an inventor has found a brand-new variety of diamond. It is discovered that the special characteristics of this particular diamond prevent water from freezing on its surface. The creator concludes that this invention can be used in the plumbing sector to stop pipes from freezing during cold weather. However, it would be too expensive to use the diamond-infused pipes on a regular basis. Diamonds in water pipes would not, therefore, satisfy the utility criteria.

3. Inventive Move / Not common step

Non-obviousness is the last but most important criteria for acquiring a patent. It is significant to note that this criterion is regarded as an indicator of creative step in many nations. A person with ordinary skill in the relevant field must not have seen the innovative component of the invention. In plainer terms, it indicates that an ordinary individual working in the field shouldn't get to the same invention as a result of the combination of known facts. Each nation has a different requirement's time frame. However, it is normally determined at the time of invention or at the time of application by the applicant.

Trade mark

A trademark is a unique symbol or design that distinguishes a company's products or services from those of other businesses on the market. It could be

viewed as a mark that distinguishes a company's goods or services from comparable ones provided by other businesses.

A trademark might be a logo or a particular sign. It serves as a way of visually identifying and displaying a specific business or brand.

When a trademark is registered, the owner is given the legal right to protect their name or symbol, preventing unauthorised use by others. Owners of trademarks are able to secure their brand identities thanks to this legal protection. Typically, trademark registrations are valid for ten years and can be renewed on a regular basis. Intellectual property includes trademark registration, which grants the trademark owner legal rights and protections.

What is the benefit in registering a trademark?

When a trademark is not licenced, the business cannot rely on the civil law's protection to protect the trademark against imitation or abuse. The corporate body does, however, acquire legal authority over the registered trademark if a trademark is licenced. For a business, trademarks are important since they are utilised to safeguard profit margins. They may be licenced for a set charge or assigned to foreign organisations like franchisors. This gives third parties the ability to utilise the trademark to aid the business's fundraising initiatives.

It is important to note that trademark registration is not required in Singapore.

Copyright

Copyright is a type of intellectual property that primarily relates to artistic creations. A copyrighted work's author is frequently referred to as the copyright holder. Photographs, sculptures, poems, essays, plays, dances, and more are examples of works that can be protected by copyright. Technology-related

elements such as software code, technical specifications, and related documentation may also be covered by copyright protection.

Copyright is fundamentally different from intellectual property (IP) in that it is exempt from regulatory agency clearance. Contrarily, IP rights must be properly registered and awarded by the appropriate governmental body. Anyone is able to file a patent or trademark litigation in a courtroom. It is crucial to remember that patent applications are frequently written by professionals with specialised understanding in the industry, such as patent officers and patent attorneys.

Important aspects of copyright to remember are:

- Exclusive rights are granted by copyright to the author of an original work, usually for a predetermined period of time.
- Although ideas or information are not specifically protected by copyright, the way those ideas are expressed or presented is.

Benefits of Copyrights

The expression and dissemination of creative works, such as literary and artistic works, are protected by copyright. It includes a range of artistic endeavours, such as written literature, computer algorithms (in the form of source code), and other kinds of creative expression.

The exact expression or material form in which such ideas are communicated is what is protected by copyright rather than the actual ideas or ideologies themselves. This means that the copyright holder has the sole right to reproduce, distribute, and display their work and that the actual words, drawings, or other tangible representations of an idea may be protected under copyright law.

Things not comprised in copyright

Specific matters not really protected by copyright shall involve: processes, theories, techniques or innovation and development.

Rights for Industrialized Design

Another type of intellectual property protection that covers the aesthetic design of non-functional things is the design right. It covers the general positioning and composition of the 3D model, colour, pattern, and shape that give an object its sculptural or aesthetic meaning. The design can take the shape of a 2D or 3D template that is used to produce items, manufactured goods, or works of art.

Design rights cover non-purely functional things' aesthetic appearance. It encompasses the creation of a structure, arrangement or configuration of a design or colour, or a combination of both, in a 3D representation that communicates a structural meaning. A component, architectural material, handcrafted object, or other item may be manufactured using a 2D or 3D representation of the architectural design.

Trade Secret

A trade secret is any method, system, process, arrangement, gadget, technique, or body of information that gives a business an advantage over customers or competitors but is not commonly recognised or readily available.

If kept hidden, trade secrets can last for a very long time and continue to be safeguarded. A trade secret may persist indefinitely, surviving until it is revealed to the public or is otherwise made public.

Trade secrets include a variety of unpublished information kinds, such as techniques, tools, devices, groups, or sequences of information that are not widely used or immediately recognisable. Their worth is derived from their secrecy and the advantage they give the company that owns them over competitors.

CHAPTER - 3

PATENTS

Types of Patents:

- 1. A utility patent** can be obtained for the development of a useful method, apparatus, manufactured good, or material composition. Examples of patents for utility include optical connections, pharmaceuticals, and electronics.
- 2. A design patent** may be given to someone who creates a brand-new, unique, and appealing look for a manufactured item. A few examples of design patents include the creation of a running shoe, a bicycle suit, and the creation of the Avengers character designs.
- 3. A plant patent** can be obtained for a brand-new, unique type of plant that can reproduce asexually and was created by a person.

While a utility patent frequently describes how a product functions and is used, a design patent protects the object's outside appearance. Further usability and design patents may be sought for an item if it is novel in terms of its utility or appealing design.

A provisional application is a straightforward patent filing that merely includes the broad strokes of an invention. A non-provisional filing is a whole application for a patent that includes claims, drawings, and specifications. It could be necessary to submit a non-provisional application within one year after the preliminary file date.

What a Patents look like?

The structure of a patent application typically includes the following elements:

- **Applicant:** This section contains the names of the individuals or entities seeking to secure the patent rights.

- **Inventor:** This section lists the name or names of the inventor or inventors who created the invention.
- **Description:** This section provides a detailed description of the invention and helps clarify the patent claims.
- **Claims:** This section includes the statements that define the scope of the protection granted by the patent law.
- **Citations and references:** This section lists any relevant prior art or references cited in the patent application.

Front Page

(12) **United States Patent**
Dean et al.

(10) **Patent No.:** US 6,849,223 B2
(45) **Date of Patent:** Feb. 1, 2005

Title

(54) **FABRICATION OF A POLYMERIC PROSTHETIC IMPLANT**

(73) **Inventors:** David Dean, Shaker Heights, OH (US); Malcolm Cooke, Richfield, OH (US)

(73) **Assignee:** Case Western Reserve University, Cleveland, OH (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 372 days.

(21) **Appl. No.:** 10/127,019
(22) **Filed:** Apr. 19, 2002

(65) **Prior Publication Data**
US 2002/0171178 A1 Nov. 21, 2002

Related U.S. Application Data
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(51) **Int. Cl.** B29C 35/08
(52) **U.S. Cl.** 264/400; 264/401; 264/482; 264/494; 156/272.8; 156/273.5; 156/275.5; 156/298; 156/303.1; 156/379.8

(58) **Field of Search** 264/400, 401, 264/482, 494; 156/272.8, 273.5, 275.5, 298, 303.1, 379.8

(56) **References Cited**
U.S. PATENT DOCUMENTS
4996,010 A * 2/1991 Modrek 264/401

Patent Number and Issued Date

Inventors

Assignee

Filing Date

Field of Search

References Cited

ABSTRACT
(57) Processes for fabricating a customized, three-dimensional, bioerodable, polymeric prosthetic implant are provided. In a highly preferred embodiment, the prosthetic implant has a porous network. The method employs a stereolithography process in which a solution comprising chips of one or more polymers and a photoinitiator is placed in a highly preferred embodiment, the solution comprises poly (propylene) fumarate (PPF) and a solvent for controlling the viscosity of the solution. During the fabrication process, the solution is placed in a container in the stereolithography instrument. The solution is exposed to UV light through a mask on a field platen for supporting the solution. The solution is cured when successive layers of the solution are exposed to UV light. The cured layers are then removed from the field platen and are forced into a mold to produce a pattern of cross-linked and non-cross-linked polymeric regions corresponding to a cross-sectional image of the three-dimensional CAD image.

15 Claims, 5 Drawing Sheets

29

Fig. 3.1 Parts of a U.S Patent

Patent Laws

A provisional application is a straightforward patent filing that merely includes the broad strokes of an invention. A non-provisional filing is a whole application

for a patent that includes claims, drawings, and specifications. It could be necessary to submit a non-provisional application within one year after the preliminary file date.

Patent Analysis and File Wrapper

A patent file wrapper is a folder that collects all the papers related to a specific patent application and contains a comprehensive record of proceedings at the United States Patent and Trademark Office (USPTO) from the initial filing to the granted patent. It includes every communication that takes place between the inventor/attorney and the patent office.

According to patent law, any individual who invents or develops a unique and useful method, system, product, or composition of matter, or an improvement thereof, may be granted a patent, provided it meets the requirements of the law. The term "method" refers to a process or system, typically involving industrial or technological methods. "Machine" and "manufacture" are self-explanatory, while "composition of matter" applies to chemical compounds and mixtures. These categories cover virtually everything created by humans, except for the methods of production.

The statute requires that the subject matter must be "useful" or "practical." This means that the subject matter must have a practical purpose or use, and a computer that does not work for its stated function would not be considered useful and therefore not eligible for a patent. Definitions of the legislation even by judiciary further established the boundaries including its sphere of subject-matter that may be copyrighted, and moreover it is being claimed that only the rules of physics, observable processes and theoretical theories really aren't protectable.

The patent will never be secured on the grounds of a specific concept or recommendation. This same patent application on a new computer, production, etc., as it has been said, and not just on the idea or proposal of a new device. A

detailed explanation of the specific computer and perhaps other subject-matter from which a patent is obtained is needed.

3.4.1 How to perform file wrapper analysis?

As per the PTO, the "file wrapper" is just the directory where only records for either a given program are stored and preserved. It provides a full documentation of the litigation of the PTO after the registration of the preliminary patent petition in favor of the patent granted.' A patent file wrapper includes all correspondence with the applicant (or his attorney) with the PTO.

It contains certain step taken by the Company, the order for approval, the pledge and also the document, as well as the details of the patent investigator's consultation.

The importance of the file wrapper cannot be overstated. According to the PTO, it contains the official information on the prosecution of a patent case in the United States Patent and Trademark Office, which is more than just the actual documents. The court record, which determines the nature of the asserted invention and the rights of the patent owner, is crucial for the existence of the patent. The concept of file wrapper estoppel points out how the scope of the patent may be limited by the details in the file wrapper.

To access the file wrapper, a search must be performed on the patent in question. For example, the patent number US8644875B2 can be searched to perform a file wrapper analysis.

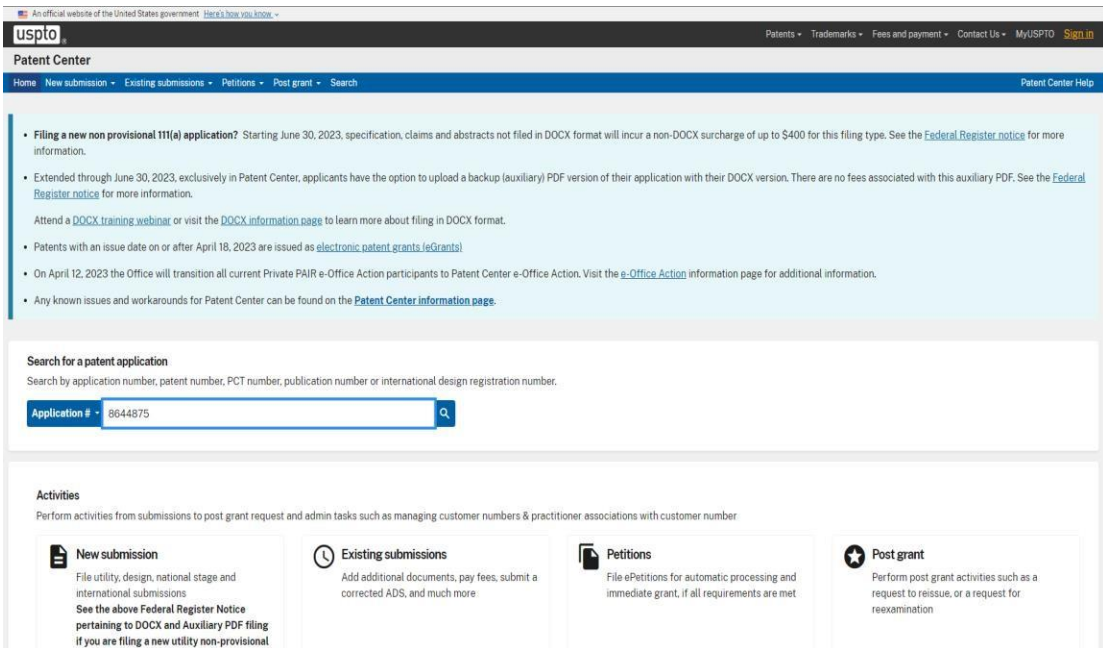


Fig 3.2 Patent Centre search screen for searching patent US8644875B2

After filling the patent number, we are taken to USPTO record.

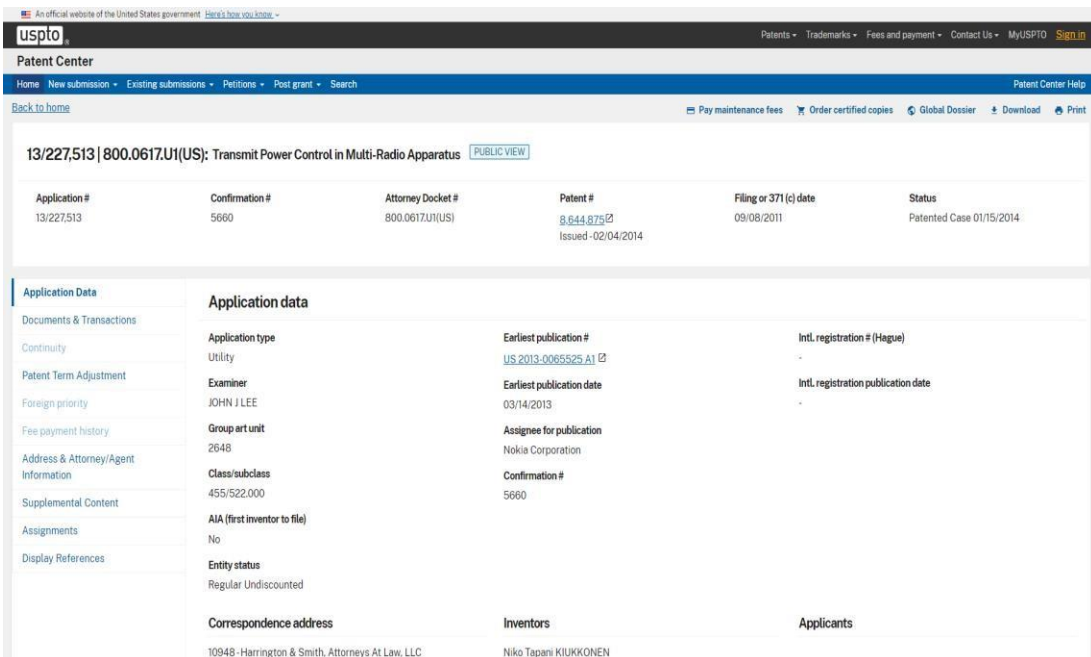


Fig. 3.3 Application data tab for patent US8644875B2

One searches the fees tab for further details. If we choose the "fees" tab, a new window relating to the USPTO Maintenance database emerges. Copy the patent

application number, then type it into the search box. The following image depicts the next page that has been opened:

The screenshot shows the USPTO Patent Center interface. At the top, there is a navigation bar with links for Home, New submission, Existing submissions, Petitions, Post grant, and Search. Below this, the patent title "13/227,513 | 800.0617.U1(US): Transmit Power Control in Multi-Radio Apparatus" is displayed with a "PUBLIC VIEW" button. A table provides key details: Application # 13/227,513, Confirmation # 5660, Attorney Docket # 800.0617.U1(US), Patent # 8,644,875B2 (Issued - 02/04/2014), Filing or 371 (c) date 09/08/2011, and Status Patented Case 01/15/2014. The main content area is titled "10 Assignments found" and shows "Assignment 1" with details for Reel/frame (027328/0586), Date recorded (11/16/2011), and Pages (6). It also lists Assignors (KIURKONEN, NIKO TAPANI; ONG, ENG HWEE; MARIN, JÄNNE), Execution dates (10/07/2011, 10/07/2011, 10/14/2011), and Correspondent (HARRY SMITH; HARRINGTON & SMITH ATTORNEYS AT LAW, LLC; 4 RESEARCH DRIVE, SUITE 202). The Assignee is NOKIA CORPORATION, KEILALADENTIE 4, ESPOO, FINLAND FIN-02150. A sidebar on the left contains navigation links for Application Data, Documents & Transactions, Continuity, Patent Term Adjustment, Foreign priority, Fee payment history, Address & Attorney/Agent Information, Supplemental Content, Assignments (selected), and Display References.

Fig. 3.4 Assignments tab for patent US8644875B2

Let's now click on the "Get Bibliographic Data" button. By using this button, we ask for information on the upcoming submission window's date and the associated charge.

It is now studied under the Patents Term Adjustment tab.

13/227,513 | 800.0617.U1(US): Transmit Power Control in Multi-Radio Apparatus [PUBLIC VIEW](#)

Application #	Confirmation #	Attorney Docket #	Patent #	Filing or 371 (c) date	Status
13/227,513	5660	800.0617.U1(US)	8,644,875 B2 Issued: 02/04/2014	09/08/2011	Patented Case 01/15/2014

Patent Term Adjustment

A Delays	B Delays	C Delays	Overlapping Days	Non-Overlapping USPTO Delays	PTO Manual Adjustments	Applicant Delays	Total patent Term Adjustments
251 days	0	0	0	251 days	0	0	↑ 251 days

Patent term adjustment history

Showing 1 to 10 of 45 entries

Number	Date	Contents Description	PTO (Days)	APPL (Days)	Start
50.5	02/04/2014	PTA 36 Months		0	0.5
50	02/04/2014	Patent Issue Date Used in PTA Calculation		0	0
49	01/10/2014	Dispatch to FDC		0	0
48	01/09/2014	Application Is Considered Ready for Issue		0	0
47	12/24/2013	Issue Fee Payment Verified		0	0

Fig. 3.5 Patent term adjustment tab for patent US8644875B2

Let's examine the Display References tab now. This page displays all of the filled-out patent's references.

13/227,513 | 800.0617.U1(US): Transmit Power Control in Multi-Radio Apparatus [PUBLIC VIEW](#)

Application #	Confirmation #	Attorney Docket #	Patent #	Filing or 371 (c) date	Status
13/227,513	5660	800.0617.U1(US)	8,644,875 B2 Issued: 02/04/2014	09/08/2011	Patented Case 01/15/2014

Display references

U.S. Patent Documents (1) Reference Forms (5) Foreign Patent and Non Patent Documents (3)

1 documents found

Date	Form type
07/14/2013	892 View

10 per page Page 1 of 1 Previous 1 Next

Fig. 3.6 Display References tab for patent US8644875B2

Let's investigate the most crucial tab, Image File Wrapper. We may learn about every office activity made in this tab.

Mail room date	Doc code	Doc description	Pages	Quick download
05/27/2014	COCOUT	Certificate of Correction-Post Issue Communication	1	Preview PDF
03/21/2014	COCIN	Request for Certificate of Correction	4	Preview PDF
01/15/2014	ISSUE.NTF	Issue Notification	1	Preview PDF
12/24/2013	IFEE	Issue Fee Payment (PTO-85B)	2	Preview PDF
09/25/2013	NOA	Notice of Allowance and Fees Due (PTOL-85)	8	Preview PDF/ XML/ DOCX
09/25/2013	SRNT	Examiner's search strategy and results	3	Preview PDF
09/25/2013	IFW	Issue Information including classification, examiner, name, claim, renumbering, etc.	3	Preview PDF
09/25/2013	SRPW	Search information including classification, databases and other search related notes	1	Preview PDF
09/25/2013	SRNT	Examiner's search strategy and results	3	Preview PDF
09/25/2013	BIB	Bibliographic Data Sheet	1	Preview PDF
09/25/2013	FWCLM	Index of Claims	1	Preview PDF
09/25/2013	SRNT	Examiner's search strategy and results	22	Preview PDF
09/17/2013	A...	Amendment/Request for Reconsideration-After Non-Final Rejection	1	Preview PDF
09/17/2013	CLM	Claims	8	Preview PDF/ XML
09/17/2013	REM	Applicant Arguments/Remarks Made in an Amendment.	2	Preview PDF
09/17/2013	N417	Electronic Filing System(EFS) Acknowledgment Receipt	2	Preview PDF
09/17/2013	WFEE	Fee Worksheet (SB06)	1	Preview PDF

Fig 3.7 Patent US8644875B2's Documents & Transactions tab

Consumers have access to copies of court documents

CHAPTER - 4

TYPES OF SEARCHES

Types of Searches

1. Prior -Art Search
2. Landscape Analysis
3. Infringement Analysis

Prior-Art Search

Everything that was afterwards recorded and may have contributed to the creation of an alleged "invention"

The innovation is valid and may only be patented since it differs from the previous art and is not an evident derivation of the prior art, i.e. there was human intelligence involved in its production.

Prior-Art Search is the process of locating pertinent Prior-Art references in a certain context. It might contain:

- Check the patent / non-patent database
- General quest on the Internet for news stories, posts, forums and other resources
- Identification and consultation of specialists in the sector
- Virtual examination of the 'still-to-be-digitized' collection

Landscape Analysis

1. Patent landscaping is only a subcategory of infringement research that also entails a thorough examination and search of patent-related records. These records concern the area of patent technology.

2. The detailed explanation of the equipment is organised around the member of the organisation. These divisions are made in accordance with the analysis's goal. In this type of search, all records pertaining to the patent are examined and categorised to enable customers to get the most out of the available database of patent information.

Infringement Analysis

Determining that a product or procedure violates a patent requires expert research. Patents can use infringement research to establish whether a product or method violates intellectual property rights.

In this regard, copyright analysis aids companies that are connected to a product or method in determining if a service or tool violates intellectual property rights. A critical stage in the development or modification of a product or series of goods is the detection of a violation.

CHAPTER - 5

INFRINGEMENT ANALYSIS

What is Infringement Search

In the field of patentable innovation, it is a command of an unlawful conduct. Use of the innovation by a third party without the patent owner's consent is a patent infringement. The patent holder may provide a licence to the other party in exchange for authorization. Different jurisdictions define patent infringement differently. However, selling, using, proposing to sell, or creating an already patented version of the creation is the basic concept of patent infringement. Most of the country consider this conduct to be a patent infringement if it uses the patented innovation for profit or has a profit motive.

Objective of Infringement Analysis

There are many various forms of analysis that can employ infringement search, for example.

- Modification of the claim throughout the legal action
- Recognition of unauthorised usage of the patented innovation
- Opportunities for Licencing (Licensing-IN & Licensing-OUT)
- Patent Trimming and Monetization

Approach to Investigating Patent Infringement Searches

Searches for infringements don't always provide the right response. Some people could come across as pleasant.

The method for looking for patent violations is as follows:

1. The widest defence of the patent is the first stage in the investigation of a patent infringement. The most restricted component of the argument must be chosen after the widest one. Find the most stringent priority claim item first,

please. The innovative section of the application for a patent might be chosen if it is impossible to pinpoint the argument's most restrictive component.

The selection of an inventive portion of the invention claim or its most demanding portion has a purpose. We shall expeditiously find patent infringements by selecting the components of the aforementioned assertions. We have to spend more time on the most restricted component of the assertion or the novelty of the patent claim since spending more time on the tremendous issue of the claim is a waste of effort because such apparent elements will still be worked out. Some of the claimed elements take less time to test when the exclusivity of the formula's limiting factor is confirmed. Here, it is important to point out that there are instances in which the medicine does not include the limiting components. In these situations, we should move on to another issue and neglect the first. Note that that's not always the case.

Undoubtedly, there are some lengthy patents. How to deal with these kinds of lengthy patents is the current problem. For your information, a number of Chinese patents have grown thus lengthy as a result of inadequate justifications.

The following approach is taken to cope with such lengthy patents:

The claims must be divided into groups under the smaller provisions. These clauses can be further broken down into the argument's parts. The work-flow of the patent application must be examined. It will be accomplished by weighing all of the patent application choices in practical situations.

Then, with the support of arguments derived from the description of part of a patent, we will support the aspects of our argument in order to gain an improved understanding of the patent.

The history of the patent case may also be used to extrapolate a claim's authorization. This stage does get better.

My limited experience in this industry led me to provide the following advice. Additionally, there are situations when it is impossible to locate a claim's patent specification. In these circumstances, a short Google search will be conducted. When merely looking at a fraction, more care must be taken to conduct the

search in the context of patent discovery. If you have experience working in the industry, you can even look at earlier patents in the same field of invention to see how some of those arguments were addressed in those patents.

Undoubtedly, we are not finished here. Instead, we should go through the far less-known process of re-reading the statements.

As we complete one phase, we must go on to the next. The following step enables one to ascertain each of the argument's constituent parts.

Additionally, we have reached a stage where even the meaning or connection of words might be ambiguous. Think of how the term "computer equipment" may be mentioned in the patent. However, because the phrase is so wide, it is difficult to comprehend precisely what the patent's inventor intended to limit to that word. The purpose of the components in these statements must then be specified.

To describe the distance, we shall go through the terms of the patent. We shall discuss the history of the patent filing cover when we are still unsure about the reach. You could be asking yourself at this point whether it's not necessary to evaluate the file wrapper's history and whether it's sufficient to merely limit patent searches. Yes, we do need to connect with a file wrapper in situations when there is some uncertainty about the distance.

Let me use this example to help you understand the idea:

A month ago, I utilised SEP to operate. By reading through the patent claims, I generally tend to gain a quick summary of the invention. And this was a unique situation. The accusation's wording was ambiguous. The argument's words frequently made little to no sense, and some of them were even impossible to understand. But in the end, I read the patent's specification. The information provided in the patent summary was frequently ambiguous.

This indicates that one must examine the patent's file wrapper in order to define the character of the claim item because simply reading the majority of patent claims and their definitions is never sufficient.

Following the dissemination of the patent claims, the following action is taken:

3. Keep in mind all possible applications for the product before choosing the ones with the largest market shares.

If you decide to stop looking for a component after this, it will be a good thing. It's also wise to become aware of workable design implementations. The entire procedure will unquestionably assist the clients in utilising his innovation to the fullest.

Take a look at an illustration and assume the patent requirements pertain to the imaging system. You're going to look up camera equipment when you hear the word imaging system. However, there are also a lot of possibilities to uncover this claim component in products. Robots, computers, automobiles, diagnostic tools, and a number of other items may fall under the heading of imaging equipment. You would be surprised to learn that the search will be so nimble that we discover subcategories of cameras that might include alarms, security cameras, DSLRs, etc. It is assumed that if the patent conflicts with one or more of the items mentioned above, it will also conflict with the remaining items at issue. If we don't take into account all of the patent's possible applications, we will be able to limit the customer's ability to profit from the innovation.

4. Classification of its most available literature (product literature)

When I've finished studying the invention, I've begun generating Google searches to look for products. But we need to look for counterfeit items in a much more rational way. Even the smallest number of the documentation's important phrases won't be sufficient.

Despite all of this, we may still conduct some inquiry by posing a few further questions, such as: What could be the product that is infringing the innovation?

What possible advantages may technology offer if the maker doesn't make use of it?

When and how will the relevant information be found? Would there ever be a situation where the business would reveal it to its customers?

There may be a chance that verifying the product will make it simpler to find overlaps.

Would it be essential to check YouTube or even new tech review websites to see the true information?

This makes me more aware of the situation I have to deal with in the future. This brings to mind an incident from a while back when I was discussing drug mapping with my direct boss. In this instance, it must be established that the daily sounds and texts are part of the same document (a correspondence thread). Additionally, it was our responsibility to demonstrate that the communication method (such as sound or print) is specific to the programme in question.

In that instance, I can remember why I didn't reach for the product documentation right away given that I knew which lead was the most pertinent. This aided in identifying the innovation's operational environment. Mixing the sequence of events with the invention clearly paid dividends in the long run.

5. Use of search functions such as proximity operators

We'll be conducting some online research during the ensuing cycle of the search. We must choose a discover string related to the innovation in order to locate the component. It's possible that DocFetCher is what makes scanning possible. This technique aids in locating the element. Any specified record may be scanned and examined using this approach, which also employs proximity operators.

I could definitely recall from my point of view the instance of the research done on a project by John Coworker. John recently entered the competition. He also interacted with the company in some way. On a 3GPP proposal, he worked.

Ron made the decision to learn more regarding the 5 G concept. He made the decision to take into account the fact that 5 G makes use of an IP infrastructure. John is therefore definitely kind 5 G Near (the internet Protocol). By the way, that's how you find out on Google Patents.

Sadly, John was discouraged by his failure to find the desired outcome of his search. He attempted to discuss this with his tutor, who advised him to experiment with various search string combinations. For instance, although he had used NEAR, he might have used AROUND.

The advice from his mentor made his day better since it allowed him to get the necessary information for this string change.

similar to the momentary updates I find useful when searching on Google. I'm using some of the following Google search operators:

Related operator: This user's credentials may be used to locate regional websites.

The entire process of searching could aid in locating alternative businesses in a pertinent field.

The *.. * operator is another option. This allegedly use a range of numbers.

For example, we'll use the above search term with the *.. * Operator to find a few smartphones footage throughout 2015 and 2019, but not from any other years.

Smartphones with video 2015–2019

It might assist you in finding information within a constrained time frame. The term "filetype" limits an individual file type's effects. While "ext:" and other search phrases are additionally utilised on occasion in this context.

such as the Microsoft PowerPoint file format.

This could make it easier for us to find reliable information. Whether at least 42 keywords have been found on each webpage is a crucial supposition.

6. Generate tentative mapping

And after I've shown that practically all of the assertion's constituent parts can be found in the data, I'll try to map it out to confirm the resemblance. A claim piece or a sequence of events that were followed by an argument may be skipped after we have made a mental comparison. When preparing a mapping that shows

a side-by-side comparison of the claim component with the item, as shown in the figure, this is when.

We must prepare a temporary mapping until it is clear if any aspect of the argument eliminates the medicine. To test the infringement, this kind of mapping is required. We are inclined to forget the point of the argument when there exists a mental comparison. But this is the time when we will start to genuinely recognise the worth of a mapping work.

That by itself enables you to draw the conclusion that every single claim component overlaps, and it may also help their mentor analyse overlaps, thereby making it much simpler to begin putting together proof of Using (EOU) charts if necessary.

Assuring that every component of the claim's argument overlaps is helpful. This will also motivate the professor to investigate the infraction, which is usually best done when there isn't enough time to compile the Evidence of Use (EoU) charts. The preceding may be an instance for mapping performed tentatively:

Claim	Product literature	Comments
<p>a storage system for storing information accessible by the blade server system via the middle plane;</p>	<p>The ***** Storage Blade delivers direct attached storage for c-Class servers, with support for up to twelve hot plug small form factor (SFF) SAS hard disk drives or SAS/SATA SSDs or SATA Midline hard disk drives . The enclosure backplane provides a PCI Express connection to the adjacent c-Class server blade and enables high performance storage access without any additional cables. The ***** Storage Blade features an onboard Smart Array ***** controller with 1 GB flash-backed write cache, for increased performance and data protection.</p> <p>Source: nameoftheinfringer.com</p>	<p>***** - Name of actual product hidden to not reveal confidential information.</p>

Table 5.2.1 Tentative Mapping

In addition to highlighting the language's basic commonalities using colours, we can also use notes to make it easier for the reader to visualise the information.

The following follows from the aforementioned strategy:

Each person has a unique approach for handling an issue. What occurred that worked for me probably wouldn't work for others. As I already indicated, although some inquiries look like they would be lovely to answer, others make you feel like you need to do them right now. You probably won't revolutionise the status quo, and now that we've exhausted our own options, we're trying to take a number of actions to improve things.

Growing each of us is unique and appears to take a certain strategy to resolving the problem. It is extremely possible that that's what occurred, as what works for one person may not work for another. However, certain searches may be quite attractive while the majority of queries leave the searcher perplexed. It should be noted that this issue has not been rectified, but we might have a respectable strategy and be working to improve its allure.

CHAPTER - 6

PROJECTS WORKED ON

Since it is corporate policy to keep customers and many project specifics confidential, I will attempt to summarize the projects I worked on while keeping in mind this policy.

The projects I worked on are listed below:

1. 5G Study
2. 5G Infringement Study
3. eVTOL Aircraft Patent Study
4. Online Ads Study of company XYZ
5. Article writing for company's website

5G study

Objective of the project:

This project is for a client that requests a count of the number of companies whose patents have been certified 5G standard essential (SEPs).

What is Standard Essential Patent (SEP)

SEPs, or standard-essential patents, cover patents that specify that they adhere to the current technological norms. The production of technological requirements by designated standards organizations enables applicants to report and grant patent licenses. The unanswered patent claims are in line with the demands that every business has.

What is 3GPP

Seven common partnership organisations focused on telecommunications infrastructure make up the 3rd Generation Partnership Project (3GPP). The mentioned 3GPP delegates are:

- ARIB
- ATIS
- CCSA
- ETSI
- TSDSI
- TTA
- TTC

The Corporate Partners are these seven organisations. They offer colleagues a reliable setting for the creation of technical reports and standards that represent 3GPP technology.

Conclusion

I used similar approach with 5G patents. Numerous patents need to be evaluated for this project. So, in order to examine more patents in a shorter amount of time, we had to become more strategic in our analysis of these patents.

During my first training, I was required to create a preliminary mapping for each patent, and discussions concerning my knowledge of the patent and the mapping were held with my mentor. The main goal of the patent analysis was to determine if the provided invention is a standards essential for 5G technology or not.

6.25G Infringement Study

Objective of the Project

The client for this project gave us a list of specific firms that it wished to target. The customer requested that we demonstrate product and patent overlap for the listed firms.

Project Responsibility

The customer has a significant patent portfolio, maybe numbering over 40,000 patents. Their portfolio contains patents for many technologies. I was in charge of filing the 5G technological patent.

Strategy Involved

As I previously noted, the client's portfolio contains a sizable number of 5G patents. Out of hundreds of patents, I had to choose 8 patents. To complete it in a shorter amount of time, I required a plan of action. So the following is the approach I took:

- Patents having priority dates earlier than the most recent revision of the 5G standard were chosen. For that, we employed in-house software.
- We selected a few of the most discussed 5G domains and screened the remaining patents based on keywords associated with these 5G domains.
- Next, we determined whether or not those patents were standard necessary. We were left with a relatively limited number of patents using typical essential patent criteria.
- Then we choose the patents with the most inclusive claims.
- From hundreds of patents, we chose 8 in this manner.
- Based on the items' sales, pick products from the targeted firms.
- Cross-reference these goods with the patents.

Work done in the Project

The work that was completed on the project is listed below:

- a) Mapping of patents with 5G standards.
- b) Preparing Tech Charts.
- c) Preparing Detailed Infringement Analysis (DIA) report.

Mapping of patents with 5G standards

We must demonstrate that the client's patents are SEPs in order to demonstrate product overlap with the targeted entities. The reports above section explains how we demonstrate that a patent is SEP. By designating a patent as a SEP, we can readily demonstrate how the offered 5G device infringes on the patents. A vital element in this undertaking is proving that the invention is SEP.

Preparing Tech Charts

We create tech graphs for the goods and patents in this stage. Another critical phase for the undertaking is the creation of a tech chart.

What is a tech chart?

It is a document that provides a basic degree of mapping between standards and patents. In this instance, tech charts feature a fundamental level of patent mapping to 5G standards.

Contents of tech chart:

- Overview of the patent
- What is disclosed in 5G standards
- Text from 5G standards

Creating a technology chart is essentially a middle stage that demonstrates product overlap. We make sure that the provided patent does not overlap with the standards by creating a tech chart.

Preparing DIA (Detailed Infringement Analysis)

In this manner, we demonstrate a patent-protected product's violation. We receive an interim report from the DIA report. It is not my role in this project to produce the Evidence for Use and Claims Chart using the DIA report. The Evidence of Consumption and Infringement Chart is a piece of documentation that one brings to a lawyer's office to demonstrate product infringement.

eVTOL Aircraft Patent Study

Objective of the Project

This project is for an aircraft manufacturer that wants to determine whether certain businesses are violating its patent. A technique for creating an eVTOL (Electronic Vertical Take-Off and Landing) aeroplane was claimed in the patent. Some of the leading manufacturers of eVTOL aircraft piqued the client's attention. To pique his interest in our examination of the violation, we intended to offer him a bargain. We wanted to construct the preliminary for him to propose a contract. Finding the main goods from renowned aviation manufacturers that have been infringed upon is the primary focus of this preliminary.

Project Responsibility

I was given the task of creating a preliminary report for the customer. This preliminary report is crucial in converting the customer into a devoted patron of our business. The customer may hire the project on a long-term basis if he or she likes this report and considers the defined infringement strategy appealing.

Strategy Involved

Following is the strategy incorporated with the project:

- Understanding the patent
- Selecting major aircraft manufacturers
- Selecting major products of picked manufacturers
- General product literature study of each product
- Basic level mapping for each product with subject patent

Work done in the project

Understanding the patent

Patent claim and patent descriptions are used to comprehend a patent's essential concepts. The largest claim that potentially affect the most items is chosen. The patent file wrapper examination is then carried out. From file wrapper analysis, the most restrictive claim element and unique portion of the invention are inferred. The inferred claim portion aids in our further study of infringement.

Selecting major aircraft manufacturers

The best aeroplane manufacturer that produces eVTOL aircraft is chosen after studying the patent. Based on their sales, top manufacturers are chosen through a market analysis. Priority is given to the firm with the highest revenue over manufacturers with lower revenue. The customer earns greater royalty payments from them by selecting large fish.

Selecting major products of picked manufacturers

We choose their key items after choosing the primary target firms. Such items are chosen depending on their level of commercial success. Here, the goal is to choose a patent-infringing product that is also a top seller on the market. This tactic allows the client to profit as much as possible from the violation of his patent.

General product literature study of each product

After selecting the best items, we research each one thoroughly. We make an effort to compile and examine product literature. The objective is to determine how this specific product might be related to the patented invention. We make an effort to read as much of the good literature as we can. This broad research aids us in the investigation of product infringement that follows.

Basic level mapping for each product with subject patent

Following a basic review of the product literature, we determine whether or not each product violates the patent. This approach heavily relies on the file wrapper research that we carried out in the preceding stage. The newest and restrictive claim feature is usually overlapping with product literature. The amount of time we spend for product mapping is reduced as a result.

Online Ads Study of company XYZ

Objective of the project

The customer requested that we violate internet advertising networks that conflict with its patent. The client first provided a list of some of the possible violators. We anticipated discovering more of these counterfeit goods.

Project Responsibility

I was required to provide a Claim Chart and Evidence of Use for any potential infringing items. The Proof of Usage and Claim Maps are proofs that may be shown in courtrooms to demonstrate the product's infringement.

Strategy involved

Following is the strategy used in this product:

- Patent understanding

- Prepare tech charts
- Prepare DIA (Detailed Infringement Analysis)
- Prepare Evidence of Use and the Claim Charts

Work done in the project

The project required extensive work to be completed. The work completed on the project is listed below:

Patent Understanding

We must first completely comprehend the patent. By reading through the claims in the patent and using claim enabling with the patent description, the invention may be understood. The file wrapper examination is then carried out. Finding the patent's new and limiting elements is what it entails.

Prepare Tech Charts

We create tech diagrams for the goods and patents in this stage. Another critical phase for the project is the creation of a tech chart.

What is a tech chart?

It is a specific kind of document that offers a fundamental level of mapping from patent to product. Tech charts in this case offer a basic degree of patent matching to business XYZ's online advertising platform.

Contents of tech chart:

- Overview of the patent
- Basic level of mapping

Creating a technology chart is essentially a middle stage that demonstrates product overlap. By creating a tech chart, we make sure that the product and the granted patent do not overlap.

Preparing Evidence of Use and Claim Charts

Since this is the product of the patent, this portion of the endeavour is quite important. This is the proof that the client must provide to the courthouse in order to prove that another firm violated his patent.

Let's first define proof of usage and claim charts before moving further with the procedure.

We need to comprehend the product in order to prepare the proof of usage and claim charts. The product under this project is a platform for online advertising (like LinkedIn Ads). We first needed to comprehend how these internet advertising networks functioned. Going over product literature could be part of this. After learning how the internet advertising network operates, we attempt to demonstrate product overlap.

For this, we make highly precise mappings between the subject patents and the desired product using DIA reports. As part of the process of creating claim charts and proof of usage, we also conducted several actual tests. Actually, our goal was to comprehend how a platform for internet advertising behaves. We examined the advertisements produced by the platform in question under particular circumstances. The patents set these precise criteria.

Article writing for company's website

In addition to the projects I have worked on during my training, I have also taken the opportunity to share my experiences. These experiences will be compiled into an article to be featured on the company's website. Here are some of the articles I have shared with the company:

Article 1:

Have you ever been in a circumstance when a crowd blocked a store's entrance, preventing actual customers from entering and upsetting business? Consider a scenario where hackers target your mobile phone and prevent you from connecting to the network. This kind of assault is called a Denial of Service (DoS) attack, and it can take many different forms.

Your mobile phone is first disconnected from a network when you turn it on. It makes a connection request in order to establish itself on the network. The network might, on occasion, reject the request, which could be frustrating and drain your phone's power. The T3302 parameter is used in this situation. It keeps a time value that tells the phone to wait before submitting another connection request for a certain amount of time. Typically, we quickly reconnect to the network because this value is set to a short period.

However, hackers can influence this option by disabling it entirely or setting a long duration period, preventing you from re-establishing network connectivity. This prohibits any online surfing or streaming. Thankfully, Samsung has submitted a patent that deals with this problem. The patent recommends not relying on the T3302 parameter and instead employing a fixed stored value, typically a brief time period. By doing this, you can protect your mobile device from hacker threats and maintain network connectivity. Better more, this patent has been acknowledged as an SEP according to 5G standards.

Article 2:

The term "subnetting" has it ever crossed your mind? It is a networking idea that deals with the problems caused by IP shortcomings. Keeping track of a lot of hosts might be difficult. Let's use the illustration of a business with several networks. In these situations, the problem is solved using a multi-network address system or a subnetwork method.

Let me ask you a question now that you are familiar with the idea of a multi-address scheme: How would you discover the address of the next hop for messages in a multi-address scheme? Although you may have some suggestions, the first reliable solution to this issue was offered in a patent back in 2003. The process involved in the solution was as follows:

- The destination address is contained in a SIP message that is delivered to the IMS (IP Multimedia System).
- The corresponding address configuration of the message received is specified.
- A predetermined address strategy is applied to the incoming message if the provided address policy has a strategy for the incoming address system.
- Location inquiries are directed to location services if a specific address strategy is not given. The departing address strategy offered by the location services is then used to send outgoing messages after the incoming address scheme has been transformed into departing address strategies.

In the context of the IP Multimedia System, this patented method resolved the problem of figuring out the next hop address in a multi-address scheme.

Article 3:

I can remember a time when I was utilising my outdated Nokia 1100 keypad phone. Connection dropped during a call, and when I checked my phone, I saw that the name of another operator, Airtel, had replaced my operator, Aircel, on the home screen. I was perplexed and questioned what had occurred.

Today, as I was reviewing a patent, I experienced nostalgia. A method for billing a single amount when using numerous operators was covered by the patent.

The patent states that if the subscriber of the second network is recognised as a joint billing subscriber when a connection setup request is sent from the second

communication network (Airtel) to the first communication network (Aircel), the second network will transmit its own tariff to the first network. Following that, the first network mixes its own pricing with the one it has received, and billing is determined using this combined rate.

I was reminded of my past experience by this patent predicament. Even though I have utilised Airtel's connection in the past, I only ever paid Aircel, my operator. I was interested in this invention and pondered whether it may qualify as a Standard Essential invention (SEP) for 5G. And much to my surprise, it is a SEP for 5G.

Article 4:

Today I discovered that Packet Data Networks may be accessed securely using 5G technology. The IP Multimedia System (IMS) in particular offers protection from potential assaults, such as fraudulent user attacks, in which an attacker impersonates an authorised user.

The IMS is a framework for providing multimedia communication services over IP networks, such as phone, video, and text messaging. The Call Session Control Function (CSCF), which enables session control between end nodes (terminals) in the IMS network, lies at the heart of the IMS design. The Proxy-CSCF (P-CSCF), the Interrogating-CSCF (I-CSCF), and the Serving-CSCF (S-CSCF) are the three primary parts of the IMS.

The process that is used to secure the IMS is as follows:

- An SIP (Session Initiation Protocol) message is delivered to the P-CSCF by a terminal device linked to a packet data network.
- The IP address of the source is extracted from the SIP message by the P-CSCF.
- The packet holding the sent SIP message's IP address is retrieved by the P-CSCF.
- Both IP addresses are compared by the S-CSCF.

- The S-CSCF starts the protection processing based on the comparison's findings.
- Finally, based on the protection processing, secure access to the packet data network is made available.

By following this procedure, the security and integrity of the communication services offered are maintained and the IMS network is able to recognise and stop fraudulent user attacks.

Article 5:

The cost of renewing patents is expected to reach billions of dollars by 2021 and beyond. In 2020, there will be an estimated \$8 billion invested globally in patent renewals, according to PatentSight. When the full lifespan of these investments is taken into account, the total cost soars to an astounding \$184 billion.

A graphic created by PatentSight shows which IP organisations are anticipated to receive the biggest payouts over the course of their current grants. The U.S. Patent Office comes in second on the list with a minimum of \$35 billion in royalties from their current grants, trailing the Chinese patent system by at least \$72 billion.

The paper emphasises China's recent large increase in patenting. The results show that CNIPA (China National Intellectual Property Administration) would surpass USPTO (United States Patent and Trademark Office) by more than twofold if all payments for active Chinese patents across their lifetimes are taken into consideration.

The top 10 patent office's account for 90% of all payments, with the two major patent offices, the USPTO and CNIPA, accounting for 50% of all transactions. The companies with the highest maintenance costs also exhibit this dominance in the market.

How can companies avoid paying fees worth millions of dollars? It is important to note that 1.3 million US grants are below average, while 1.7 million are above the median. USPTO fees are predicated in great part on patents that are better than average. Low-quality patents, however, might result in large and sometimes unjustified expenses. Low-quality patents might cost \$900 million in 2021 alone, and \$15 billion throughout the course of their lifetime.

Businesses can significantly reduce their costs by carefully managing their patent portfolios and getting rid of low-value patents. By making targeted modifications to their intellectual assets, even businesses with smaller portfolios have the potential to save millions of dollars in fees.

CHAPTER - 7

CONCLUSION

Conclusion

I learned useful skills and a thorough grasp of the crucial role that GreyB Services plays in intellectual property, notably in the patent sector, during my industrial training at the company. I've benefited greatly from the exposure to the technical parts of this profession that the GreyB team gave me. I feel prepared to enter the field and tackle the rigours of a full-time position thanks to this professional knowledge, and I have no worries about my lack of experience.

My career has been greatly helped by the industrial training I had at GreyB Research Pvt Ltd., which also gave me a thorough grounding in the business world. It has given me a platform to successfully use my technical and analytical abilities.

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Patent Infringement Analysis

ORIGINALITY REPORT

5 %	1 %	2 %	3 %
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Bahcesehir University Student Paper	1 %
2	Joseph P. Kennedy, Wayne H. Watkins, Elyse N. Ball. "How to Invent and Protect Your Invention", Wiley, 2012 Publication	<1 %
3	Submitted to Colorado Technical University Student Paper	<1 %
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