OVERVIEW OF INTELLECTUAL PROPERTY (IP) AND PATENTS

ME 481/482 SENIOR DESIGN PROJECT I/II

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Types of Intellectual Property (IP)

(from Easiest to Most Difficult to Obtain)

- Trade Secrets
- Copyrights
- Trademarks
- Plant Variety Protection Certificates/ Plant Breeders Rights
- Patents
Trade Secrets

What is a Trade Secret?

Under the Uniform Trade Secrets Act ("UTSA"), which has been enacted by most states, a Trade Secret is information that derives independent economic value because it is not generally known or readily ascertainable, and it is the subject of efforts to maintain secrecy.

Though Trade Secrets are not registered with any government agencies, Trade Secrets can represent a company’s most valuable IP assets.
Examples of Trade Secrets

• Lists - NY Times Bestseller List, customer lists
• Software Algorithms - Google search algorithm, Kayak search algorithm
• Chemical Formulas for Products - Dawn, Listerine, WD-40
• Recipes for Food Products – Coca Cola, KFC, McDonald’s Big Mac Special Sauce
• Manufacturing Methods and Processes
• Devices
Trade Secrets

• Not Registered, but Protected by State and Federal Laws

• The **Uniform Trade Secrets Act (UTSA)** - published by the Uniform Law Commission (ULC) in 1979 & amended in 1985
  • goal to make state trade secret laws uniform (critical for companies operating in different states)
  • adopted by 48 states (except NY & NC), WADC, Puerto Rico & US Virgin Islands (however, some states have modified the language in their version of the statute)

  • allows a trade secret owner to sue in federal court over misappropriation of trade secrets

• The owners of Trade Secrets must maintain the Secrecy of their Trade Secrets
Copyrights

- The U.S. Copyright Law is intended to encourage the creation of art and culture by rewarding authors and artists with the exclusive right, generally for the life of the author plus 70 years, to:
  - make and sell copies of their works
  - publicly perform or display their works
  - create derivative works from their works
- The US Copyright Act of 1976 protects “original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.” 17 USC. § 102(a)
- The creator of the work owns the copyright, unless the work is a Work Made for Hire/Work for Hire (WFH)
• a work prepared by an employee within the scope of his or her employment

• a work ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an atlas, if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire. (17 U.S.C. § 101)
Examples of Copyrights

U.S. Copyright law protects published and unpublished "original works of authorship, fixed in a tangible medium" such as:

- Software, Websites, Blogs
- Videos, Movies, Audio-visual works
- Theses, Manuscripts, Posters, Term papers
- Pantomimes, Choreographic works
- Books, Poems
- Plays, Operas, Musicals
- Song, Sound Recordings
- Pictures, Photographs
- Drawings, Paintings, Sculptures
- Architectural works
Copyrights

• Protection begins as soon as the work is fixed in a tangible medium.
• Protects the expression of the author’s original work, and elements of that expression, but does not protect the author’s underlying ideas (for example, a thesis or publication that describes an invention is protected is by copyright, but the invention itself is not protected)
• Though you are not required to register a copyright, there are advantages to registering
• Registering a copyright with the U.S. Copyright Office (USCO), part of the Library of Congress, provides additional protection in case of copyright infringement, such as being able to claim attorney’s fees and statutory damages
• Statutory damages can sometimes be much higher than actual damages
  • compensation per work of $750 to $30,000 instead of compensation for actual losses, loss of profit or damages for each infringing copy
  • up to $150,000 in the case of willful infringement
• **Put copyright notices at the beginning of your work, for example:**
  Copyright © 2019 Maria Chin, All rights reserved
  Copyright © 2013-2018 XYZ Inc.
Trademarks

(What is a Trademark?)

• Brand for Goods and Services
• Any color, design, logo, slogan, scent, sound, symbol, word, or combination thereof that:
  • Identifies the source of your goods & services, AND
  • Distinguishes your goods & services from the goods & services of another party
Examples of Trademarks

UNIVERSITY of HAWAIʻI®

Microsoft

Google

McDonald’s

Nike

Apple

Intel

Coca-Cola

TOYOTA

HONDA

Volkswagen
Examples of Trademarks

• **Business Name** – ABC Stores, IBM, OfficeMax

• **Colors** – red soles on Christian Louboutin shoes, brown on UPS trucks

• **Domain Names** – asme.org, ebay.com, uspto.gov

• **Slogans/Phrases** –
  • “What’s in your Wallet” by Capital One Financial Corp.
  • “Hasta la Vista Baby” from the movie “The Terminator”
  • “This is CNN” by CNN

• **Scents** –
  • Flowery Musk smell in Verizon stores
  • Piña Colada smell on ukuleles from the Eddy Finn Ukulele Co.
  • Poo-Pourri smells in toilet fragrances from Scentsibles, LLC

• **Sounds** – AAMCO “Double A” two car horn honks “M-C-O”, Aflac duck quack, MGM lion roar, NBC 3-note (G, E, & C) chime
Trademarks

- Protection can last forever
- Register with your state agency (the Hawai‘i Department of Commerce and Consumer Affairs (DCCA)) and the USPTO
  - Establish a place in time for your Trademark Claim
  - Get enhanced protections in case of infringement disputes
  - Registering with the USPTO is necessary for interstate commerce
  - Registering with USPTO grants you more protection in federal courts than not registering

- To notify others that you intend to use a trademark as an identifier, use the symbol \textit{TM}
- To notify others that you fully registered your trademark, use the symbol \textcircled{R}
Plant Variety Protection Certificates/Plant Breeder Rights

- Plant breeders' rights (PBR), also known as plant variety rights (PVR), & USDA Plant Variety Protection (PVP) Certificates grant plant breeders of new varieties of plants, trees or vines the exclusive control over the propagating materials (cuttings, divisions, seed & tissue culture) and harvested materials (flowers, fruits, & foliage) of new varieties for a specified number of years.
  - 20 years for a plant in the U.S.
  - 25 years for a tree or vine in the U.S.
Patents

- Patent Law is designed to encourage inventors to disclose their new inventions to the world in exchange for a time-limited period of monopoly to exclude others from making, using, selling, offering for sale, importing, inducing others to infringe, and/or offering a product specially adapted for practicing the patented invention.

- A Patent is not automatic, unlike a copyright which is.

- Inventors or owners have to file a patent application for their invention with the USPTO in order to obtain a patent.

- For the USPTO to grant a patent on an invention, the invention must be:
  - Useful
  - Novel
  - Non-obvious to a person of “ordinary skill” in the relevant technology or art.
Types of Patents

• Design Patent
• Plant Patent
• Utility Patent
Design Patents

• Whoever invents a novel, useful & non-obvious ornamental design of a functional object can obtain a patent, subject to 35 U.S. Code §171, for an ornamental design, such as a/an:
  • Bottle
  • Emoji
  • Jewelry piece
  • Lamp shade

• Protect the object’s appearance only
• Do not protect the object’s functionality or structure
• Expire 14 years from the filing date
Plant Patents

- Whoever invents a new & distinctive plant can obtain a patent, subject to 35 U.S.C. §161 on such a plant that is:
  - Not a tuber propagated plant (such as potatoes or yams)
  - Invented or discovered in a cultivated state
  - Asexually reproduced (without seeds, such as by budding, cutting, grafting or spores)
- Plant patent requires asexual reproduction to prove that the patent application can reproduce the plant
- Expires 20 years from the filing date
Utility Patents

• Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof may obtain a patent on that invention, subject to 35 U.S.C. §101.

• To be patentable, the Invention must meet 4 Criteria:
  1) Inventor(s) can obtain only ONE patent on the invention
  2) Inventor(s) must all be identified in the application
  3) Invention must be eligible for patenting by:
     • Being a Process, Machine, Manufacture, or Composition of Matter
     • Not being directed to a judicial exception - an Abstract Idea, Law of Nature or Natural Phenomena (including products of nature)
  4) must be useful or have a utility that is specific, substantial and credible

• Expires 20 to 21 years from the filing date, but could be longer
Examples of Inventions that are Not Eligible for Patent Protection

• **Abstract Ideas** – such as mathematical equations and scientific principles
• **Laws of Nature** – such as gravity and electromagnetism
• **Natural Phenomena** (including products of nature) – such as:
  • Isolated DNA
  • Cloned farm animals such as cattle, goats & sheep
  • Correlations, such as a correlation that is the consequence of how a certain compound is metabolized by the body (Mayo Collaborative Servs v. Prometheus Labs)
• **Nuclear Weapons and other weapons of mass destruction**
• **Anything about human beings**
• **Anything that has been previously publicly disclosed**
Patent Eligibility
1. Utility Requirement

- 35 U.S.C. §101
- Invention must be a Process, Machine, Manufacture, or Composition of Matter that is useful or has a utility that is specific, substantial and credible

- “The invention should not be frivolous or injurious to the well-being, good policy, or sound morals of society” – Associate Justice of the U.S. Supreme Court Justice Joseph Story (1808-1809)
Patent Eligibility

2. Novelty Requirement

• 35 U.S.C. §102

• Invention must be clearly different from the Prior Art

• Prior Art (state of the art or background art) is all information (including any information of the inventor(s)) that has been made available to the public in any form before a given date that might be relevant to a patent's claims of originality.

• A patent examiner can deny an application for a patent if an invention has been described in the Prior Art or would have been obvious over what has been described in the Prior Art
3. Non-Obviousness Requirement

- 35 U.S.C. §103
- Invention cannot be obvious to a person having ordinary skill in the art
- Teaching-Suggestion-Motivation (TSM) test
  - A patent examiner can deny an application for a patent if the answer is “Yes” to any of the following questions:
    - Is the invention taught by the prior art?
    - Is the invention suggested by the prior art?
    - Is the invention motivated by the prior art?
Two Things Necessary to have an Invention

1) Conception –
   • “formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice…” MPEP 2138.04, citing Townsend v. Smith, 36 F.2d 292, 295, (CCPA 1929)

2) Reduction to Practice -
   • Constructive - description of the conceived invention in a patent application that satisfies the “how to use” and “how to make” requirements of 35 U.S.C. 112(a)
Some Things to Consider Before Filing a Patent Application

• Why should we try to patent our invention?
  • To benefit human-kind or animal-kind?
  • To start a company and get rich?
  • To block (prevent) competitors from using our invention?

• What is the market potential for our invention?
  • 95% of the over 2 million active U.S. patents, including over 50,000 university patents) are unlicensed or uncommercialized (Forbes, June 18, 2014)

• How much money do we have to prosecute the patent?
  • Obtaining a U.S. patent may cost up to $25,000 or more
  • Obtaining a foreign patent may cost $100,000 or more
Some Things to Consider Before Filing a Patent Application

• How strong is our patent?
  • American Invents Act of 2011 made it faster and cheaper to challenge weak patents
  • Innovation Act of 2013 made it harder to enforce patents and easier to infringe patents

• Which countries should we file in?
  • 85% of all of the world’s patents were granted in China, Japan, South Korea, the E.U. and the U.S.

• What type of patent application should we file?
  • Provisional (U.S. Only)
  • Non-Provisional
  • Patent Cooperation Treaty (PCT)
Common Types of Patent Applications

• Provisional (U.S. Only)
  • Very inexpensive - it costs UH less than $200 to file
  • Establishes an early priority date (filing date of 1st application)
  • Does not mature into an issued patent unless the applicant files a regular non-provisional patent application within one year

• Non-Provisional
  • Contains all of the necessary parts (a written description and claims) that are required by the USPTO to grant a patent.
  • The USPTO will examine the application and determine whether or not to grant a patent.

• Patent Cooperation Treaty (PCT)
  • Filed with the World Intellectual Property Organization (WIPO)
  • Allows a single application in over 153 contracting states
  • Extends the priority date by about 30 months
Preserving Your IP with Contracts

• Give enhanced protections in case of disputes
• Set the rights and obligations of all parties
• Set restrictions on how your IP, proprietary research materials and other assets will be used by all parties
• Usually require negotiation to conclude and sign
• Material Transfer Agreements (MTAs)
  • for transferring proprietary information, data or materials (biological materials, cell lines, chemicals, nanomaterials, plant materials, etc.)
• Confidentiality Agreements (CAs), also known as, Confidential Disclosure Agreements (CDAs) or Non-Disclosure Agreements (NDAs)
  • for protecting any information and/or data that is Proprietary and/or Confidential
Preserving Patent Rights for your Invention

• **Do Not** make a Public Enabling Disclosure before filing a patent application:
  • **Enabling Disclosure** – a disclosure that contains sufficient information and detail to enable someone skilled in the art to make or practice the invention
  • You will lose the ability to obtain a patent in nearly every country, except the U.S.
  • You will have to file a patent application within one year of the enabling disclosure to preserve U.S. patent rights

• **Do Not** publicly use your invention or offer to sell your invention before filing a patent application

• Execute Cas, CDAs, or NDAs before disclosing details of your invention to others, including family, friends and colleagues

• Contact the UH Office of Technology Transfer before making a Public Enabling Disclosure

www.hawaii.edu/research/oic
Examples of Public Enabling Disclosures

• Publishing an article or manuscript describing your invention
• Demonstrating, presenting or discussing your invention at a trade show, conference, classroom (including ME 481/482) or other public venue
• Posting a description of your invention on the internet
• Displaying a poster describing your invention
• Describing your invention in a government grant application that gets awarded
• Defending a thesis that describes your invention
• Discussing your invention with anyone, including family, friends and colleagues who has not executed a CA, CDA, or NDA with you
Case Study 1: Easy Patent, Easy Money

• US 3,079,728
• HOOP TOY
• Inventor: Arthur K. Melin of Pasadena, CA
• Filing Date: May 13, 1959
• Issue Date: March 5, 1963
• 3 pages

Background Before the Patent Issued:

• 1948 - Arthur “Spud” Melin and his friend Richard Knerr founded a toy company in the Knerr family garage and named it Wham-O Inc.
• 1957 - Their first big hit was a flying plastic disc called the Frisbee.
• 1957 – Joan Anderson brought back a bamboo exercise hoop from Australia and called it a Hula Hoop. Her husband showed it to Spud and made a “gentlemen’s agreement” to share any profits.
• Unfortunately for the Anderson’s, Wham-O weaseled out of the agreement, and they got nothing.
• July 1958 – Wham-O started selling the Hula Hoop for $1.98.
• 25 million sold in less than 4 months
• 100 million sold in 2 years
Case Study 1:
Easy Patent, Easy Money
Case Study 1:
Easy Patent, Easy Money
Case Study 1: Easy Patent, Easy Money

“Claim

1. A hoop toy especially suited for rotation about a human body in response to the user's body gyrations, comprising a member formed into a closed circular hoop, the member being of rigid tubular plastic and having an outside diameter of about an inch so that the hoop as a whole is substantially rigid, the hoop having an outside diameter of approximately 31 to 37 inches and having a total weight of approximately 7 to 10 ounces, so that a portion of the hoop diametrically opposite from a hoop portion in contact with the user's body is spaced from the user's body a sufficient distance to co-act with the weight of the hoop to cause the hoop by virtue of its being substantially rigid to rotate about the user in response to the user's body movements.

2. Apparatus of claim 1 wherein the tubular member forming the hoop has a wall thickness of approximately 62/1000 inch.
Case Study 1: Easy Patent, Easy Money

“I Claim

3. A hoop toy especially suited for rotation about a human body in response to the users body gyrations, comprising a member formed into a closed circular hoop, the member being of rigid tubular plastic and having an outside diameter of about of an inch so that the hoop as a whole is substantially rigid, the hoop having an outside diameter of approximately 30 to 40 inches and having a total weight of approximately 6 to 12 ounces, so that a portion of the hoop diametrically opposite from a hoop portion in contact with the users body is spaced from the users body a sufficient distance to co-act with the weight of the hoop to cause the hoop by virtue of its being substantially rigid to rotate about the user in response to the users body movements.”
Case Study 2: Blocked by Michael Jackson

• US 5255452A

• METHOD AND MEANS FOR CREATING ANTI-GRAVITY ILLUSION

• Inventors: Michael J. Jackson, Michael L Bush, Dennis Tompkins

• Filing Date: June 29, 1992

• Issue Date: Oct. 26, 1993

• 8 pages

“Abstract

A system for allowing a shoe wearer to lean forwardly beyond his center of gravity by virtue of wearing a specially designed pair of shoes which will engage with a hitch member movably projectable through a stage surface. The shoes have a specially designed heel slot which can be detachably engaged with the hitch member by simply sliding the shoe wearer's foot forward, thereby engaging with the hitch member.”
Case Study 2: Blocked by Michael Jackson
Case Study 2: Blocked by Michael Jackson
Case Study 2:
Blocked by Michael Jackson

www.hawaii.edu/research/oic
Case Study 2: Blocked by Michael Jackson

“I Claim

1. A system for engaging shoes with a hitch mans to permit a person standing on a stage surface to lean forwardly beyond his or her center of gravity, comprising: at least one shoe having a heel with a first engagement means, said first engagement means comprising a recess formed in a heel of said shoe covered with a heel slot plane located at a bottom region of said heel, said heel slot plate having a slot formed therein with a relatively wide opening at a leading edge of said heel and a narrower terminal end rearward of said leading edge, said recess being larger in size above said terminal end of said slot than is said terminal end of said slot; and

a second engagement means, detachably engageable with said first engagement means, comprising a hitch member having an enlarged head portion connected by a narrower shank portion to a means for raising and lowering said head of said hitch member above and substantially level with or below said stage surface, said head portion being larger in size than said terminal end of said slot and said shank portion being narrower than said terminal end of said slot, wherein said hitch member can be moved through apertures in said stage surface between a projecting position raised above said stage surface and a retracted position at or below the stage surface, and when said head portion of said hitch member is raised above said stage surface, said first engagement means can be detachably engaged with said projecting hitch member, thereby allowing a person wearing the shoes to lean forwardly with his or her normal center of gravity beyond a front region of said shoes, and maintain said forward lean.
Case Study 2: Blocked by Michael Jackson

“2. The system of claim 1, wherein said slot in said heel slot plate is V-shaped, with the mouth of the V at the leading edge of said heel.”

3. The system of 1, wherein said shoe has strapping means to secure the shoe to the wearer's feet.

4. The system of claim 1, wherein said shoe has lace means to secure the shoe to the wearer's feet.

5. The system of claim 1, wherein said shoe has extension means overlying the wearer's ankle, and is provided with covering means to conceal the said extension means of said shoe.

6. The system of claim 5, wherein said covering means comprises a sock-like covering.”
Case Study 2: Blocked by Michael Jackson

“7. A system for engaging shoes with a hitch means to permit a person standing on a stage surface to lean forwardly beyond his or her center of gravity in a stable manner, comprising:

at least one shoe having a heel with a first engagement means, said first engagement means comprising a recess formed in a heel of said shoe, said recess having a relatively wide opening at a leading edge of said heel and a narrower terminal end rearward of said leading edge; and

a second engagement means, detachably engagable with said first engagement means, comprising a hitch member having an enlarged head portion, connected to a means for raising and lowering said hitch member above and substantially level with or below said stage surface, wherein said hitch member can be moved through apertures in said stage surface between a projecting position raised above said stage surface and a retracted position at or below the stage surface, and when said hitch member is raised above said stage surface, said first engagement means is detachably engagable with said projecting hitch member, thereby allowing a person wearing the shoes to lean forwardly with his or her normal center of gravity beyond a front region or said shoes, and maintain said forward lean.”
Case Study 2: Blocked by Michael Jackson

“8. The system of claim 7, wherein said recess is covered with a heel slot plate located at a bottom region of said heel, said heel slot plate having a slot formed therein.

9. The system of claim 8, wherein said slot in said heel slot plate is V-shaped, with the mouth of the V at the leading edge of said heel.

10. The system of claim 7, wherein said shoe has strapping means to secure the shoe to the wearer's feet.

11. The system of claim 7, wherein said shoe has lace means to secure the shoe to the wearer's feet.

12. The system of claim 7, wherein said shoe has extension means overlying the wearer's ankle, and is provided with covering means to conceal the said extension means of said shoe.

13. The system of claim 12, wherein said covering means comprises a sock-like covering.”
Case Study 3: Sunk by Donald Duck’s Prior Art

- It was September of 1964 when a freighter carrying 5,500 sheep docked at Kuwait’s harbor. Only 500 sheep were unloaded when something went wrong and the freighter capsized with the remaining 5,000 sheep on board.

- The dying sheep started contaminating the water around the harbor, which was a threat to the city’s water supply. The freighter needed to be raised right away. Using cranes was not a good idea as it was time-consuming and could have broken the hull into pieces.

- Karl Kroyer, a Danish inventor, came up with a brilliant idea of filling the freighter with plastic balls. In the month of December, he filled the capsized freighter with approx. 27 million plastic balls and hit the nail on the head.

Source: 4 Cases Where Examiner Found Ridiculously Awesome Prior Art
https://www.greyb.com/4-cases-examiner-found-ridiculously-awesome-prior-art/
Case Study 3: Sunk by Donald Duck’s Prior Art

Bibliographic data: NL6514306 (A) — 1966-05-05

Method of raising sunken or stranded vessels

Inventor(s): KROVER K K K

Application(s): International: B63C7/12

Classification: Cooperative: B63C7/12 (EP); B63C7/27 (CA)

Application number: NL6514306 19661104

Priority number(s): DK1964005420 (19641104)

Also published as: GB1070800 (A)

Abstract not available for NL6514306 (A).

Abstract of corresponding document: GB1070800 (A)

1,070,900. Raising sunken vessels. K. K. K. KROVER. Nov. 2, 1966 [Nov. 4, 1964]. No. 4634365. Heading B73. An apparatus for raising a sunken vessel (1). Fig. 1 (not shown), by introducing buoyant bodies into the interior of the vessel comprises a water pump (6). Fig. 2 (not shown), which on the pressure side is connected to the inlet and of an ejector (7) having its suction pipe (8) connected to a pipe (9) containing the buoyant bodies, the outlet end of the ejector (7) being connected to one end of a tube (3) the other end (19) of which can be introduced into the interior of the sunken vessel. An adhesive of asphalt supplied through tube (11) is applied to each buoyant body as it leaves nozzle (19) to enter the sunken vessel. The buoyant bodies may be gas-contained polymers made of pieces of cellular plastics material.
Case Study 3: Sunk by Donald Duck’s Prior Art

• Karl later went ahead with filing a patent application (NL6514306) on his idea. And contrary to what you are thinking, his patent application got rejected.

• It is said that the examiners at Dutch PTO found a similar method of raising a ship in one of Donald Duck’s stories.

• In late 1949, in a story of Donald Duck, he used ping pong balls (buoyant object) to raise a sunken yacht from a lake. Who might have thought that Mr. Donald Duck had already invented a solution for a non-existing problem?
Case Study 3: Sunk by Donald Duck’s Prior Art
Other Helpful Resources

- Association of University Technology Managers https://autm.net/
- Hawai’i Department of Commerce & Consumer Affairs https://cca.hawaii.gov/
- Hawai’i Technology Development Corporation https://www.htdc.org/
- Hawai’i Small Business Development Center https://www.hisbdc.org/
- Hawai’i State State Library https://www.librarieshawaii.org/
- U.S. Copyright Office https://www.copyright.gov/
- U.S. Small Business Administration https://www.sba.gov/
- U.S. Patent & Trademark Office https://www.uspto.gov/
Questions?

Thank you!

Contact:
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