

Lecture 3: Patenting Your Invention

Dr. ByungChul (Eric) Kim
B.C.Eric.Kim@bristol.ac.uk



If you have a great idea?

- You should ask yourself the questions below.

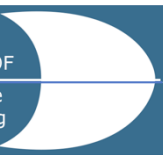
1. Is it really new ?

2. Is it commercially valuable ?

3. Do you want to make some profit from it? or share with others for free ?

4. How can you protect it from others who may copy and get the profit from yours ?

5. Do you want to sell it by yourself ? or give the right to use your idea to someone else ?



If you have a great idea?



What creates the commercial value ?

Demands

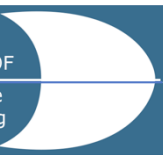
Uniqueness

Scarcity

Your idea can be unique within your brain. But, it can never be valuable until you take it out.

Once you release your idea, it is not rare any longer.

How can you protect this invisible thing ?



What is Intellectual Property?

- Tangible property vs. Intellectual property
- Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.
- IP is protected in law, which enable people to earn **recognition** or **financial benefit** from what they invent or create. By keeping the right balance between the interests of innovators and the wider public interest, the IP system aims to ***foster an environment in which creativity and innovation can flourish.***
 - WIPO (World Intellectual Property Organisation)

Types of Intellectual Property

- ***Patents***

An exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem.

- ***Copyright***

A legal term used to describe the rights that creators have over their literary and artistic works. (e.g. books, music, paintings, sculpture and films, to computer programs)

- ***Trademark***

A sign capable of distinguishing the goods or services of one enterprise from those of other enterprises.

Ref.) From WIPO (World Intellectual Property Organisation) <http://www.wipo.int/patents/en/>

Type of Intellectual Property

- ***Design***

An industrial design constitutes the ornamental or aesthetic aspect of an article. A design may consist of three-dimensional features, such as the shape or surface of an article, or of two-dimensional features, such as patterns, lines or colour.

Ref.) From WIPO (World Intellectual Property Organisation) <http://www.wipo.int/patents/en/>

History of Patents

- Greek city of Sybaris in 500 BC
 - Exclusive rights were given to creators of unique culinary dishes for one year.
- Early monarchies
 - Royal favours to certain individuals, giving exclusive rights to sell certain commodities which had previously been available to all.
- Roman empire
 - The cities or states monopolies were outlawed, and in medieval Europe and Great Britain at a much later date.
- "*Letters patent*" in England in 1300s
 - It provided the recipient with a monopoly to produce particular goods or provide particular services.
- Venice in 1400s
 - The Guilds of Venice encouraged the granting of protection to new devices and arts.

History of Patents



<http://youtu.be/GvA1UMFGb3Q>

Nature of Patents

- ***Exclusive rights***

In principle, the patent owner has the exclusive right to prevent or stop others from commercially exploiting the patented invention. In other words, patent protection means that the invention cannot be commercially made, used, distributed, imported or sold by others without the patent owner's consent.

- ***Territorial rights***

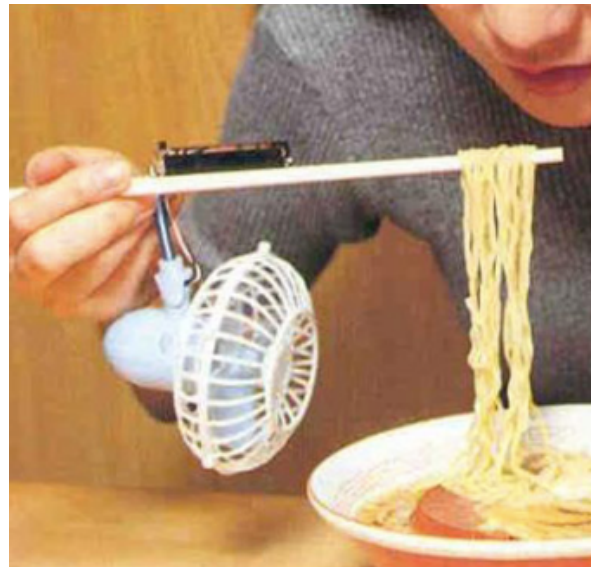
In general, the exclusive rights are only applicable in the country or region in which a patent has been filed and granted, in accordance with the law of that country or region.

- ***Time-limited rights***

The protection is granted for a limited period, generally **20 years** from the filing date of the application.

Ref.) From WIPO (World Intellectual Property Organisation) <http://www.wipo.int/patents/en/>

What is patentable ?



What is patentable ?

Requirements of a new patent

- **Novelty**

The invention must have a new characteristic. Not part of the current knowledge in its technical field. Not something that can be easily derived by combining existing inventions.

- **Industrial applicability**

The invention must be able to use in industry. Not just an idea or a theory. (e.g. Time machine)

- **Inventive step (Non obviousness)**

Your invention could not have been easily deduced by a skilled person with average knowledge of that particular technical field.

What is not patentable ?

- Discovery
- Scientific theory
- Mathematical method
- Skill
- Literary, dramatic, musical or consists of artistic work or any other aesthetic creation
- Scheme, rule or method for performing a mental act, playing a game or doing business
- Programme for a computer, or
- The presentation of information
- ...

Inventorship vs. Ownership

Inventor

Who actually created the invention (Honour & Reward)

Assignee

Who actually own the exclusive right (Commercial interests)

European patent law

- Ownership of an invention may pass from the inventor to their employer by rule of law automatically if the invention was made in the course of the inventor's normal or specifically assigned employment duties.

US patent law

- Only the inventor(s) may apply for a patent although it may be assigned to a corporate entity subsequently and inventors may be required to assign inventions to their employers under an employment contract.

Format of a patent

Vertical take-off system, Lockheed Martin

United States Patent [19] **US005209428A**
Bevilaqua et al. [11] **Patent Number: 5,209,428**
[45] **Date of Patent: May 11, 1993**

[54] **PROPULSION SYSTEM FOR A VERTICAL AND SHORT TAKEOFF AND LANDING AIRCRAFT**
4,587,806 5/1986 Madden 244/12.5
4,660,767 4/1987 Scrace 244/12.5
4,791,783 12/1988 Neitzel 60/262

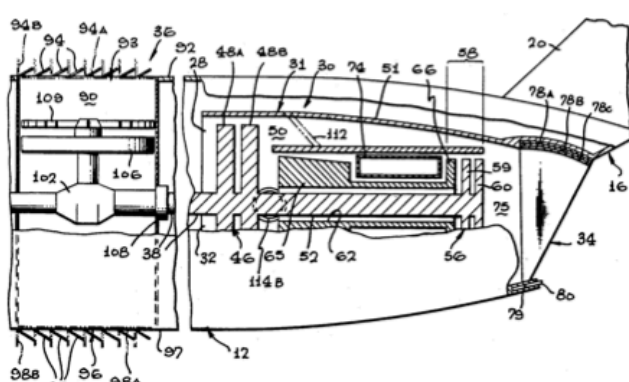
[75] **Inventors:** Paul M. Bevilaqua, Santa Clarita; Paul K. Shumpert, Valencia, both of Calif.
FOREIGN PATENT DOCUMENTS
2736120 2/1978 Fed. Rep. of Germany 244/12.3
1061397 3/1967 United Kingdom 244/12.3

[73] **Assignee:** Lockheed Corporation, Calabasas, Calif.
Primary Examiner—Galen Barefoot
Attorney, Agent, or Firm—Louis L. Dachs

[21] **Appl. No.:** 521,211
[22] **Filed:** May 7, 1990
[51] **Int. Cl.:** B64C 29/00
[52] **U.S. Cl.:** 244/12.3; 244/23 D; 244/52; 244/12.5
[58] **Field of Search:** 244/12.3, 12.5, 23 B, 244/23 D, 52, 53 R; 60/242, 229, 224, 225

[56] **References Cited**
U.S. PATENT DOCUMENTS
2,918,232 12/1959 Lippisch 244/23 B
2,988,301 6/1961 Fletcher 244/12.3
3,186,165 6/1965 Edkins 60/242
3,380,660 4/1968 Markowski 60/242
3,381,474 5/1968 Gist 244/12.3
3,907,219 9/1975 Pharris 244/12.5
4,326,686 4/1982 Runge 244/23 D
4,474,345 10/1984 Musgrove 244/58

11 Claims, 4 Drawing Sheets



United States Patent [19] Bevilaqua et al.



US005209428A

[11] **Patent Number: 5,209,428**
[45] **Date of Patent: May 11, 1993**

[54] **PROPULSION SYSTEM FOR A VERTICAL AND SHORT TAKEOFF AND LANDING AIRCRAFT**

4,587,806 5/1986 Madden 244/12.5
4,660,767 4/1987 Scrace 244/12.5
4,791,783 12/1988 Neitzel 60/262

[75] **Inventors:** Paul M. Bevilaqua, Santa Clarita; Paul K. Shumpert, Valencia, both of Calif.

FOREIGN PATENT DOCUMENTS

2736120 2/1978 Fed. Rep. of Germany 244/12.3
1061397 3/1967 United Kingdom 244/12.3

[73] **Assignee:** Lockheed Corporation, Calabasas, Calif.

Primary Examiner—Galen Barefoot
Attorney, Agent, or Firm—Louis L. Dachs

[21] **Appl. No.:** 521,211
[22] **Filed:** May 7, 1990

[57] **ABSTRACT**

The invention is a propulsion system for a V/STOL type aircraft. In detail, the invention comprises a turbo-fan engine including a fan section, compressor section, combustion section, turbine section and nozzle section. The turbine section comprises a low-pressure turbine portion coupled to and driving the fan section and a high-pressure turbine portion coupled to and driving the compressor section. A lift fan is coupled to the fan section by means of a drive shaft. A clutch is incorporated for decoupling the lift fan from the fan section. A mechanism is incorporated for extracting additional power from the low-pressure turbine portion of the turbine section to drive the lift fan that augments the basic engine thrust for V/STOL operation.

[51] **Int. Cl.:** B64C 29/00
[52] **U.S. Cl.:** 244/12.3; 244/23 D; 244/52; 244/12.5
[58] **Field of Search:** 244/12.3, 12.5, 23 B, 244/23 D, 52, 53 R; 60/242, 229, 224, 225

[56] **References Cited** **U.S. PATENT DOCUMENTS**

2,918,232 12/1959 Lippisch 244/23 B
2,988,301 6/1961 Fletcher 244/12.3
3,186,165 6/1965 Edkins 60/242
3,380,660 4/1968 Markowski 60/242
3,381,474 5/1968 Gist 244/12.3
3,907,219 9/1975 Pharris 244/12.5
4,326,686 4/1982 Runge 244/23 D
4,474,345 10/1984 Musgrove 244/58

11 Claims, 4 Drawing Sheets

The claims describe the DPS (Design Parameters) in AD!

The FRS in the description

Claims

Most important part of a patent specification !
The rights that the applicant wants to protect

Independent claims

- completely self-contained
- higher level than dependent claims
- broader range of claims than dependent claims

Dependent claims

- refers to one of earlier independent or dependent claims and is considered to include all of its own limitations as well as those of any one of the claims to which it refers.

Infringement will be judged based ONLY ON THE CLAIMS !

Patent infringement

- ***Direct infringement***

Patent infringement occurs when a party makes, uses, offers to sell, sells, or imports products covered by the patent without the patent owner's permission.

- ***Indirect infringement***

If a person actively encourages another to make, use, or sell the invention, the person is liable for indirect infringement.

- ***Contributory infringement***

A person who sells a component of the infringing product may be liable for "contributing" to the infringement if:

He knew that the component was especially made for use in the infringing product.

The component is not a staple article or commodity that has substantial non-infringing uses.

Patent infringement

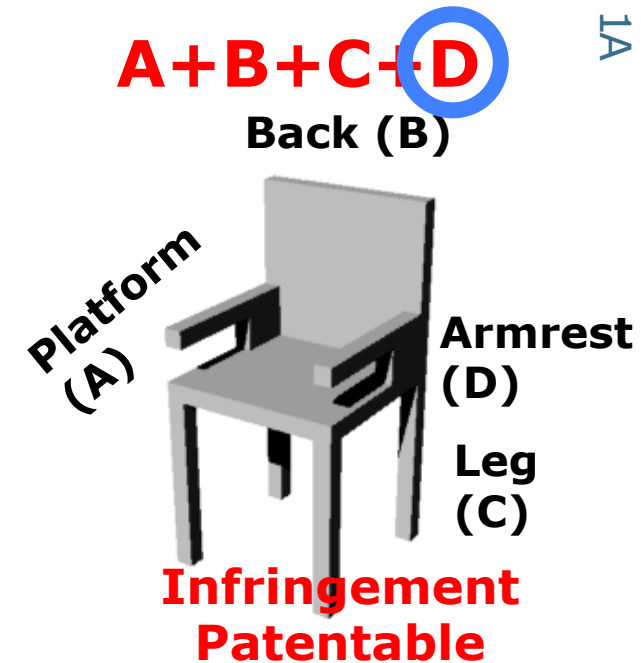
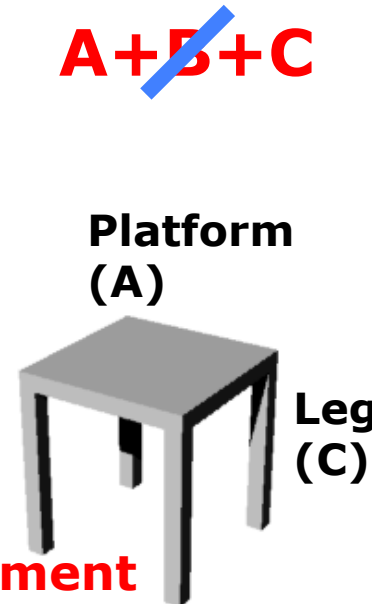
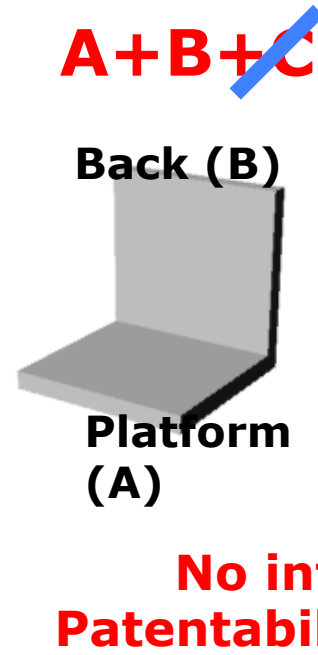
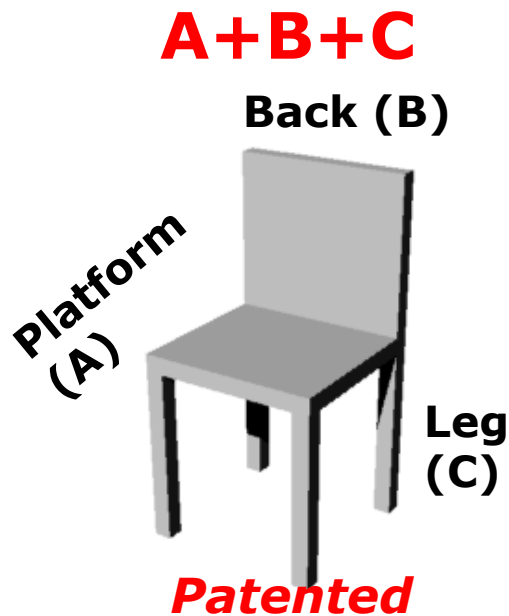
- All Elements Rule**

If the accused invention has all elements of the claims of the patent, it falls under the infringement. Otherwise, the infringement is not recognised.

< Example >

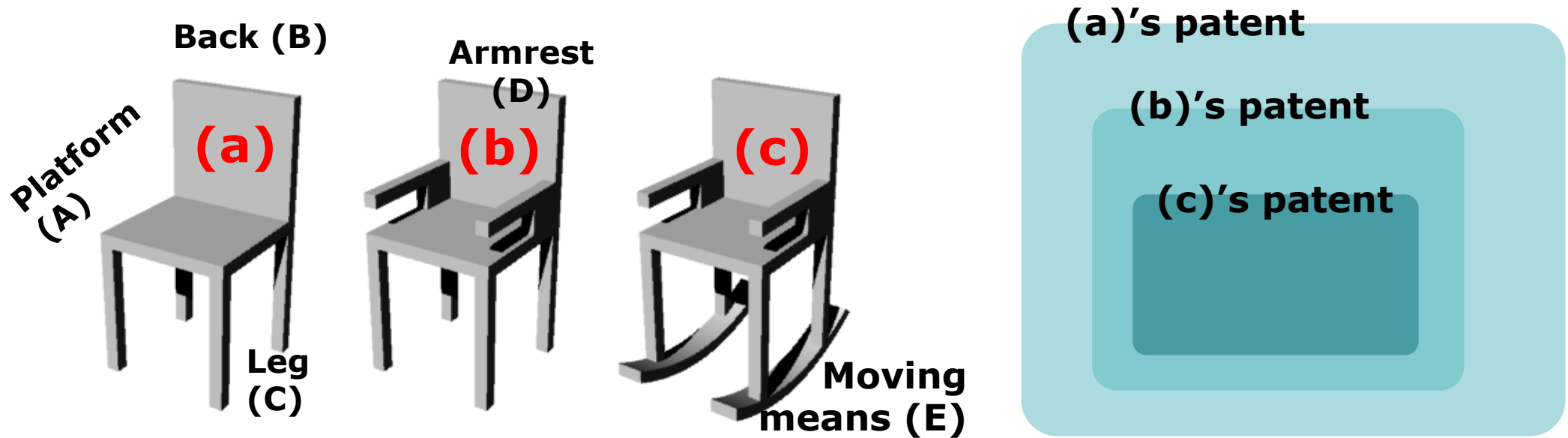
Claim

1. A device comprising:
a platform;
a back; and
at least one leg to support the platform above the ground.



Patent infringement

- The more elements you claim, the smaller your right becomes.*



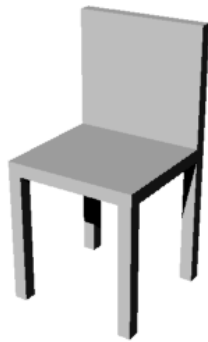
- Doctrine of Equivalent*

A+B+C' : Infringement (Patentable or not)

A+B+D : No infringement (Patentable or not)

Infringement & Patentability

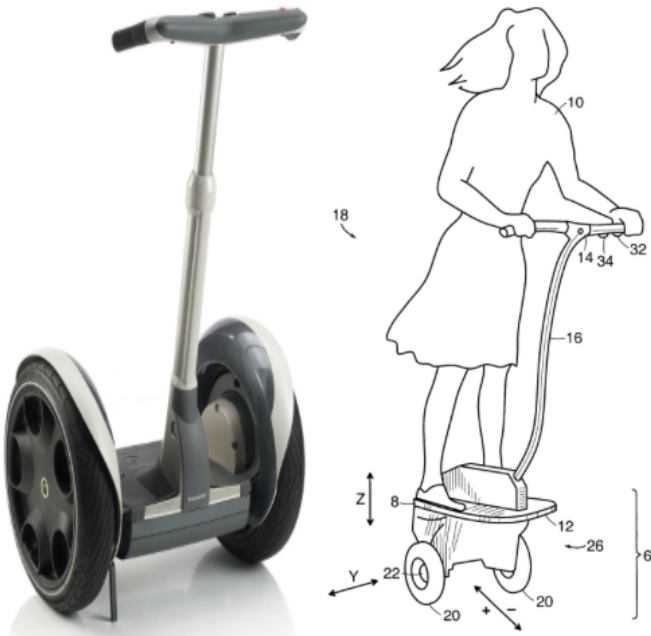
- If a patent infringes other patents, is it patentable or not?
 - e.g combining existing technologies to achieve different functionality
- Infringement is a legal problem, while the patentability is about novelty. Its patentability is determined by its technological advancement.
- If there is a significant improvement, it can be patented. However, the product can be produced only if the inventors of the existing technologies agree with your usage. And you might need to pay royalties to them.



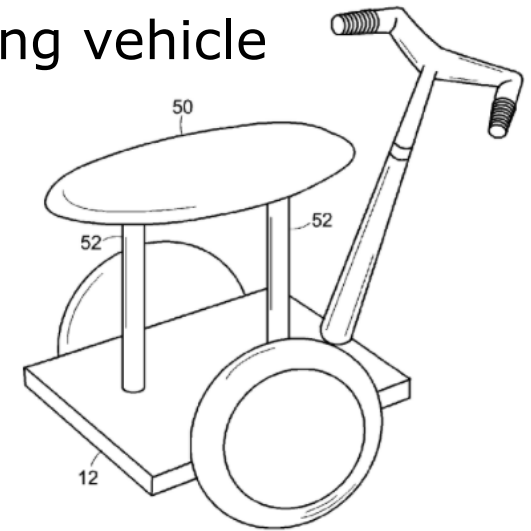
Basic patent vs. Improvement patent

Strong protection of possible modification
But, additional cost required

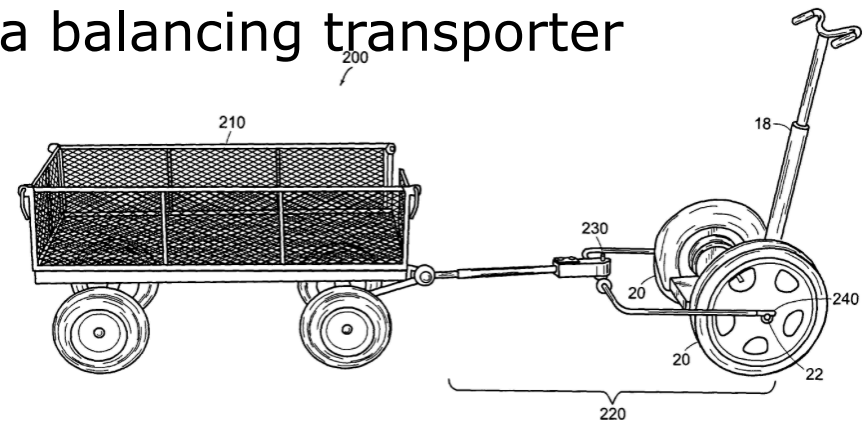
US 6302230 B1
 Personal mobility vehicles and methods



US 7690447 B2
 Dynamic balancing vehicle with a seat



US 7000933 B2
 Method for attaching a carrier to a balancing transporter



Preparing a patent application

(1) Detail description of the invention

must include:

- a. Detailed technical information about the features of the claimed invention;
- b. How the invention can be made or carried out; and
- c. Its application in industry or commerce.

(2) Claims

- are the heart of a patent
- demarcate in words the boundary of your invention
- If the description includes some features that are not covered by the claims, then all such features are not protected by the patent.

(3) Who prepares

Generally, you will need to ask patent attorneys. However, you are responsible to check whether the descriptions (especially the claims) were accurately written in the draft.

Patent process

Pending

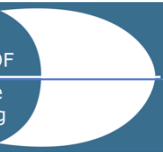
vs.

Granted

A patent is applied,
but is being
examined.

It can be either
accepted or rejected.

A patent is accepted
due to its novelty, and
is being protected by
the patent law.



Patent searching

Searching patents is as important as searching journal papers!

- Google patent search
 - <http://www.google.com/patents>
- Espacenet (European patent office)
 - <http://worldwide.espacenet.com/>
- USPTO (The United States Patent and Trademark Office)
 - <http://www.uspto.gov/patents/process/search/>
- Ipsum (UK Intellectual Property Office)
 - <http://www.ipo.gov.uk/p-ipsum.htm>
- Patentscope (World Intellectual Property Organisation)
 - <http://www.wipo.int/patentscope/en/>

Patenting is not free !

- Patent attorney fee
 - All legal documents should be prepared accurately and perfectly. Otherwise, the time and cost for patent processing may increase significantly.
 - Preliminary patent search by yourself or your patent attorney will save the time and cost significantly.
- Filing fee / Examination fee / Search report fee
- Maintenance fee (Renewal fee)
 - In order to protect your right, you have to pay the maintenance fee every year once your patent is granted.

In order to reduce the time and cost for your patent, you need to setup a strategy to select the best time for releasing your idea and to secure enough funding for the patent application in advance.

If you need a patent, mind these.

- You should not disclose your invention in any form.
 - Should not present anything related to your invention in a journal or conference paper, or a poster, or a lecture, or a TV programme, or an internet website.
 - Should not sell a product including any element of your invention.
 - Should not do a presentation or a lecture without NDA (Non-Disclosure Agreement).
 - If you disclose your invention through journal or conference publication, you should file the application within 6 months.
- You always need significant helps from experts such as patent attorneys since the preparation process for patenting requires high level of knowledge and experience. UoB has RED team.

Two sides of the patent law

- Patent trolls (Invention capitalism)
 - PAE (*Patent Assertion Entity*)
 - PHC (*Patent Holding Company*)
 - NPE (*Non-Practicing Entity*)

Companies that don't make products and whose function is to buy up patents to assert against others would be in that category.

Effects:

Patent bubble

Flood of low quality patents

Overvaluation of patents

Tax on innovation

Other aspects

- Patent is to get the recognition of your creativity, respect others' creativity, and not to harm them.
- Ultimately it is for sharing knowledge and know-how with others after you get some benefit from it. It is the legacy of human intelligence and great gifts from our ancestors.
(The patent pool is like a huge database comprising great ideas in human history.)
- Do not be disappointed when you find the same idea of others with yours. You already saved a lot of money and time by not doing the same thing. You should think that you still have a chance to create something even better.

Thank you !

Lecture 4 & 5

Materials and Manufacturing

