

Intellectual Property Rights, and Competition Law
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Lecture - 01
Concepts of Intellectual Property Law Patents

Good morning all, I am Professor K. D. Raju, Professor of law, Rajiv Gandhi School of Intellectual Property Law, IIT Kharagpur. In this NPTEL course, Intellectual Property Rights and Competition Law; this week we are going to discuss the Concept of Intellectual Property Law and different categories of intellectual property rights.

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CONCEPTS COVERED

- Concept of Intellectual Property
- 1. Patents
- 2. Trademarks
- 3. Copyright
- 4. Geographical Indications
- 5. Designs
- 6. Integrated circuits
- 7. Trade secrets

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We know that the concept of intellectual property law is very simple.

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If you don't see a problem with this question, you need this class!

"All I asked was, 'Can I patent my copyrighted trademark?!'"

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Concept of Intellectual Property

- Creation of human mind
- Incentive for innovation
- Statutory right for a limited period of time for disclosing the invention.
- Fruits of creativity.

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It actually says that it is a creation of human mind or an incentive for innovation or it is a statutory right given by the government to the innovator or the inventor. Or, we can say that it is the fruits of creativity or it is an incentive given to the inventor by the government for a limited period of time. At the same time, we can see the different categories of intellectual property law.

And in this particular week, we are going to deal with patents, trademarks, copyrights, geographical indications, designs, integrated circuits and trade secrets. These are the 7 categories of intellectual property rights described in one of the WTO agreement dealing with intellectual property law i.e. Trade Related Aspects of Intellectual Property Law. And you can see in this particular picture what they are saying, they say “All I ask was, Can I patent my copyrighted trademark?”

So, these fellows do not understand, what is a copyright? what is the trademark? what is a patent? So, in most of the cases, people have this misconception, what is the patent? what is the trademark? or they could not find any distinction between the different categories of intellectual property law. So, if you are not able to understand ,definitely you require this class. So, this week we will discuss the categories of intellectual property law.

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IP Philosophy

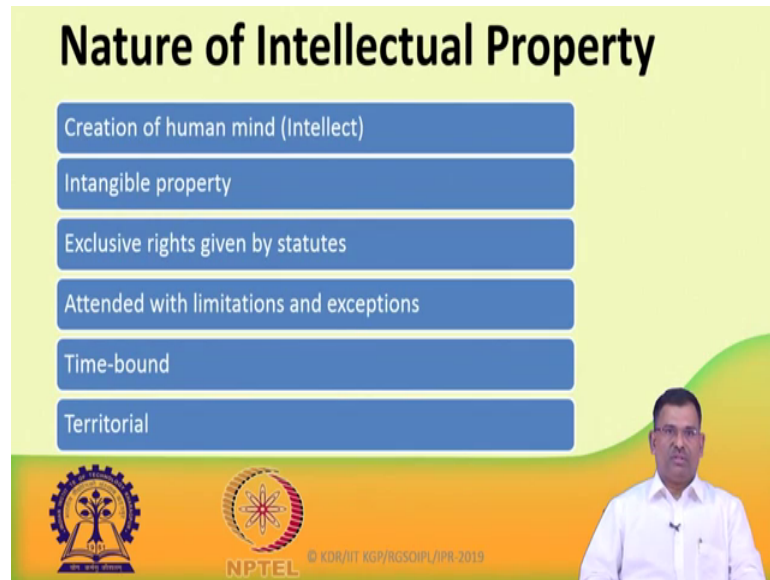
The WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) attempts to strike a balance between the long term social objective of providing *incentives for future inventions* and creation, and the short term objective of allowing people to use existing inventions and creations.

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The IP philosophy, which we already talked about, is the incentive for innovations. The present entire regime of intellectual property law is in the TRIPS agreement, one of the WTO agreement which provides minimum standards of intellectual property, but not uniform. Each and every WTO members, presently 164 World Trade Organization members, have intellectual property laws in their domestic countries.

They have to follow the minimum standards prescribed by this WTO agreement which is known as the Trade Related Aspects of Intellectual Property Rights, popularly known as the TRIPS agreement.

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And, we already discussed that the nature of intellectual property is of human creation of intellect; it is an intangible property. Earlier, every company survived with tangible properties. But now, every knowledge base companies survive with intangible properties. It is an exclusive right given to the inventor or the innovator or the artist or the writer or the author for a limited period of time. Under the TRIPS agreement presently, uniform protection is given to patents for 20 years.

This is very simple because the objective of giving this limited period of protection is that after this particular period of time everybody i.e. the public would be able to use this particular technology or this innovation. So, the exclusive right is given to the inventor for a limited period of time, for it is an exclusionary use.

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The slide features a purple header with the title "What is IP". Below the title, there are two blue text boxes. The first box contains the text: "IP results from the application of someone's mind or intellect to create something new or original. IP can exist in various forms, for example, IP can be an invention, a trade mark, book, film, trade secret or artistic design." The second box contains the text: "the legal protection of IP rights provides writers, journalists, photographers, artists, business people, entrepreneurs and inventors with the exclusive right to use and control, and therefore profit from, their intellectual and creative endeavours." At the bottom of the slide, there is a small video inset of a man in a white shirt. To the left of the inset are two logos: the IIT KGP logo and the NPTEL logo. Below the NPTEL logo, the text "© KDR/IT KGP/RGSOIPL/IPR 2019" is visible.

So, intellectual property is; there are lot of definitions for intellectual property, but it is clearly the application by someone using their mind or intellect to create something new. And we will see and later on discuss, what are the requirements of these criteria of intellectual property.

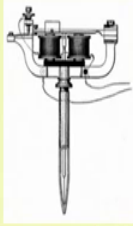
But it is very clear, it is the invention which is mostly appreciated under the intellectual property Law and it is under a legal protection. Now, it is obligation of every country to provide legal protection under the TRIPS agreement to this kind of innovations and inventions.

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Thomas Alva Edison

"Genius is one percent inspiration, ninety-nine percent perspiration."

- (February 11, 1847 – October 18, 1931) was an American inventor and businessman.
- He developed many devices that greatly influenced life around the world, including the phonograph, the motion picture camera, and a long-lasting, practical electric light bulb.
- A School dropout with 1093 patents .



U.S. Patent 196,747, Stencil-Pens. Later adapted to be a Tattoo machine.



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So, if we look into the history, we can see that the concept of intellectual property is not new at all. And, we can find prolific inventors in the past centuries and one of such bright mind is none other than the Thomas Alva Edison, who contributed thousands of inventions, thousands of patents to the knowledge. And, we can find his some of the inventions, which are still relevant especially in the case of lights and other machineries.

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Purposes

- Reward or incentive for the author
- Stimulate artistic & scientific creativity



Vertical wood carrier lowered or raised plates when formed.

Horizontal bar formed stroke.

Fixed plates pressed in paper against type.

Type form cast into other raised plates.

Leather balls stuffed with lead or steel, were used to hit type.

Paper to be printed was put in paper holder.

Paper holder filled over type form.

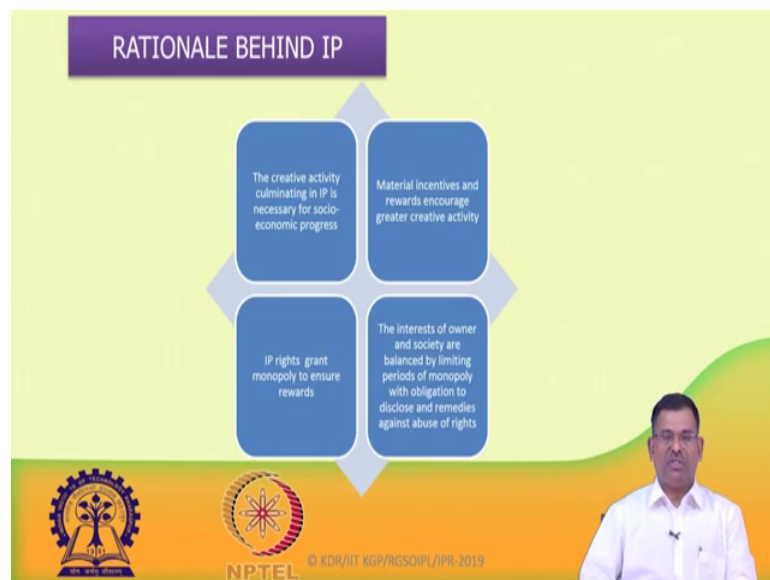


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The purpose is very simple of intellectual property law. It is actually a reward or an incentive to the author. It is an incentive to the sweat of the inventor to do more and more innovations in the future. It is a simulation to the artist; it is an incentive to the writer or the author.

So, it is a recognition of scientific creativity. So that is why we can find number of innovations in the market now. Now, the entire society is run on innovations. So, for each and every company, if you do not innovate; you perish that is the present situation of all the knowledge based companies.

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So, the rationale is very simple, which we talked about, one is the incentive theory; incentive for creativity and the other one is the monopoly right; limited monopoly right granted to people those who innovate. This is an incentive for further innovation to the society and there are criticism also of the protection of intellectual property. They say that each and every knowledge belongs to the society.

So, nobody can make it monopoly rights, but protection of intellectual property is also contributing to the society because, this monopoly right is granted for a limited period of time. The society, what it gets out of it? The inventor discloses this particular innovation

to the society from the day one. So that when the limited period of protection is over, the society can use this particular knowledge for further innovation.

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IP Laws of India

Act	Ministry/Department
The Copyright Act, 1957 - 2012	Higher Education
The Patents Act, 1970-2005	Industrial Policy & Promotion
The Designs Act, 2000	Industrial Policy & Promotion
The Trade Marks Act, 1999	Industrial Policy & Promotion
The Geographical Indications of Goods (Registration and Protection) Act, 1999	Industrial Policy & Promotion
The Semiconductor Integrated Circuits Layout-Design Act, 2000	Information Technology
The Protection of Plant Varieties and Farmers' Rights Act, 2001	Agriculture and Cooperation

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And, if you look into the Indian scenario; India has complied with the TRIPS agreement and enacted or amended its laws in accordance with the obligations under the TRIPS agreement. So, we have Patent Act, we have Copyright Act, we have Designs Act, we have Trademarks Act.

We have Geographical Indications of Goods Registration and Protection Act, 1999; Semiconductor Integrated Circuits Layout Designs Act, 2000; the Protection of Plant Varieties and Farmers Rights Act, 2001. So, most of these acts came after the TRIPS agreement, i.e., came to existence after 1995. We amended our laws in accordance with it.

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Why should you protect IP

- Basmati case in US
- Haldi -
- Neem -

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So, the pertinent question is that why should you protect the intellectual property? I will give you some of the examples: I won't say bio piracy, it has toughen our intellectual property and one is the Basmati case and other one is Haldi and the third case is Neem case.

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Basmati

1997- Rice Tech Inc. American company was granted a patent by the US Patent Office.

brand names like "Kasmati" "Texmati" etc.

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So, the basmati case is simple and basmati is rice which is grown in many parts of India especially, some of the northern states of India. And, it has huge export market all over

the world and Pakistan is also claiming that the basmati rice belongs to them as well. So, apart from the conflict of interest between India and Pakistan. One of the American company Rice Duck in 1997, they filled a number of patents with the US Patent Office based on the bio genes taken from the original Indian basmati rice.

And, they want to patent it in many names and sum of them were Kasmati, Texmati etcetera. So, it is nothing, but the theft of Indian knowledge, India's intellectual property, which will come under one of the categories of intellectual property i.e. the geographical indication.

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And this company was trying to patent it in the US and the Government of India had to fight the case in the United States and finally, the US Patent Office revoked it and the second case is on haldi. And, haldi everybody knows that it has medicinal qualities and it has wound healing qualities.

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Issue of patent

May, 1995 the US Patent Office granted to the University of Mississippi Medical Center a patent [#5,401,504] for "Use of Turmeric in Wound Healing."

The United States of America

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In 1995, another US Patent Office has granted a patent for “The Use of Turmeric in Wound Healing”. So, again we see this Indian traditional knowledge being stolen by these US companies. Then, again India fought this case in the US courts and finally, this patent also was revoked.

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NEEM

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And the 3rd case is on Neem and we know that the neem is used by Indians for many medicinal purposes for time immemorial period.

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The slide is titled "Neem" in a large, bold, black font at the top center. Below the title are three blue rounded rectangular text boxes containing the following text:

- Since 1985, a dozen patents have been granted to Japanese and US firms for neem based tooth paste.
- 1992 – W.R.Grace extracted a powerful pesticide from its seed.
- Consequently suing Indian firms for making emulsion using neem.

At the bottom of the slide, there is a yellow and green gradient background. On the left, there is a logo of a tree inside a gear. In the center, there is a logo of a sun or star with rays. To the right of these logos is a small inset video of a man in a white shirt speaking. At the bottom center, there is a small text box that reads "NPTEL © KDR/IT KGP/RGSOIPL/PPR 2019 © KDR/IT KGP/RGSOIPL/PPR 2019".

And here, also we can see another US Company, W. R. Grace. They want to actually patent different products of neem, involving neem and get monopoly for them. In 1985, onwards you can find a number of patents. Patents that are neem based products like tooth paste and other products. And the patents were filed in the USPTO as well as the Japanese Patent Office.

In 1992, W. R. Grace, this particular company came out with pesticide emulsion based on the neem products. And, once they made this, they patented this particular product and started suing the Indian firms those who were making this emulsion using the neem seeds, specifically the neem seeds. So, because everybody knows that the bio pesticides can be made from neem and this particular knowledge is in India for time immemorial period. So, India had to fight this case as well.



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EPO

In 1997- rejected a patent on the fungicidal effect of neem oil (Patent No.436 257 B1) owned by W.R.Grace & Co an American Company.

Indian scientists argued that Indian people knows the medicinal properties of neem for thousands of years.

EPO accepted the argument.



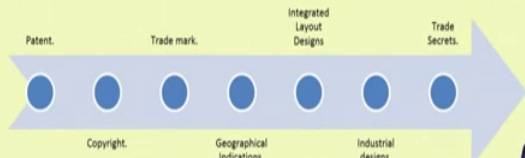
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Not only in US, but in other jurisdiction as well. In 1997 this patent was rejected and also in others jurisdiction like Germany, the European Patent Office has accepted the arguments of Indian scientist that this particular knowledge exist for time immemorial period and in India and Indian knows this particular knowledge.

So, what does it mean by all these cases? What is specifically meant by fighting all these cases?



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Types of intellectual property



Patent. Trade mark. Integrated Layout Designs. Trade Secrets.

Copyright. Geographical Indications. Industrial designs.



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If you do not protect your intellectual property locally, somebody is going to take away your intellectual property and are going to make it their own and make money out of this. And, due to the patent protection they are going to have a monopoly right over your intellectual property. So, it is now your duty to protect your intellectual property and for you to look into different types of intellectual property, which I have already explained to you.

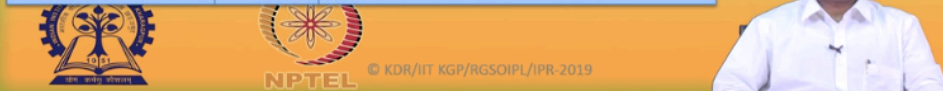
So, under the TRIPS agreement, there are 7 categories of intellectual property which is mentioned in the TRIPS agreement. I am starting with patents, then you can find copyright, then trademark, geographic indications, then integrated layout designs, industrial designs and then finally, the trade secrets or undisclosed information. And in today's class, we are going to discuss about the patents.

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IP At a Glance

What's Protected	Type of IP Protection	What it Means
Inventions	Patents	The owner has the exclusive right to use, sell or license the invention. Patents also allow the owner to stop others from manufacturing, using, copying and/or selling the device or process.
Letters, numbers, words, colours, a phrase, sound, smell, logo, shape, picture, aspect of packaging or any combination of these	Trade Marks	A trade mark identifies the particular goods or services of a trader as distinct from those of other traders. The owner has the exclusive right to use, sell or license the trade mark.
Two and three dimensional product designs, for example, a fabric pattern and the shape of a chair	Registered designs	The visual appearance of a manufactured product is protected, but not the way it works. The owner has the exclusive right to use, sell or license the registered design.
New plant varieties	Plant Breeder's Rights (PBR)	Plant Breeder's Rights are used to protect new varieties of plants by giving exclusive commercial rights to market a new variety or its reproductive material.
Art, literature, music, film, broadcasts and computer programs	Copyright	The owner's original expression of ideas is protected, though not the ideas themselves. The owner has the exclusive right to use, sell or license the copyright work.
Trade secrets, confidential information, circuit layouts	Other	These types of IP give creators certain rights and privileges depending on the type of IP protection, but in general, the owner has the exclusive right to use, sell or license the IP.

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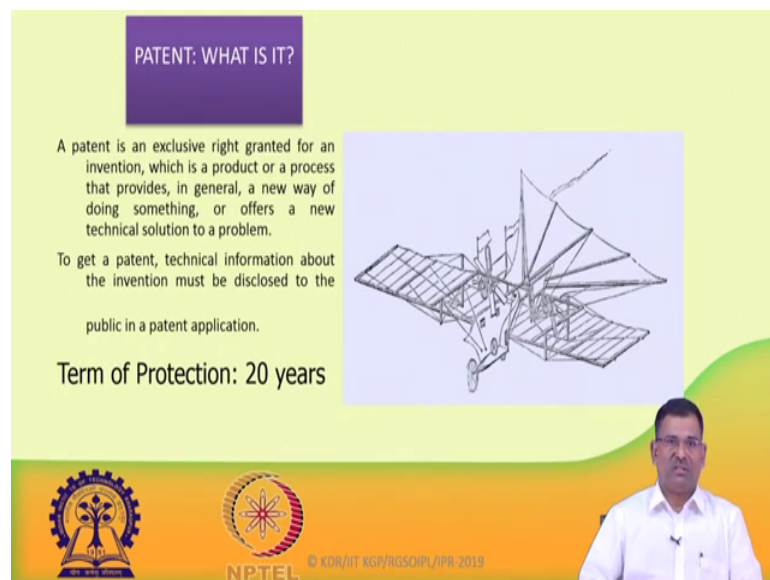


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Everybody has heard about patents. But actually most of them are not aware of what constitute the patent, what are the requirements of a patent? Why you should take patents ? why you should protect your inventions through patents?

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So, if you look into some of the old technologies. We know that the flying technology or the first flying machine is invented by the Wright brothers. So, the Wright Brothers, you

can find the patent protection for their machine. They have patented some of these machines and you can also find some of the very old patents.

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The slide is titled "First Ever Patent....." and features three blue text boxes on the left side. The first box states: "The first recorded patent of invention was granted to John of Utynam by King Henry VI." The second box states: "In 1449, he was awarded a 20-year monopoly for a glass-making process (stained glass) previously unknown in England for creating the stained glass windows of Eton College." The third box states: "In return he has to teach his process to Englishman." To the right of these boxes is a portrait of John of Utynam, a man in a black cap and white shirt. At the bottom of the slide, there are logos for IIT Kharagpur and NPTEL, along with the text "© KDR/IIT KGP/RGSOIPL/IPR-2019". A small inset video of a man in a white shirt is visible in the bottom right corner of the slide.

So, the first ever old patent was granted to John of Utynam by King Henry VI and that was in 1449. So, remember the first patent was granted in 1449 that is centuries back; so, the concept of intellectual property or patent protection, is not new at all. It is a centuries old concept of protecting intellectual property. So you can find the coincidence that the first patent also was granted for a period of 20 years.

And, after many centuries TRIPS agreement also limited the protection to 20 years of monopoly rights. And here you can find the first case the incentive theory. So for giving a monopoly rights he had written, he has to teach his process to the English man that was the condition put by the kind on the first incentive. So, in the first invention itself he got the incentive and then the first patent system, the India patent system started from that onwards.

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First Patent
Samuel Hopkins, received Patent No. 1 on July 31, 1790, for an improvement "in the making Pot ash and Pearl ash by a new Apparatus and Process."
The patent was signed by President George Washington, Attorney General Edmund Randolph, and Secretary of State Thomas Jefferson.
Only two other patents were granted that year, one for a new candle-making process and the other the flour-milling machinery of Oliver Evans.

The First US Patent

The United States Patent Office

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So, you can see that the first US patent also was granted for Pot ash that was in 1790 to this patent number 1, which was signed by the President of the United States at that point of time for making Pot ash and Pearl ash by new apparatus and process. You can see the certificate granted by the United States of President at that point of time.

So what I want to say is that the concept of intellectual property is not new at all. It is not the invention of the 21st century it is centuries old, the concept at all.

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- Paper clip was patented by Norwegian, Johan Vaaler in Germany, 1899.

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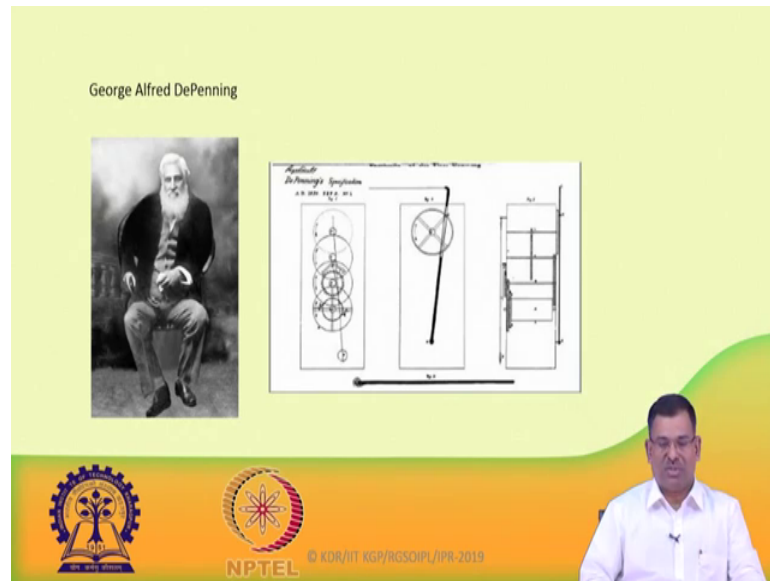
So, we use a very simple clip, the gem clip which is patented in the year 1899. So, the patented clip, it was invented by a Norwegian person, Johan Vaaler in Germany in 1899. So, you can see that even a small thing, a simple thing can get a monopoly right only for limited period of time. But the inventions; the innovations are spread over many centuries and we still use the same gem clip, after centuries. So, it means that even a small invention can go for centuries and centuries.

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The slide features a Venn diagram with three overlapping circles. The top circle contains the text: "On March 3, 1856, a civil engineer, George Alfred DePenning of 7, Grant's Lane, Calcutta petitioned the Government of India for grant of exclusive privileges for his invention – "An Efficient Punkah Pulling Machine". The bottom-left circle contains: "These were accepted and the invention was granted the first ever Intellectual Property protection in India". The bottom-right circle contains: "On September 2, DePenning, submitted the Specifications for his invention along with drawings to illustrate its working." The slide also includes the logos of IIT Kharagpur and NPTEL, and a copyright notice: "© KDR/IT KGP/RGSOIP/IPR 2019". A small video inset of a man in a white shirt is visible in the bottom right corner of the slide.

And, if you look into the first ever patent granted in India it is in 1856; in 1856 the Britisher who was serving in Kolkata, whose name is George Alfred De Penning. So, who belongs to Kolkata at that point of time has invented a machine, a mechanised system for moving a manual *punkha*.

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So, he is with his invention i.e. George Alfred De Penning. Earlier, before the fans which we use in the present state, there were manual *punkhas*.

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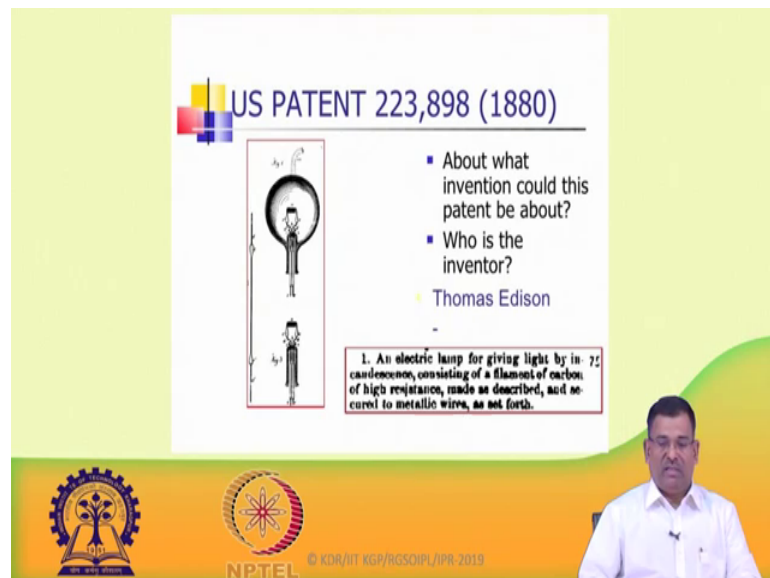
So, this is how you know, you can see the manual *punkha* on the roof and some people have to manually operate this. So, he made an invention to operate this particular *punkha* that was the first invention.

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So, you can see the transformation of the present fan from the *punkha*, which is the manual *punkha* to the innovation; different innovations and which reach to the present level of the fans which you see nowadays.

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US PATENT 13,661 (1855)

- About what invention could this patent be about?
- Who is the inventor?

Sewing Machine
I.M.Singer

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The slide features a technical drawing of a sewing machine mechanism. Below the drawing, there are two bullet points asking about the invention and the inventor. The text 'Sewing Machine' and 'I.M.Singer' is listed below the questions. The slide is part of an NPTEL presentation, as indicated by the logo and copyright notice at the bottom.

I can explain a number of patents. Let us skip through all these inventions. You can find “n” number of inventions for example the sewing machine. The sewing machine, everybody gives the present day, which was invented at that point of time in 1855 onwards. It is a patented machine at that point of time. Now, you can find new innovations to the sewing machines.

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Thomas Alva Edison (d. 1931)

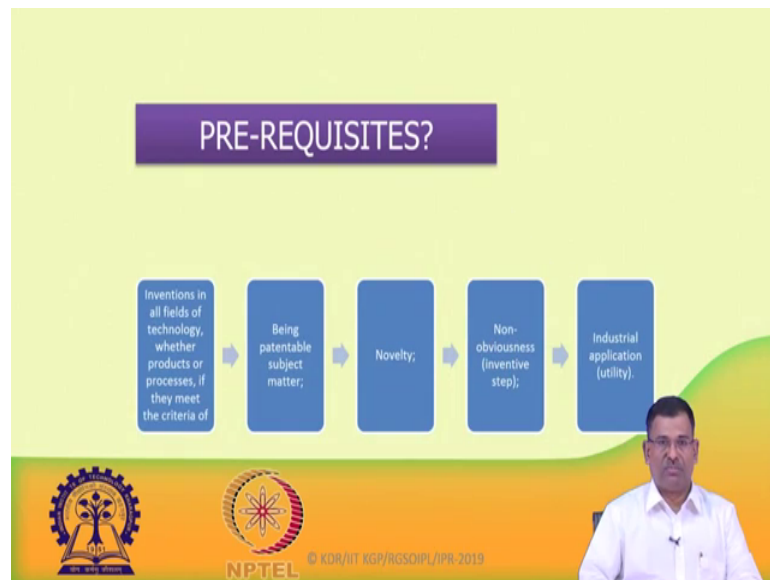
- 389 patents on lamp and electrical power,
- 195 on phonograph,
- 150 on telegraph,
- 141 on battery and
- 34 on telephone.

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The slide features a large blue arrow pointing to the right, containing five boxes with patent counts for Thomas Alva Edison. The slide is part of an NPTEL presentation, as indicated by the logo and copyright notice at the bottom.

Earlier also I talked about this Thomas Alva Edison, who had thousands of patents on different innovations. So, if you innovate, a prolific innovator, who was a class drop out.

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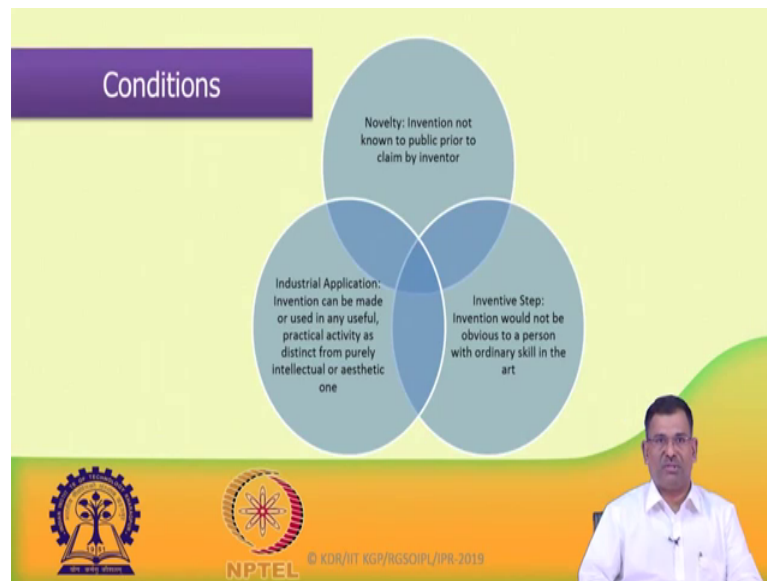


Will come to the prerequisites of the patentee.

So, as I told you, in many of the jurisdictions inventions are patentable and in India discoveries are not patentable. But, the criteria, as I already told you, is that the TRIPS agreement only put minimum standards; not the maximum standards. So, some of the countries are very liberal in the inventions and incremental innovations are also permitted in some of the countries.

And so, the first criteria is patentable subject matter; and also has to prove the basic three minimum criteria i.e. novelty, then non-obviousness or inventive step and third is the industrial application.

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So, if you look into these three criteria, the novelty criteria is very simple criteria. In layman's language if I say that it should not be known to the public prior to the claim by the inventor; that is a very simple criteria of novelty. And the second criteria is the inventive step; that means, the invention would not be obvious to a person who is ordinarily skilled in the art.

So, if the mechanic; if it is a mechanical invention a mechanical engineer or a person, who is conversant with the technology should not have heard about it before, that is the simple language, that is the inventive step, or non-obvious to a person.

And, the third criteria is the industrial application i.e. the invention cannot be abstract. Invention must be useful or it must be practical activity or there must be an intellectual industrial application. So, the intellectual creativity must have an industrial application. These are the three conditions which is put forward.

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The slide features a purple header with the text 'EXCLUSIONS FROM PATENTABILITY'. Below the header, six blue rectangular boxes list the following categories of exclusions:

- Naturally occurring substances/elements;
- Diagnostic, therapeutic and surgical methods of treatment of humans or animals;
- Plants and animals other than μ -organisms;
- Essentially biological processes for production of plants or animals;
- Inventions whose use is contrary to public order or morality.
- Ideas, methods for business, playing games, performing mental acts.

At the bottom of the slide, there are three logos: the Indian Institute of Technology (IIT) logo on the left, the NPTEL logo in the center, and a copyright notice '© IIT KGP/RGSOIPL/IPR 2019' on the right. A small inset image of a man in a white shirt is visible in the bottom right corner of the slide.

And, under article 27 of the TRIPS agreement, there are many things which are excluded from patentability, i.e., patentability criteria is mentioned. For example, the naturally occurring substance or elements are excluded, then, secondly the diagnostic, therapeutic and surgical methods for treatment of humans or animals are also excluded. Then, plants and animals and other than micro organisms. But there are controversies with regard to the plants and animals produced with the help of biotechnology.

So, genetically modified organisms, in some of the countries it is patentable and in some of the countries these are non-patentable. Then fourthly, the essentially biological processes for production of plants or animals are also excluded. Then, again most importantly the inventions, which are contrary to the public order, *public ordre* or morality is excluded from patentability. And lastly, the mere ideas or methods for business, playing games, performing mental acts are not patentable in most of the countries, but you can find business method patents are available in the countries like the United States.

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PATENT: SPECIAL REQUIREMENT

Disclosure of invention

- Sufficiently clear and complete so that a person skilled in the art can carry out the invention.
- A country may require the best mode for carrying out the invention to be disclosed.

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And the most important requirement of the invention is the disclosure of the invention to the public. As I already told you the inventor gets an incentive for a limited period of time for disclosing his invention to the public at large.

So, the disclosure must be sufficiently complete. So that a person skilled in that particular art can duplicate that particular invention once the protection period is over; he should be able to practice. So, we can see that these inventions disclosure should be complete; so, that we can make this.

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NON-PATENTABLE

An Invention Which is frivolous or

which claims anything obviously contrary to the well established Natural Laws.

A machine whose primary or intended use or commercial exploitation of which could be contrary to Public order or morality or which causes serious prejudice to human, animal or plant life or health or to the environment :

- Gambling machine
- device for house-breaking
- Biological warfare material or device
- Terminator gene technology
- embryonic stem cell

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The slide features a light green background with a yellow-to-orange gradient at the bottom. A man in a white shirt is visible in the bottom right corner. The text is presented in blue rounded rectangular boxes.

And, you can also find the non-patentable subject matter and so, frivolous matter are not inventible; so it is not patentable. And also the established laws. A machine which is made for opening of locks. So, contrary to established natural laws are also non-patentable. Also other than commercial exploitation. So, a machine which you invent contrary to public order and morality or which causes serious prejudice to the human or animal or plant life or health or to the environment is excluded from patentability.



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NON-PATENTABLE

Mere Discovery of a Scientific Principle

or Formulation of an Abstract Theory

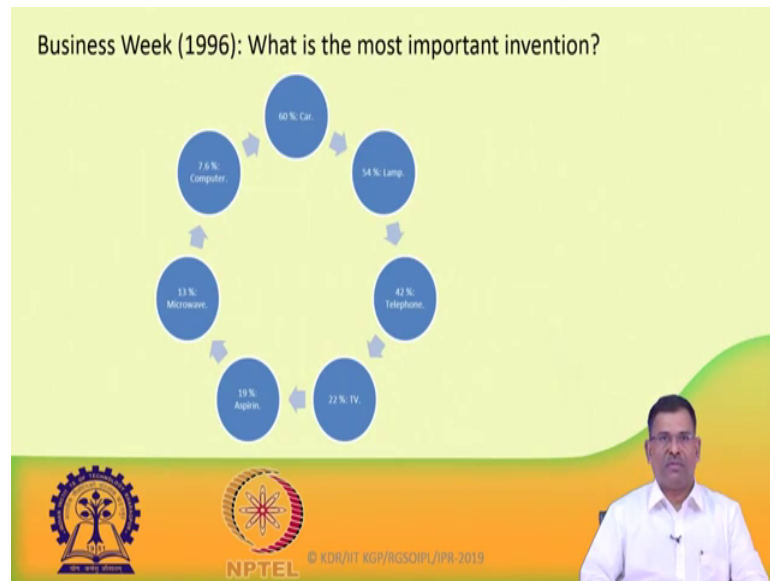
or discovery of any living thing or non-living substance occurring in nature

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Then, again as I already told you that the mere discovery of scientific principle is non-patentable in most of the jurisdictions and abstract theory again is non-patentable. Then, the discovery of any living things or non-living substance occurring in the nature is non-patentable.

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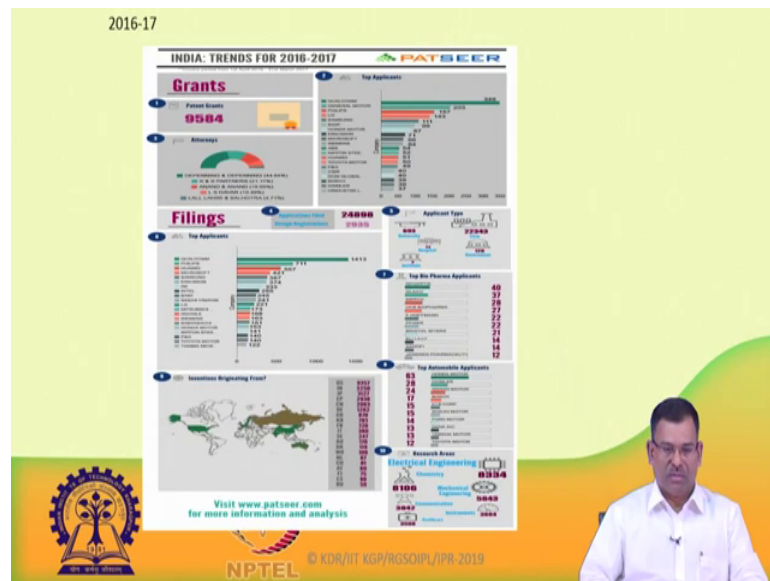


But in some of the countries, which you can find there is a distinction between non-living substance and living substances in some of the jurisdiction.

If you look into this particular picture you can find that the most important inventions are in, which are the areas where the most important invention are. Whether it is in the automobile sector; whether it is in the lamps; whether it is in other areas like telephone or it is in areas like microwave or in the computer.

So, you can find some very specific areas where, there is lot of innovations happening especially, 60 percent innovations happening in the automobile sector, in car. So, this concentration of innovation can be found in some of the specific sectors.

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I think this is a panoramic view of trends of the patents, which you can find it in all over the world and which are the areas where, it is happening, where the filing are happening and the grant is, the grant of the total number of patents in different jurisdictions which you can find.

So, these are the data, which is created by specific people who clearly say that the innovations are happening in the developed world not in developing countries. I think the developing countries also have to now look upon the innovations more and more.

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And If you look into the data some of the companies are prolific innovators like the famous companies like Qualcomm, who is the major in the telecommunication sector and General Motors. And, these numbers are representative numbers which may change, but clearly it shows that other than CSIR, which is the Government of India organization, you could not find even a single Indian company in this long list.

So, it means that the countries like India or the developing countries should more and more concentrate on innovation and innovation, not only innovations but filing patents. So, all these companies are foreign companies; why the foreign companies? So, the Indian companies also should come up and innovate and they should file the patents.

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If you look into some of the institutions, they are also majors in filing patents; definitely, Indian Institute of Technology: IITs are the majors in filing number of patents. And most importantly, you can find some of the private institutions are also in this particular figure and these private institutions are also actively now coming up with patent filings and they want to become the majors in this particular field. I hope that these institutions specifically the industry and institutional partnerships can make the number of filing in India very high.

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Patent Trends					
Year	2012-13	2013-14	2014-15	2015-16	2016-17
Filed	43674	42951	42763	46904	45444
Examined	12268	18615	22631	16851	28967
Granted	4126	4227	5978	6326	9847
Disposed	9027	11411	14316	21987	30271

And these patent trends, which specifically shows that the number of patent filings in India are going up; definitely it is going up if you take into account from 1995 onwards. And now, the filing procedure are also very simplified by the Indian Patent office. So, these patent trends, when we compare it with the other countries, number of obligations in other countries are very small.

So, we have to innovate. We not only have to innovate, but the number of patent filings also has to go up. And then only we can say that we are an innovative country.

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And we will stop this particular class here, this is about the patents and we will go to the other categories next.

Thank you.