

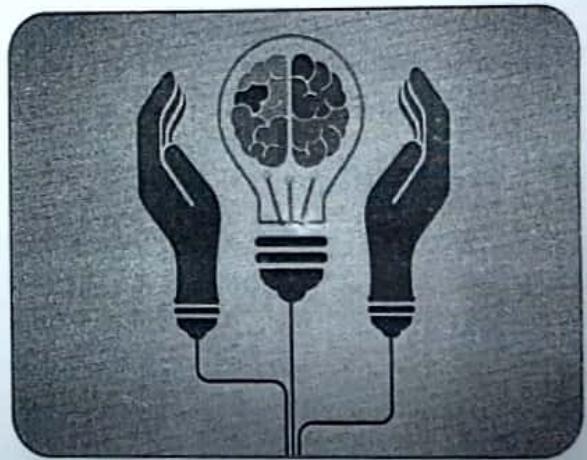
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Textbook

on

Intellectual Property Rights

(Prepared as per AICTE Model Curriculum)



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Chapter 1

NATURE OF INTELLECTUAL PROPERTY

1.1 INTRODUCTION

This chapter deals with the nature of intellectual property such as patents, designs, trademarks and copyrights, process of patenting and development, technological research, innovation, patenting, development, international scenario, international cooperation on intellectual property, procedure for grants of patents, patenting under PCT.

1.1.1 PROPERTY

Property is basically classified into a tangible property (physical goods that can be perceived by touch) and intangible property (non-physical goods that cannot be perceived by touch). Tangible property is further classified into movable property (Jewellery, Vehicles, Computer, etc.) and immovable property (Building, Factory, Stadium, etc.). Intangible property is further classified into intellectual property (Patents, Trademark, Industrial Design, Copyright, etc.), right to individual reputation (Character, Ethics, Freedom, etc.) and securities (Debt Securities, Equity Securities, Derivative, etc.) (Fig. 1.1). This book focuses on the basic aspects of intellectual property.

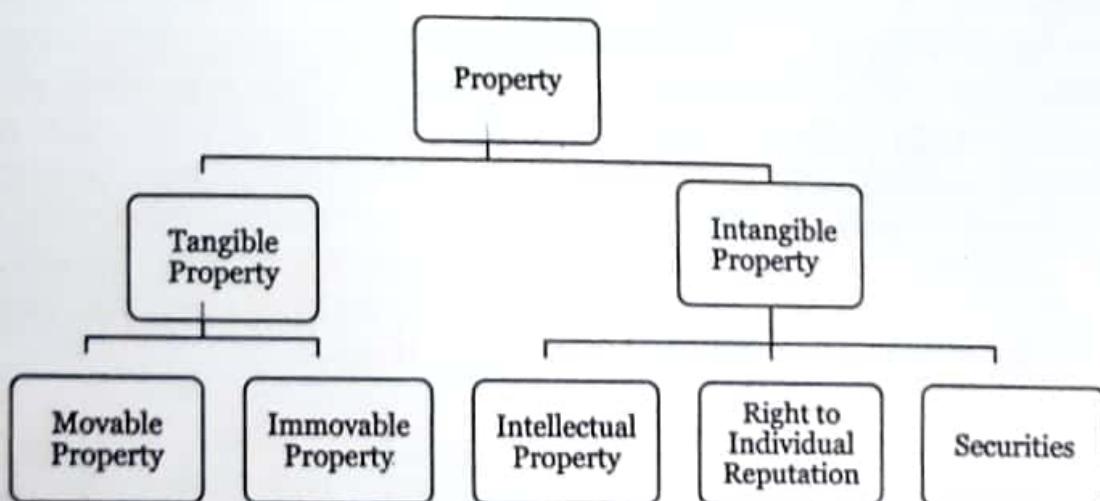


Fig. 1.1 Classification of Property

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1.1.2 INTELLECTUAL PROPERTY

Intellectual property is classified into industrial property and literary property (Fig. 1.2). The major components of industrial property are Patents, Trademarks, Industrial Designs, Layout Design of Integrated Circuits. Copyrights and Neighbouring rights are classified under the category of literary property. Neighbouring rights are further classified into performers' right (stage performance such as Dance, Drama, Singing, etc.) and broadcasting rights (Sports, News, Music in Television, Radio, etc.).

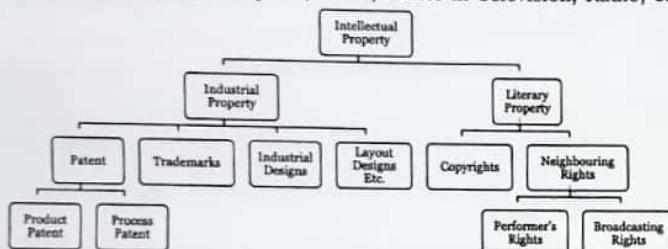


Fig. 1.2 Classification of Intellectual Property

Intellectual property refers to creations from the mind such as inventions, literary works, artistic works, symbols, names and images used in commerce/business. Intellectual properties are intangible. Hence, it is highly difficult to offer protection like other types of properties. For example, a tangible property, such as a smartphone, automobile, etc. can be recovered or replaced, even if it is stolen. If a new invention/innovation has been stolen by someone, the potential profit of the invention will also be taken away by him. Since the intellectual property originates from the mind, the benefits arising from these ideas can be enjoyed by others immediately after they are divulged, if not properly protected. Therefore, respective governments protect the creator(s)/applicant(s) of any innovation by issuing intellectual property rights (IPRs) in the form of patents, copyrights, trademarks, industrial designs, etc., IPRs results in some benefits in terms of revenues and recognition for creators/applicants. However, the protection of intellectual activity in the industrial, scientific, literary or artistic fields is only for a certain period of time.

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1.1.3 INTELLECTUAL PROPERTY RIGHTS (IPRs)

Intellectual Property Rights (IPRs) refers to rights issued to the applicants/creators for their invention/innovation in the form of the certificate by the respective governments through their Patent/Trademark/Copyright/Industrial Design/Geographical Indicators offices. The various components of IPRs such as Patent, Trademark, Copyright, Industrial Design and Geographical Indications are briefly presented below.

1.1.4 PATENT

A patent is a form of intellectual property granted to the applicant(s), who claims to be the first inventor(s) for providing a solution(s) to a technical problem in a particular field. A patent is an exclusive (monopoly) right awarded for an invention/innovation for a product or process. It provides a new way or method or approach to solve a particular technical problem. Otherwise, we can express, patent as a technological document, which describes fully the best way of performing a particular invention/innovation and also which provides the details relating to the applicant(s) and the inventors. A granted patent gives an applicant(s) the legal right to exclude others from making, using, selling, and importing for a period of 20 years from the date of filing. An applicant(s) of a granted patent has the authorisation to use the invention/innovation for his own purpose or make money by making and selling it and (or) license to others or transfer the technology. The applicant(s) has also the right to take legal action against any person exploiting their invention/innovation partially or fully without their consent or permission.

The patent law in India is governed by the Patent Act 1970. Indian Patent Offices are located in New Delhi, Mumbai, Chennai and Kolkata. A completed application in the prescribed format can be applied in the patent office by an applicant(s) or an authorized patent agent or an attorney (lawyer). A granted patent is valid only in the particular jurisdiction, where it is sanctioned (Country wise: United States, India, China, Japan, etc. or Region wise: European Union, African Countries, etc.). There is nothing called as 'International Patent'. An applicant who wishes to get a patent granted for his invention/innovation in other countries, should submit a separate patent application in each country of his choice through the Patent Cooperation Treaty (PCT) route or by the Conventional route.

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1.1.5 COPYRIGHT

Copyright is an exclusive right awarded for any creation in the literary work, artistic work, dramatic work, musical work and computer software (*per se*) to an author or composer (or their applicants) to print, publish, perform and sell copies of his original work. Copyrights are issued to the creator(s) by the respective Copyright office for protecting creativity and ingenuity. Copyright is awarded to a work that is new or original, irrespective of the quality of work. A major limitation of the copyright is that it protects only the original expression of ideas, and not the ideas *per se* (by or in itself or themselves). Copyright is issued only to a fixation material, i.e., the work must be arranged in the form of words, musical notes, colours and so on, which is written on a paper, sheet or printed as a book, CD, etc. A copyright holder may use his own work according to his wish. The different types of copyrights are given in Fig. 1.3.

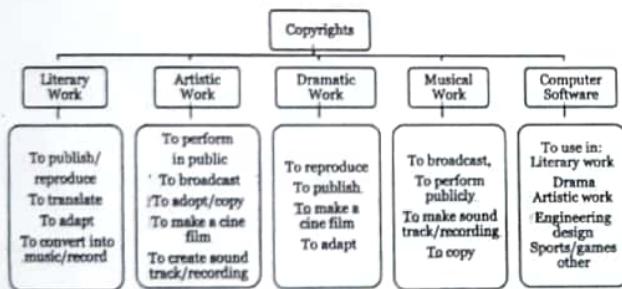


Fig. 1.3 Types of Copyrights

There are two types of rights under copyright. The first one is the moral right, which allows the owner/creator to take certain actions to preserve the personal link between him and the work. The second one is the economic right which allows the owner to derive financial rewards from the use of his work by others. Copyright holders have the right to exclude others from using their creations without their authorisation. Copyright also includes the right issued to others to reproduce, translate, neighbouring rights or rights to perform in public, recording, motion pictures and broadcasting. Copyright is issued to the creator(s)/owner(s) for a lifetime of a person plus 60 years by the Copyright office. In India, the Copyright office

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is located in New Delhi. The law of Copyrights in India is governed by the Copyright Act 1957. Typical examples of Copyright is given in Fig. 1.4.

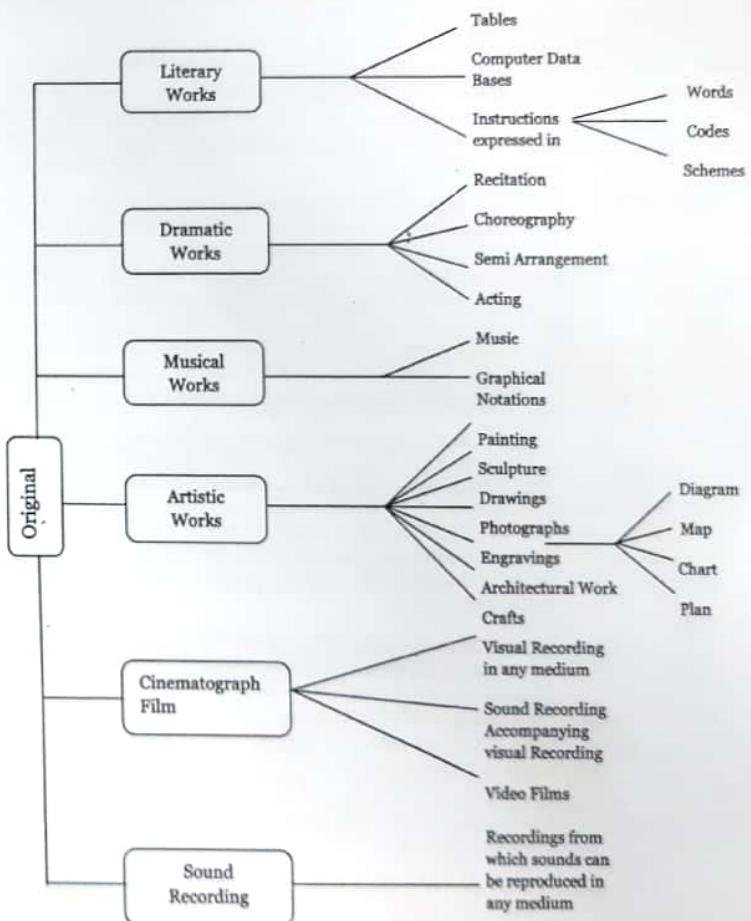


Fig. 1.4 Typical Examples of Copyright

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Forms of Copyright

The different forms of copyright include reproduction right, translation work right, adaptation right and neighboring right. These are briefly discussed below.

- a) Reproduction right: A copyright owner can also transfer or permit ownership to others to reproduce contents of his work by means of an agreement with financial benefits. The work includes musical work, audiovisual works, computer programs, etc.
- b) Translation Work and Adaptation Right: A copyright owner can transfer his ownership to others for translation or adaptation of his own work. Translated work means the expression of a work in any language other than that of the original version. Adaptation is the modification of a work from one type of work to another. For example, adapting a novel into a motion picture or adapting an instructional textbook originally prepared for higher education into an instructional textbook intended for students at a lower level.
- c) Neighbouring Right: Neighboring rights include performing right, recording right, motion picture right and broadcasting right. These are briefly presented below:
 - (i) Performing right: After getting the necessary permission from the owner(s) of the Copyright, the performing rights provide rights to perform the musical performance, dramatic work, etc. in public.
 - (ii) Recording right: Recording right is given for the protection of the sound recording of a work. Sound recording is the most important part of musical work. A holder of sound recording right also holds the Copyright for music, words or both. If the owners are different, the person who claims the Copyright of the sound recording is required to obtain authorization from others. In other words, it is necessary to get permission from musicians, singers and others who are all involved in the sound recording.
 - (iii) Motion picture right: Right in respect of a motion picture is given specifically to the visual recording often called cinematographic work or audiovisual work.

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- (iv) Broadcasting right: Broadcasting right is given for broadcasting of live games, sports, news, etc which are communicated to the public by means of wires, cables, satellite, etc.

1.1.6 TRADEMARK (TM)

A trademark™ refers to any sign or symbol (brand name) that differentiates the goods of the owner from those of the competitors. Any business organization or individual can register for a trademark for his company/organization in the form of words, letters and numerals, devices or combinations of the above, colored marks, three-dimensional signs, audible signs, olfactory marks and other signs. A trademark also includes a heading, label, ticket, signature, package or any combination thereof. A trademark can be identified on a package, as a label, as voucher, or on the product itself. For the sake of identity, trademarks are often displayed on company buildings, brochures, letterheads, advertisements, etc. But it may not provide any information relating to the organization or person who is manufacturing the product or who is trading or the quality of the product. The law of trademarks in India is governed by the Trademarks Act, 1999. A trademark is granted by Indian Trademark Registry (office) at Chennai, Mumbai, New Delhi and Kolkata. Fig. 1.5 shows a few typical trademarks.



Fig. 1.5 Typical Trademarks

Trademark Act 1999 provides a single application for registration of more than one class. The existing mark of the company/organisation can also be registered as a Trademark. A trademark is valid for a period of 10 years from the date of filing. Thereafter, it has to be renewed every five years by payment of renewal fees. However, a trademark should not have the following features:

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- a) It should not be deceptively similar to any other existing marks, e.g., Mc Donalds and McDowell's
- b) It should not be a description of the goods. For example, "Book my Show".
- c) It should not be a word that defines the nature of the product. For example, 'Apple' applied to a fruit grower/seller.
- d) It should not be the name or surname of the person. For example, Shivaji, Netaji, Gandhi, Rajini Kanth, Dhoni, Kohli, Sachin Tendulkar, Ramraj, etc.
- e) It should not be a geographical name, e.g., Ooty, Munnar, Thekkady, etc.

The criteria for filing the trademark application are given below:

- a) Invented Word: The trademark to be registered must be an invented word/mark. A mark that describes the product cannot be registered as a trademark. For example, The name simply as "Tea", "Fan", "University" are not allowed to be registered as a trademark. But Darjeeling tea, Usha Fan, Anna University, etc can be registered as a trademark. The mark that describes the quality of the product cannot be registered as a trademark. For example, words such as excellent, superb, innovative, fine, quality, etc., cannot be registered as trademarks.
- b) Distinctiveness: Distinctive refers to the mark which has the ability to distinguish one from another, even though the products are similar in nature. For example, Uber, Ola, etc.,
- c) Absence of deceptive similarity: Any mark which is similar or distinctively similar to another mark is termed as deceptively similar. A deceptively similar mark is likely to cause confusion or deceive the public mistaking for another mark.

Some factors for the deceptive similarity of marks are:

- (i) Phonetic similarity: Any mark which sounds similar to the existing mark to the customer is considered as a phonetically similar mark. E.g., Gluvita and Glucovita, Lakme and Likeme.
- (ii) Visual similarity: When the marks are visually similar to the mark, the consumer believes that the goods bearing both the

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marks belong to the same manufacturer. Therefore, the mark must be distinguishable and should not resemble (look-alike) any other marks.

- (iii) Absence of similarity in the idea: Any marks having similar ideas are not allowed to ensure that one manufacture does not copy the idea of another. For example, PayPal and Paytm. The reputation of PayPal is affected due to the similarity in the idea.

Service Mark (SM)

A service markSM is a trademark used to identify a service rather than a product. A service mark is a brand name or logo that identifies the provider of a particular service. A service mark may also consist of a word, phrase, symbol, design or a combination of these elements as with a trademark. A “service” is something intangible provided by a company for the benefit of others. For example, a carpet cleaning company would likely get a Service Mark registration because it performs a service activity rather than offering a physical product. Similarly, hospitals providing service as treating the patients can get the service marks registered in their name.

Collective Marks and Certification Marks.

A collective mark is one that is owned by an association and its members, whereas a certification mark is based only on the standards of the goods. In India, Agmark and ISI are examples of the certification mark. Typical examples of a collective mark and certification marks are shown in Fig. 1.6 and Fig. 1.7 respectively.



Fig. 1.6 Typical Examples of Collective Mark



Fig. 1.7 Typical Examples of Certification Mark

The registration of Trademark is classified on the basis of Nice Agreement, (signed at Nice, a City of France in 1957), where the Goods are referred to as Trademark TM under Classes 1 to 34 (Annexure 1), while the Services are referred to as Service mark SM under Class 35 to 45 (Annexure 2).

Granting Procedure of Trademark

The procedure of the grant of a Trademark is illustrated in Fig 1.8. The application for registration of a trademark should be submitted with a Form filing a TM-A (Annexure 3) to the Registrar of Trademarks. The examiners examine the application and raise objections (if any). If there is no objection, the mark is accepted and advertised in the Trademark Journal. Once the application is advertised in the Trademark Journal, any person can oppose the mark within a period of four months from the date of advertisement. Objections can be filed on the ground that the mark necessarily proposed is conflicting with their other trademarks, whether registered or not. Once an objection is filed by the opponent, a counter-statement should be filed by the applicant within two months from the date of service of the notice of opposition by the Trademark Registry. If a counter statement is not filed within the prescribed time period, the application shall be deemed to have been abandoned. After filing the counter statement, both the parties should submit the necessary evidence as proof. The Registrar, after hearing both the parties, will decide upon the case and amend or register the trademark.

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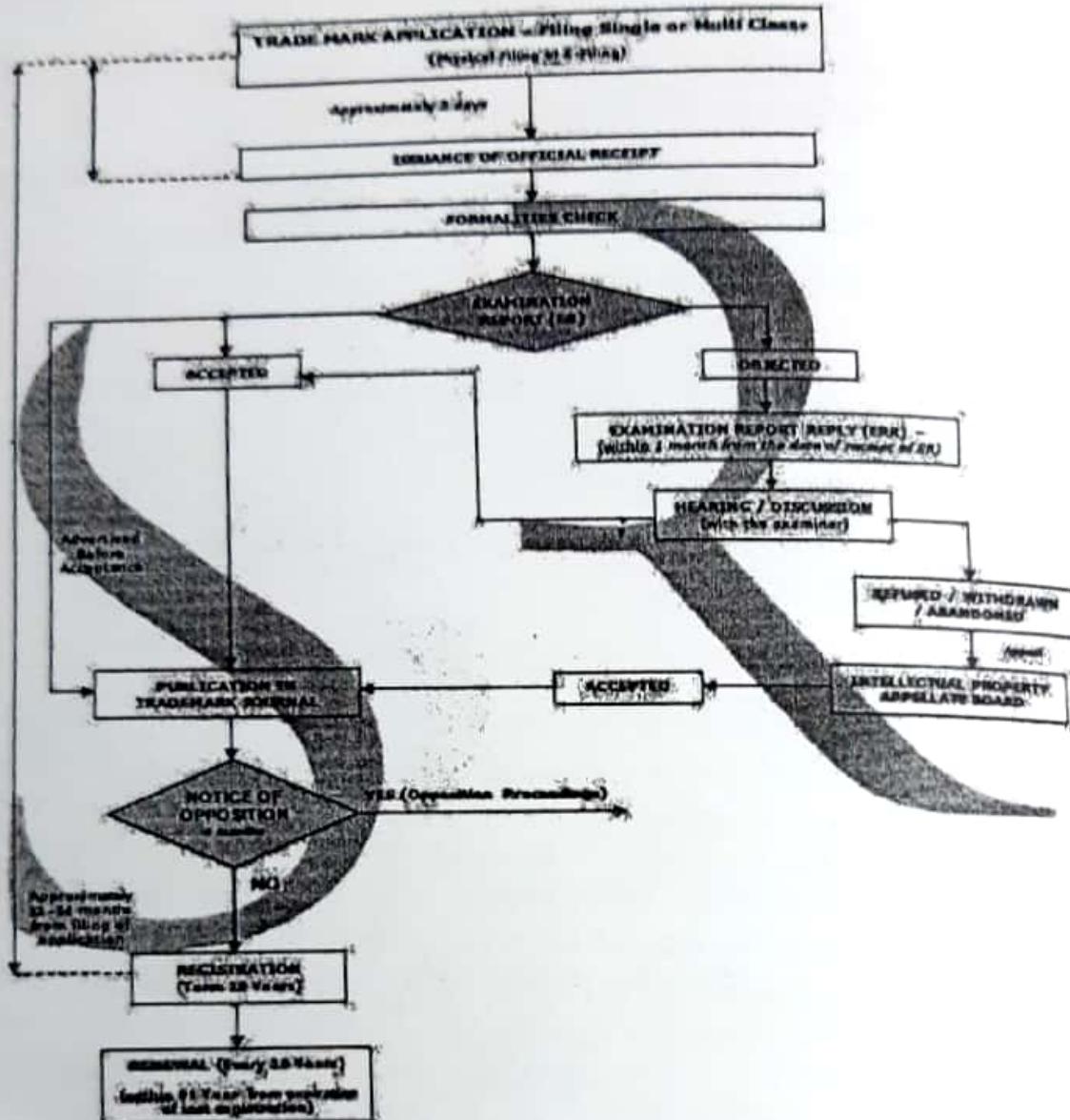


Fig. 1.8 Procedure for the Registration of Trademark Application

1.1.7 INDUSTRIAL DESIGN

Industrial design is expressed in the form of shapes, patterns, lines, colours, three-dimensional structures, etc. To be more precise, an industrial design is granted by the patent office on the basis of the originality in the design/shape of the product. For example, the shapes and pattern engraved in the water bottles (Fig. 1.9). Industrial design right prevents other manufacturers from producing similar articles with similar design/shape. Fig. 1.10 shows the industrial design of various shampoo bottles of different companies.

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Fig 1.9 Different Industrial Design of Water Bottles

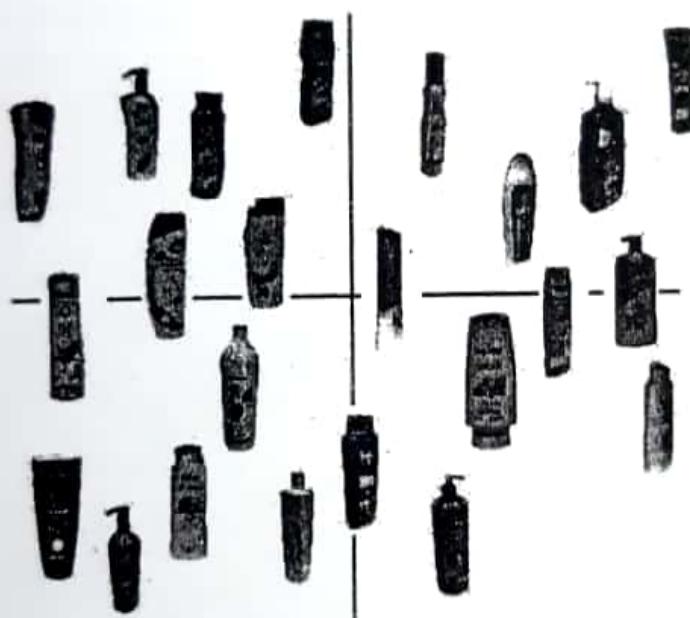


Fig. 1.10 Industrial Design of Shampoo Bottles of Different Companies

According to the Indian Design Act 2000, industrial design is defined as features of shape, configuration, pattern or ornament. Shape and configuration signify the form in which an article is made or something that is three dimensional. The "pattern" and "ornament" which are embossed, engraved or placed upon an article are considered for the purpose of its decoration. The industrial design protection is concerned solely with the appearance and not with their function(s).

The major requirement of the grant of an industrial design is that it should be novel, original, should not have been disclosed in public, should not be contrary to the public order or morality and it should not contain any scandalous matter. The registration of an industrial design gives the owner the exclusive right to prevent any unauthorised use of the same design. The

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Industrial design granted also gives the owner the right to sell, hire and import. The industrial design granted is valid for 10 years and can be renewed every 5 years from the date of filing of the application. The head office of the industrial design registration is at Kolkata. However, any person can also file the industrial design application in any patent offices in India including Chennai, Delhi and Mumbai. The typical industrial designs of the different articles and its applicant names are given in Fig 1.11. The industrial design of a smartphone of Apple Inc. is given in Fig 1.12.

	Name of Article: Chair Applicant Name: Little Nap Design Pvt Ltd. :
	Name of Article: Chair Applicant Name: The Supreme Industries Ltd.
	Name of Article: Fan Applicant Name: Luminous Power Technologies Pvt Ltd.
	Name of Article: Bottle Applicant Name: M/s Imperial Spirits Ltd.
	Name of Article: Bottle Applicant Name: Lion Dates Impex Pvt Ltd.

Fig. 1.11 Typical Examples of Registered Industrial Design



Fig. 1.12 Typical Industrial Design of Apple Phone (Different views)

Procedure of Grant of Industrial Design

The procedure of the grant of Industrial design is shown in Fig. 1.13.

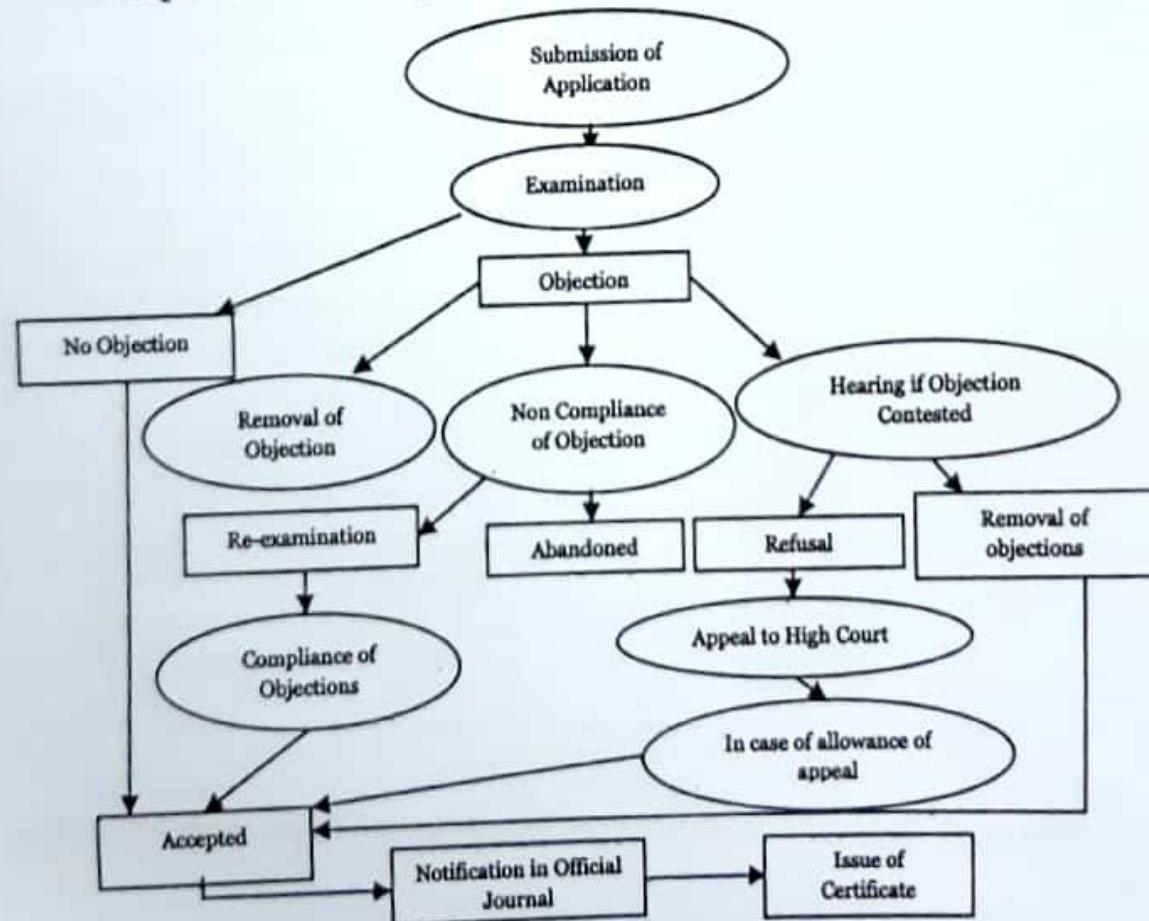


Fig. 1.13 Procedure of Grant of Industrial Design

Differences between Copyright and Industrial Design

- a) The registration of the industrial design is mandatory before the public use of the product in the country where protection is claimed. Copyright Registration is not mandatory.
- b) Industrial design protection is provided generally for a short period of time (ten years) and extended further to a period of five years after renewal. Copyright protection is provided until the life of the author plus sixty years.

1.1.8 TRADE SECRET

A trade secret is a formula, practice, process, commercial method or compilation of information in a product or process not generally known to public or reasonably ascertainable by others by which a business can obtain an economical advantage over competitors. In some countries, such trade secrets are referred to as confidential information. Typical products having trade secrets are Tirunelveli Halwa, Coco-Cola, Tirupathi laddu, KFC, Google, etc.

Unauthorised use of trade secret by any person in any office is regarded as an unfair practice and it is a violation of the company agreement. Typical examples of unfair practice include sales methods, distribution methods, consumer profiles, advertising strategies, lists of suppliers, lists of clients, manufacturing processes, etc.

Contrary to patents or copyrights or industrial designs, trade secrets are protected without registration. Trade secrets are protected by the owners without any procedural registration formalities in the Intellectual Property Office and need not be disclosed to the Patent Office. However, a trade secret is also considered as a type of intellectual property, because it has a commercial value. A trade secret can be protected for an unlimited period of time since it is not disclosed in public or in the patent office. However, there are some conditions to be satisfied to be considered as trade secret. They are

- a) The information must be secret.
- b) It must have commercial value.
- c) It must have been subject to reasonable steps by the rightful holder of the information to be kept as secret through confidentiality agreements.

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It is up to the applicant(s) to decide whether to apply for a patent or to keep it as a trade secret. If the applicant has decided to file a patent application (Form 1- refer Annexure 4), the applicant has to completely disclose the working of the products or process through the complete specifications (Form 2 – refer Annexure 5), for which the public get all the information about the product or process.

The advantages of trade secrets are the following:

- a) Trade secret protection is not limited to a specific period (patents rights in general up to 20 years). It may, therefore, continue indefinitely as long as the secret is not revealed to the public.
- b) Trade secrets involve no registration costs (though there may be high costs for keeping the original information confidential).
- c) Trade secrets have an immediate effect.
- d) Trade secret protection does not require compliance with formalities such as disclosure of the information to the patent offices.

However, there are some disadvantages in protecting a trade secret, especially when the information meets the criteria for patentability:

- a) If the secret is embodied in any innovative product or process, others may be able to inspect it, dissect it and analyse it using the reverse engineering process and discover the secret and be thereafter entitled to use it.
- b) Trade secret protection of an invention does not provide any exclusive right to exclude third parties from making it.
- c) Once the secret is made public, anyone can have access to it and use it at their will.

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1.1.9 COMPARISON OF DIFFERENT IPRs

The comparison of different IPRs is given in Table 1.1.

Table 1.1 Comparison of Different IPRs

IPR Type	Protect	Term or Period	Comparative Costs
Patent	Functional Aspects	20 years upon filing	Expensive
Industrial Design	Ornamental Features	10 years upon filing + Renewal every 5 years	Moderate
Trademark	Brands	10 years upon filing + Renewal every 10 years	Inexpensive
Copyrights	Works of Authorship	Life Plus 60 Years	Inexpensive
Trade Secrets	Information	Potentially indefinite, limited by secrecy	Depends

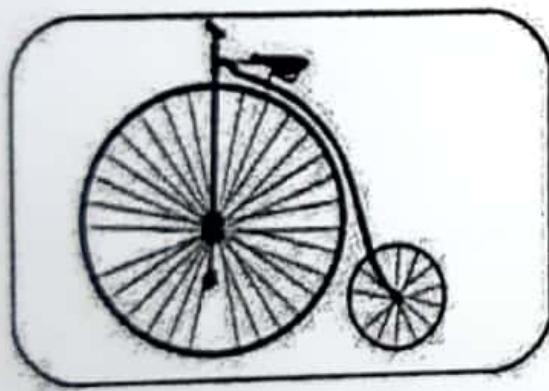
II. PROCESS OF PATENTING AND DEVELOPMENT

1.2.1 TECHNOLOGICAL RESEARCH

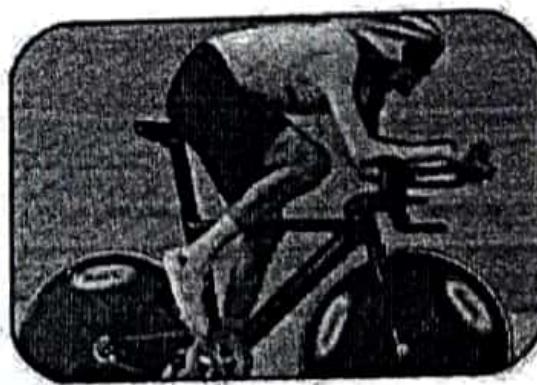
Technological research generally oriented towards engineering disciplines (but not to a specific product or process) and aimed at developing tools and test equipment and procedures, and also in providing solutions to specific technical problems.

1.2.2 INVENTION AND INNOVATION

Invention means any act of inventing something new for the first time, typically a process or product that does not exist before. **Innovation** means improving/enhancing an existing process or product further with technical advancement or having economic significance that provides solutions to the problem in the field of technology. A typical example of invention and innovation is given in Fig. 1.14.



a) Invention



b) Innovation

Fig. 1.14 Example of Invention and Innovation

According to the Indian Patent Act 1970, an ‘invention’ refers to a new product or process that involves an inventive step and is capable of industrial application. ‘New invention’ means any invention/ innovation which has not been anticipated by publication in any document or used in the country or elsewhere in the world before the date of filing of the application for a patent. It should also comply with patentability criteria. The three basic patentability criteria for obtaining a patent are (i) Novelty, (ii) Inventive step or Non-obviousness and (iii) Industrial applicability.

(i) Novelty

Novelty means that the invention/innovation should be new. Anything which is already existing or available in the public domain (e.g., Journals, Conferences, Websites, WhatsApp, Facebook, Newspaper, etc) before the date of filing of the first application is not considered as novel and it is referred to as a "Prior art". Prior art (commonly known to us as literature survey) is a document that is available to the public by way of oral knowledge or written disclosure or by way of use in the public domain. Novelty cannot be proved, but its absence can be proved.

Exceptions to Novelty:

There are a few exceptions where the rule of novelty is not applicable. They are given below:

- a) Subject matter published without the consent of the inventor(s)/ applicant(s).
- b) Invention published in consequence of a display in an exhibition notified by the government or presentation of a technical content paper before a learned society. A period of 12 months is given in such cases to file the patent application.
- c) Previous communication to the respective governments.
- d) Public working for reasonable invention trials.

(ii) Inventive Step or Non-Obviousness

Inventive step means a feature of an invention that involves technical advancement compared to the existing knowledge or having economical significance or both, which make the invention not obvious to a person skilled in the art (particular field). The expression "inventive step" is predominantly used in Europe, while the expression "non-obviousness" is predominantly used in the United States.

Any invention which meets the novelty criteria should also meet the criteria of non-obviousness. The most significant part of patentability is its requirements of being non-obvious and possessing a sufficient inventive step. The criteria of inventive step or non-obviousness are different from the earlier criteria relating to novelty. Novelty exists only if there is any difference between the invention and prior art. An inventive step arises only if an invention is novel. An invention is considered to have an inventive step

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if the innovative product or process has been developed by a new method or approach that is noticeable and is capable of being differentiated from that of the prior art. An inventive step should provide an advancement or improvement, which is significant and essential to the invention claimed.

(iii) Industrial Applicability

Industrial applicability or industrial application is one of the patentability criteria according to which a patent is granted for an invention/innovation, i.e. any invention/innovation must have an industrial/practical application. An invention/innovation should satisfy the following three conditions:

- a) It can be made
- b) It can be used in at least one field of activity
- c) It can be reproduced in any required numbers with the same characteristics

The above three criteria for patentability (such as novelty, inventive step and industrial applicability) are necessary and essential for any patent application to be granted in any of the patent offices in the world.

1.2.3 INVENTIONS NOT PATENTABLE

Inventions that are non-patentable are detailed here:

- a) Inventions which are frivolous or contrary to well established natural laws are not patentable. e.g. Any Invention relating to a perpetual motion which is expected to provide output without any input is not patentable as it is contrary to natural law.
- b) Inventions whose primary or intended use or commercial exploitation could be contrary to public order or morality (something against accepted norms of culture in the society), or which causes serious prejudice to human, animal or plant life or health or to the environment, e.g., Terminator technology which involves inserting a gene sequence in a seed to stop germination or growing recombinant plants.
- c) The mere discovery of scientific principles or the formulation of an abstract theory or discovery of any living thing or non-living substances occurring in nature. However, isolation of

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living things or non-living substances is patentable since it involves human technical intervention.

- d) Mere discovery of a new form of a known substance does not result in any enhancement of a known efficacy (efficiency) of that substance or mere discovery of any new property, or a new use of a known substance, or mere use of a known process, machine, or apparatus unless such known process results in a new product or employs at least one new reactant. For example, salts, esters, ethers, polymorphs, metabolites, pure form, particle size, isomers, mixtures of isomers, complexes, combinations, and other derivatives of known substances are considered to be the same substance, unless they have or exhibit significant differences in properties with regard to efficacy. The inference from the above is that new use of a known substance is not permissible. It means that claims for second medical use are not allowed in India unless they differ significantly in properties with regard to efficacy (efficiency).
- e) Substances are obtained by mere admixture (composition) resulting only in the aggregation of the properties of the components thereof or a process for producing such substance. However, compositions consisting of combinations of preparations comprising of two or more known active ingredients are patentable if "synergism" or "super-additive effect" is shown clearly, as for example, pharmaceutical compositions or any other chemical compositions.
- f) The mere arrangement or re-arrangement or duplication of known devices each functioning independently of one another.
- g) Methods of agriculture or horticulture. e.g., a method of producing a new form of a known plant even if it involves a modification of the conditions under which natural phenomena would pursue their inevitable course is not patentable.
- h) Processes for medical, surgical, curative, prophylactic, diagnostic, therapeutic, or other treatments of human beings or animals or plants that would render them free of disease or to increase their economic value. e.g., a method for treating an

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old animal with an enzyme two hours prior to butchering to increase the economic value of the animal for making the meat soft is not patentable, Diagnosis of diseases in human beings and animals is not patentable, but a method of screening antibodies for a specific activity is permissible.

- i) Plants and animals in whole or any part thereof other than microorganisms but including seeds, varieties and species and essentially biological processes for production or propagation of plants and animals. For example, clones and new varieties of plants are not patentable. However, the process/method of preparing any genetically modified organism is a patentable subject.
- j) A computer program per se, a mathematical method or a business method or any algorithm.
- k) Literary, dramatic, musical or artistic work or any other aesthetic creation including cinematographic works and television productions are not patentable as they are covered under the Copyrights, design and entertainment laws.
- l) Scheme/rule/method of performing a mental act or a method of playing a game.
- m) Presentation of information.
- n) Topography of integrated circuits.
- o) An invention falling within the scope of traditional knowledge such as the use of herbal medicines.
- p) Inventions relating to atomic energy are not patentable. Such applications are referred to the Department of Atomic Energy. The decision of the Department of Atomic Energy shall be final and appeal cannot be made against the decision.

The reason for the above not being patentable is that they are very subjective and cannot be standardised for patents.

1.2.4 PATENTING

The basic role of the patent is to obtain certain exclusive rights. Patents never have global coverage. Once a patent has expired, the information is freely available for others to use. The salient points of patenting the innovations are briefly presented below:

- a) Patents play a key role as an incentive for innovation in the market driven economy.
- b) The number of patent applications is growing rapidly. This can be considered a core competency of an information-based society.
- c) Assessments of patent information in combination with other information such as R&D investments can indicate the technology competitiveness of a country or the economic performance of a company or country.
- d) Patent information is public and hence, patent databases constitute an important source of technology knowledge. At the same time, individual patents are only part of a larger technology solution in many cases written in such a way that knowhow and other specific knowledge are required for complete development of the invention to an economically profitable extent.
- e) Patents have their limitations as information sources. Not all inventions are patented. But all patents have the same relevance and the same value. While the information on patent families (same patent application filed in different countries) can be collected, licensing information may not always be available.
- f) Patenting is an indicator of the progress of R&D, but the fact that many patents are filed does not guarantee that a key technology will emerge or be successful in the market.
- g) Quality patents help to increase certainty in the marketplace and also help the enhancement of technological innovation. In addition, they ensure that exclusive rights are granted only for valid inventions, preventing unwarranted exclusion of competitors from a particular marketplace.

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Application for patent is prepared in the form of documents at the technological research and development (R&D) stage of the life cycle and it is submitted to any one of the Patent Offices by the applicant(s) or through the authorized agent. The document is usually prepared with a working model or prototype or the process developed. The R&D centre of any organization plays a key role in the development of inventions/ innovations. Usually, the IPR Cell of the R&D centre prepares the documents as per the requirements of the patent act and file the applications in the patent office and also maintain it. The disclosure of the invention/innovation is submitted as a complete specification (Form 2 – Annexure 5), which is an essential consideration for any patent granting procedure. Thereafter, the complete specification submitted in the patent office will be published in the patent office journals. This allows the public access to adequate information about any product/process and evolves further development of technology. The patenting system is designed in such a way to balance between the inventors and the public.

Patent rights protect the outcomes of an innovation process. A single product can be covered by a wide range of patents, while, on the other hand, an individual patent is often part of a larger technology solution requiring crucial know-how for the execution of complex technology deployment. Patent rights are territorial in nature governed by national patent laws. This means that a patent is valid and enforceable only in the territory of the country, or for which, protection is granted, in accordance with the applicable law of that country. Therefore, if a patent is granted in India, it only protects the invention in India. If the invention needs protection in another country, say China, the applicant(s) has to file a separate application in China (as per Convention Application procedure through a patent agent in China). At present, there is no system that grants patents applicable throughout the globe (International Patent). Therefore, in principle, an application for a patent must be filed in each country of interest to the applicants in accordance with the law of that country. Simultaneous filing of a patent application for an invention in many countries may mean enormous cost. Further, each application must comply with different rules, including different language requirements. Therefore, inventors typically limit filing their patent applications to those countries where they see a potential market for their inventions.

The protection conferred by patents is time-limited. Generally, it lasts for 20 years from the date of filing of the application (provided the renewal or maintenance fees are paid on time), but can be abandoned (invalidation) or revoked before the expiry of this period. The time between

Nature of Intellectual Property

The application for the patent and getting it patent granted is called patent-pending, which typically lasts from one to five years and varies from country to country. Once the patent has expired or abandoned in a given country, third parties are no longer required to obtain the consent of the patent holder for the exploitation of the formerly patent-protected invention and the invention can be used freely by the public. Patents of addition or patents of improvements covering further developments of the invention are available in some countries. However, even the patent of addition or improvement is valid only for a period of 20 years from the date of filing of the patent application filed first. The major criteria for grant of a patent of addition is novelty, whereas the inventive step is not necessary.

A patent can also be licensed to another party (a licensee). In such a case other parties can sell or manufacture the invention. In return, the licensor usually receives a royalty from the licensee. Patents can be used also for the creation of synergistic partnerships or a market advantage. An alternative approach is to keep the inventions as Trade Secrets, which means restriction or limits for the public to access the crucial/critical technology advances. However, the Trade Secrets have advantages as well as disadvantages for both the inventors and the society. While patent information is public, information relating to the license is generally kept confidential. However, from the licensing activities, the information on which patents are licensed by whom and the commercial value of patents and the trends of technology transfer that has happened geographically can be obtained.

Patents can be owned by governments or government organisations, although a majority are owned by private sector organisations, educational institutions and individuals. Governments, in principle, cannot grant licences to third parties for the use of patents that are privately owned, nor can they force patent owners to share their rights with third parties, except in some specific cases, such as in the event of the abuse of patent rights and/or in the public interest through "Compulsory License".

All national and regional patent offices play a critical role in ensuring that patents are granted only to inventions that are genuine contributions to the state of the art and comply with procedural, as well as substantive requirements prescribed under the applicable patent laws of the country. The patent office examines the applications to ensure that they comply with formal requirements such as the completion of forms, all relevant documentation and also the payment of the published filing fee. The patent office conducts prior art search and a substantive examination

to ensure that the application satisfies the patentability requirements, such as novelty, inventive step and industrial applicability, and that the invention is clearly and completely disclosed in the patent application. If the examination leads to a positive conclusion (agreement with patentability criteria), the patent office grants the patent and issues a certificate of grant. In addition, many patent offices indicate a period during which third parties may oppose the grant of a patent. In addition, in most countries, the patent office publishes the revised patent applications. However, the patent offices are often understaffed, resulting in mounting backlogs of patent applications.

1.2.5 DEVELOPMENT

After patents, the company or organization will decide either to commercialize their own invention by manufacturing and selling it or issue a license to others or to transfer the technology to others to earn a profit. The patentee further develops the invention and the same can be registered as patent of addition for the same invention or if it meets the patentability criteria and leads to another invention, it can be registered as separate application for new invention/innovation.

III. INTERNATIONAL SCENARIO

1.3.1 INTERNATIONAL COOPERATION ON INTELLECTUAL PROPERTY

IPRs protection (including patents, Designs, Trademarks, Copyrights) has become an important aspect of the trade within the country or between countries. A granted patent of a particular country is protected only in those countries or region where it is filed. A patent application should be submitted in national languages in countries like China, Japan, Korea, etc. For example, to file a convention application in China, it has to be filed only in the Chinese language. Hence, treaties like Paris Convention, Trade-Related Aspects of Intellectual Property Rights (TRIPS), etc. were established to facilitate the filing of the patent application in one common language (say English) in the countries agreed as per convention. World Intellectual Property Rights (WIPO) is the highest body that promotes innovation and creativity through IPRs. The World Trade Organization (WTO) also plays a key role in the area of IPRs. Under the Agreement on TRIPS, the WTO indicates the minimum levels of protection for inventors in each member country towards IPRs. The International Cooperation on Intellectual Property was carried out at Paris Convention in 1967 and TRIPS agreement in 1995. The details of International conventions are presented below:

Paris Convention (1967)

The Paris Convention (1967) acts as the international umbrella for the national patenting system. It is the first major international treaty designed to help the applicant(s) of one country to obtain protection of their intellectual property in other countries for the intellectual creations. At present, 173 countries have signed the Paris Convention. India became a member of the Paris Convention on 7th December 1998.

Basics of Paris Convention:

The Paris Convention stands for the following three basic principles:

- a) National Treatment: Applicants of any national from any country shall enjoy the protection in any other country in respect of the protection of IPRs.
- b) Independence of Patents: The grant of patents for the submitted application lies on the patent law of the individual

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countries. A patent granted in one country may be rejected in another country.

- c) Right to Priority: The right to priority date is assigned to any applicant(s) on the basis of the first application filed in the member country/region. An applicant, after filing the application in a member country/region within a certain period of time (usually 12 months), has to apply for the protection in any of the country/regions if required. The applications filed later in other countries have the priority date as per the first application filed for the same invention, provided the subsequent applications are made within a period of twelve months from the date of filing of the first application, which is called the Convention application.

TRIPs Agreement

TRIPs agreement have been developed for overcoming the limitations of previous agreements. The TRIPs agreement has the following objectives:

- a) To reduce distortions and impediments to international trade
- b) To promote effective and adequate protection of IPRs
- c) To ensure that measures and procedures to enforce IPRs do not themselves become barriers to legitimate trade.

The TRIPs Agreement consists of seven parts, they are:

Part I	-	General Provisions and Basic Principles
Part II	-	Standards and use of IPRs
Part III	-	Enforcement of IPRs
Part IV	-	Acquisition and maintenance of IPRs and related inter-parties procedure
Part V	-	Dispute prevention and settlement
Part VI	-	Transitional arrangements
Part VII	-	Institutional arrangements: Final Provisions

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Further details about TRIPs can be obtained from the TRIPs Agreement website.

World Intellectual Property Organization (WIPO)

The WIPO is one of the 16 specialized agencies of the United Nations. It was created in 1967. It has currently 184 countries as members. The headquarters of WIPO is situated at Geneva, Switzerland. WIPO is dedicated to ensure that the rights of creators or inventors of intellectual property are well protected worldwide through PCT route submission of the application (PCT Application).

The mission of WIPO is to promote international cooperation for the creation, dissemination, use and protection of works for the economic, cultural and social progress of all mankind. The WIPO was set up for the administration of the Paris and also Berne Conventions. The major function of WIPO is to monitor the patenting process in all the countries and provide information among nations relating to IPRs granted. However, it does not have any authority of global enforcement on IPRs. The objectives of WIPO are

- a. To encourage creative activity in the member countries.
- b. To promote IPRs.
- c. To solve the disputes between individuals and companies using the WIPO arbitration and mediation procedures.

Anna University, Chennai is one of the nodal centres of WIPO and acts as a Technology Innovation and Support Centre (TISC) for assisting the inventor(s) in filing IPRs such as Patents, Trademarks, Copyrights, Industrial design, and Geographical Indications. Other nodal centres of WIPO in India are located in Ahmedabad, Chandigarh, Jaipur, Thiruvananthapuram and Vishakhapatnam.

IV. PROCEDURE FOR GRANT OF PATENT

1.4.1 INDIAN PATENT APPLICATION

Patent applications which are submitted to patent offices (Chennai, Mumbai, New Delhi, Kolkatta) in India are published (before and after granting of patent) online (www.wipo.gov.in) to fulfill the "social contract" inherent in the patent system, for which the applicant receives an exclusive right for a period of 20 years in return for the disclosure of the invention. Patent information, namely, the information included in public documents such as patent application (submitted before grant) and granted patents constitutes an important source of technical, legal and business information. Such information plays an important role in the process of innovation for stimulating new ideas and inventions. Patent information can also be used for the assessment of R&D trends, emerging technologies, whitespace analysis (research gap), innovation that is further patentable and the details of the competitors. The publication of patent information also helps to avoid duplication of efforts and unnecessary investments or infringement of other IPRs. When the patent ownership and inventor data are made public, competitors, as well as partners for collaboration, licensing and technology transfer, can be easily identified.

The broad range of technical, business and legal information available from the patent documents can be used for a number of different purposes. They are the following:

- a) Prior art searches to establish a baseline for technical research and development activities.
- b) Avoiding patent infringement.
- c) Planning for investment, commercial and R&D activities.
- d) Identifying key patenting trends and innovation patterns.

Patent information is also used as an indicator for monitoring the innovation of technologies, the technology competitiveness of a country or the economic performance of a company or country. Patent citations, namely references to prior patent documents and the state of the art included therein, are also often used as indicators for the commercial value of IPRs. Patent data can also be used for indicating global trends for technology transfer. A patent that is granted in many countries suggests that the inventor foresees wide applicability of this product, device or process.

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Although a combination of various indicators may be utilized as an indicator for economic impact assessment of patents, there are a number of situations where patents have limitations as indicators for innovation. Patent alone does not reflect all inventive activities and technology transfers directly, because, not all technical inventions lead to patent applications. Some businesses seek to protect their ideas by keeping them confidential (Trade Secret). Also, the propensity to patent varies over time in different technology areas, companies and countries. There are also other complicating factors, such as social and economic conditions related to inventions and transfer of technology. However, it is important to note that published patent applications and patents may not always contain the full information necessary for business activities. They do not guarantee the commercial value of the inventions since patent information is designed for the specific legal and technical purposes of the patent system.

The procedure for granting of patent application as per the Indian Patent Act 1970 is shown in Fig. 1.15. The patent process is shown in Fig. 1.16

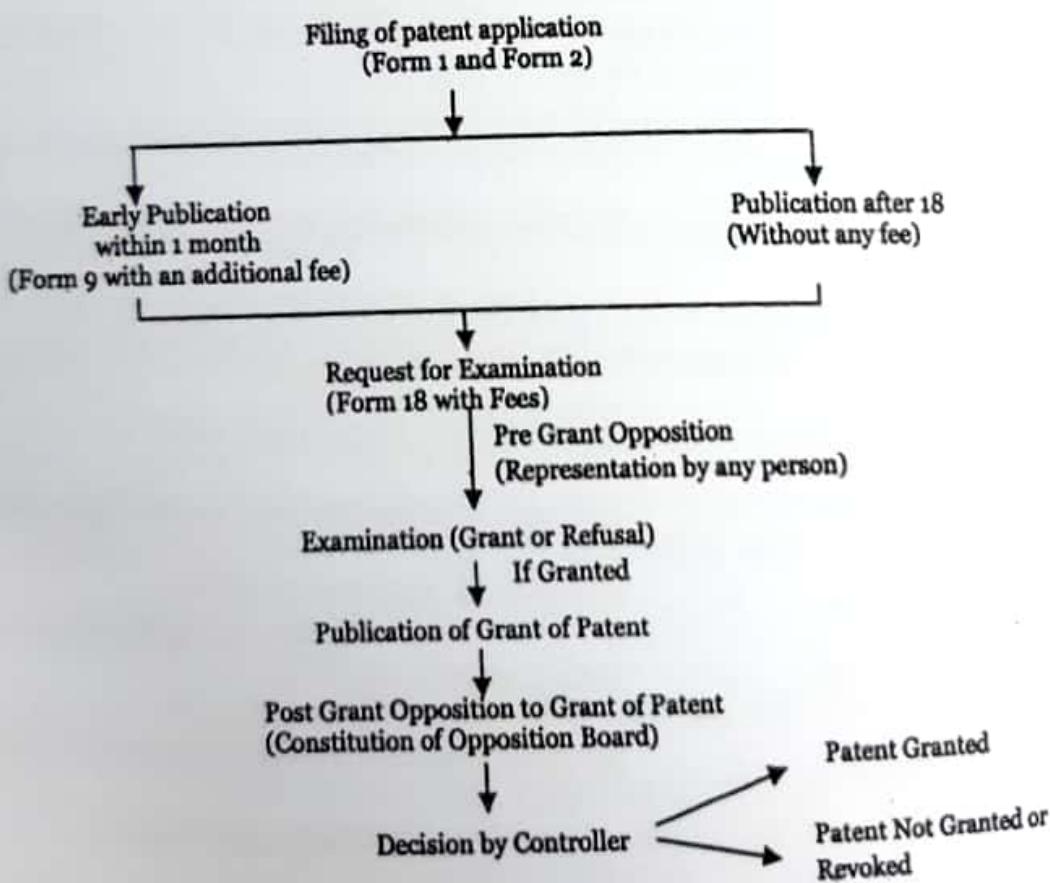


Fig. 1.15 Procedure for Grant of Patent

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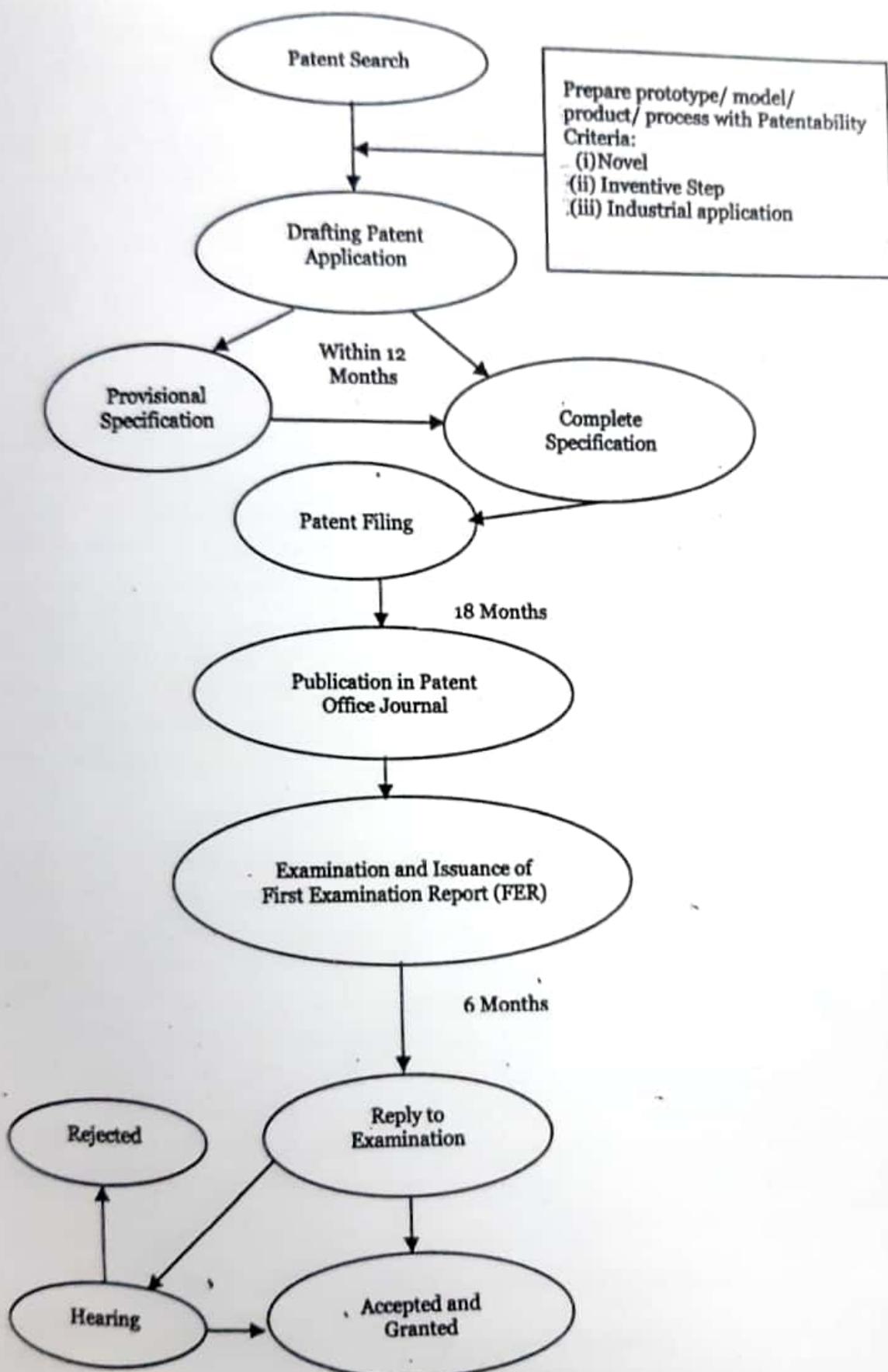


Fig. 1.16 Patenting Process

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The various stages involved in the process of granting a patent is briefly presented below:

(i) Filing of Patent Application

Application for a patent should be filed by the applicant(s) or an assignee of such invention/innovation or a person claiming to be the true and the first inventor of the particular invention or the legal representatives (Patent Agent, Attorney or Lawyer). An applicant may be a firm/company/start-ups or an organisation or University or an individual or group of persons. There is also no limitation of the number of applicants and inventors.

The patent application should be made in the prescribed format (as per Forms that includes Form 1, Form 2, Form 9 and Form 18) (Annexure 4-7) and should be filed in the patent office either as a hard copy or online (soft copy). The fee details pertaining to the submission of patent application in Indian patent office is given in Annexure 8 and Annexure 9. The forms should be accompanied by provisional or complete specification (Form 2). Form 1 provides information on the applicant(s) and inventor(s) and includes such as name, nationality, address, etc. The complete specification (Form 2) describes the invention in the manner in which it has to be performed. The complete specification begins with the title and field indicating the subject relating to the invention. Drawings that form part of the application should be submitted to support the complete specification. Each complete specification should provide a complete description of the invention, its operation, use and the best method in which it is to be carried out. The best method of performing the invention should be provided in detail and end with a claim or claims defining the scope of the invention for which protection is claimed and also an abstract.

Provisional specification (like extended abstract) should provide the basic objectives of the invention. The purpose of submitting the provisional specification is to get the priority date for the patent application. However, the complete specification must be filed within 12 months from the date of filing of the provisional specification. Starting from the date of the patent publication of the application in the Indian Patent Journal, the applicant will have privileges and rights as if the patent for the invention has been granted on the date of publication of the application. However, the applicant cannot initialise infringement proceedings unless the patent is granted.

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(ii) Filing of a patent application in other countries

No person resident in India, except under the authority of the written permission, can file any application outside India for the grant of a patent unless:

- a) The application for a patent for the same invention has been made in India not less than 6 weeks before the application is filed outside India.
- b) Either no secrecy direction has been given in relation to the application in India or all such directions have been canceled.
- c) A request for filing license in any other country may be filed in the prescribed form with a detailed description of the invention and the drawings, if any, together with the prescribed fee.
- d) Publication and Request for Early Publication

The complete specification should be published within a period of 18 months from the date of filing of the application without any fee. In case the applicant wishes to get his invention published prior to the 18 months time frame, the applicant can request for early publication by submitting the necessary form (Form 9) with the prescribed fee to the Controller of Patents in the patent office. Payment of the additional fee helps publication of the complete specification in the Indian Patent Office Journal within one month.

The early publication rule, however, does not apply when

- a) Secrecy directions are imposed
- b) Application has been abandoned
- c) The applicant has withdrawn his application three months prior to the expiry of said prescribed period of 18 months

Early publication can help the acceleration of the examination procedure. Early publication is important also for obtaining provisional protection in cases where the applicant anticipates infringement. An examiner in the patent office carried out the process of examining the application only after the publication of the complete specification in the Indian Patent Office Journal.

(iii) Request for Examination

The request for examination by the applicant or any other interested person has to be filed in the prescribed form (Form 18) (Annexure 4), with the prescribed fee within 48 months from the priority date of the application or on/from the date of filing the application whichever is earlier. Patent applications are examined only on filing the request for examination. Thus, the applicant can defer the examination of the application by at least 48 months from the date of priority. If the request is not filed, the application is deemed to have been withdrawn by the applicant.

(iv) Examination of Application,

On receipt of a request for examination, the Controller refers the specification and other documents to any one of the Examiners in the patent office, within one month from the date of its publication or from the date of the request for examination, whichever is later. The examiner submits the report to the Controller normally within one month but not exceeding 3 months from the date of reference of the application by the Controller. Then, the Controller disposes of the report normally within one month from the date of receipt of such report and issue the first examination report (FER). The FER is issued within six months from the date of the request for the examination or six months from the date of publication, whichever is later.

The time allowed for responding to the FER by the applicant(s) is normally six months from the date of receipt of FER. The applicant may apply for an extension for three months by submitting the necessary form for extension (Form 4) along with the prescribed fee for each month. Therefore, it is necessary to comply with all the requirements and objections raised by the patent office within six months from the date of the first examination report. Once all the requirements are met with and the Controller is satisfied with the arguments, evidence and amendments of the applicant, the application proceeds for the grant. The grant is notified in the Patent Journal, a weekly publication of the Indian Patent Office which issues the Certificate.

(v) Opposition Proceedings

The Indian Patent system provides for opposition proceedings at two different levels, one before the grant of the patent known as Pre-Grant Opposition and the other after the grant of the patent known as Post-Grant

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Opposition. The grounds for Pre-Grant Opposition and Post-Grant Opposition are the same, namely,

- a) Wrongful obtaining
- b) Prior publication
- c) Prior claiming
- d) Prior public knowledge and use
- e) Obviousness
- f) Not an invention
- g) Insufficiency
- h) Failure to file the information regarding filing in another country
- i) Convention application not made within 12 months
- j) Non-disclosure or wrong mentioning of the source and geographical details
- k) Origin of biological material in the complete specification
- l) Anticipation of Complete specification having regard to the knowledge, oral or otherwise available within any local or indigenous community in India or elsewhere (traditional knowledge).

(vi) Pre-grant Opposition Procedure

A pre-grant opposition may be filed by any person when an application has been published but not been granted. The opponent is required to submit statements and evidence, (if any), in support of the opposition and make a request for a hearing. The pre-grant opposition proceeding may be carried out in parallel with the examination proceedings. On receipt of the request for examination from the applicant, the Controller initiates examination proceedings and issues a notice to the applicant along with the copy of the statement and evidence filed by the opponent.

The applicant may file his statement and evidence in support of his application within three months from the date of the notice. Thereafter, the Controller carefully goes through the representations made by the opponent and decides to consider the patent application for further processing. The decision is made by the controller within one month from the date of the

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completion of the proceedings. No fee is required to be paid for pre-grant opposition. An applicant can appeal against the decision of the appellate board of the opponent's proceedings. Sometimes the applicant shall be asked to submit evidence to the complete specifications that were filed.

(vii) Post-grant Opposition Procedure

The process of post-grant opposition is initiated with a notice of opposition filed by the opponent (must be an interested person), within a year from the date of the publication of the grant along with a full written statement and evidence to the Controller. The patentee (patent holder) is required to file a reply statement and evidence in support of the patent. If the patentee does not respond within two months, the patent is considered as abandoned. This time period may be extended by one month provided the request for extension is filed by patentee within two months.

In a significant development, the Intellectual Property Appellate Board (IPAB) has come into force with effect from April 2nd, 2007. All appeals relating to patent cases pending at the High Courts are transferred to the Appellate Board except infringement suits and countersuits for revocation. The appellate board comprises a bench of three members including a technical expert. All the documents submitted for post-grant opposition are transferred to the Opposition Board constituted by the Controller. This Controller decides after a hearing along with the members of the Opposition Board. An appeal may be made against the decision before the Appellate Board within three months from date of the order.

Term of Patent

The term of any patent granted is twenty years from the date of filing. However, for PCT application, the term of a patent is twenty years from the international filing date accorded under the PCT. Renewal fee is required to be paid annually for keeping the granted patent in force. Otherwise, the patent gets lapsed. Restoration of patents for removal of the lapsed status of the patent is possible if the application for restoration of lapsed patents is made within 18 months from the date of lapse.

Registration of Assignment

The license agreement (Assignment) between the applicant(s) and the licensee has to be registered in the Indian Patent Office as per Section 69 of the Indian Patents Act 1970 by filing in the prescribed form (Form 16, Annexure 10) with the prescribed fee. After the registration, the licensee's name is entered in the Register of Patents.

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Commercial Working of Patents

Every patentee (patent holder) is required to furnish a periodical statement (every year) to the Controller regarding the extent to which the patented invention has been worked on a commercial basis in India. It is a mandatory requirement. The statement should be furnished in the prescribed format (Form 27). In case there is a licensee and is authorized by the patentee, it is necessary for the license holder to furnish the information about the working of the innovation, on a commercial basis to the patent office. Failure to furnish such required information or submission of false information warrants punishment.

Failure or refusal by the patentee or licensee holder to furnish the required data involves a penalty. Further, the submission of false information is punishable by imprisonment up to six months or fine or both. Most important is that failure of working of a granted patent in India attracts to the grant of a compulsory license. Import of the patented product or process does not amount to working of the Patent in India. Any working of the patent or the use of the patent process in the production of any article for sale to the public would appear to amount to working on a commercial scale, which implies that the demand for the particular article in India as being met at a reasonable price.

Compulsory License

Compulsory licensing is resonated to when a government allows someone else to produce a patented product or process without the consent of the patent owner or plans to use the patent-protected invention itself. It is one of the flexibilities in the field of patent protection included in the WTO's agreement on intellectual property, namely the TRIPS (Trade-Related Aspects of Intellectual Property Rights) Agreement.

Sections 84 to 94 of the Indian Patents Act, 1970 relate to compulsory licensing of patented products. A person may apply for a compulsory license three years after the grant of any patent on the following grounds:

- (i) The requirements of the public considered reasonable have not been satisfied
- (ii) The patented invention is not available at a reasonably affordable price
- (iii) The patented invention is not worked in India.

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Compulsory license may also be granted on notification by the Central Government under exceptional circumstances related to the public interest, namely, national emergency, extreme urgency and public non-commercial use. The Controller notifies and grants a license without any consideration as in other cases in respect of patents on such terms and conditions that the article is available to the public at the lowest price.

Compulsory license provisions are aimed at curbing the practice of meeting the demand for patented articles solely through import thereby discouraging

- a) Transfer of technology
- b) Developments in existing trade and industry
- c) Non-establishment of new trade and industry
- d) Refusal to grant licenses for local working the patent
- e) Imposing unreasonable terms on a licensee thereby discouraging voluntary licensing and imposing restrictive conditions on the use
- f) Sale or lease of the patented articles thereby prolonging the patent monopoly rights even after the expiring of the patent
- g) Revocation of the patent for non-working has been adopted in almost all countries.

In considering the application for the grant of compulsory license the Controller takes into account the nature of the invention, the time that has elapsed since the sealing of the patent, measures already taken by the patentee or any licensee to make full use of the invention, the ability of the applicant to work the invention to public advantage, capacity of the applicant to undertake the risk in providing the capital and working the invention, whether the applicant has made efforts to obtain a license from the patentee on reasonable terms and conditions and whether such efforts have not been successful within a reasonable period (6 months) as the Controller may deem fit.

Where the Controller is satisfied that a *prima facie* case has been made, he directs the applicant to serve copies of the case to the patentee and, upon hearing the parties, may give his decision. The Controller can terminate the compulsory license when circumstances that gave rise to the grant no longer exist.

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V. PATENTING UNDER PATENT COOPERATION TREATY (PCT)

1.5.1 INTERNATIONAL APPLICATION FOR PATENT

The submission of an international application for a patent is carried through the patent cooperation treaty (PCT) route. PCT was established under the guidance of WIPO for the convenience of the applicant(s) to file an international application for a patent. PCT is an international agreement for filing patent applications, which has come in to force to enable filing an international patent application under the treaty, through the PCT filing route. PCT enables the national of any country to file an international application for patent in the member countries with certain advantages. This helps the applicant(s) in filing for an invention and can be protected if granted simultaneously in a larger number of countries without losing the rights of priority (from the date of first filing in own member country).

Through the PCT route, the applicant(s) has a right to file a PCT application within 12 months after filing the first patent application in his parent or member country. Thereafter, an applicant(s) can decide to file a patent application in any designated country from the filing date (priority application) of the first within the 30/31 months. In some countries, 30 months and in others, 31 months are allowed. During this period, the applicant can find investors, financial resources, production, licensing aspects, national patent representatives, the choice of countries for further patenting, etc., The advantages of the PCT filing route is that an application can be prepared in a single language and the same can be filed in one or more countries (different designated countries) as per applicant's choice.

The filing of the patent application through the conventional and PCT route is described in Fig 1.17 and 1.18 respectively. The fee details for PCT applications is given in Annexure 11.

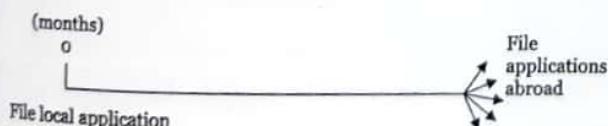


Fig. 1.17 Filing of Patent Application Through Convention Route

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The conventional application through the Paris convention route should be filed within 12 months from the date of first filed application in the foreign countries (country of interest).

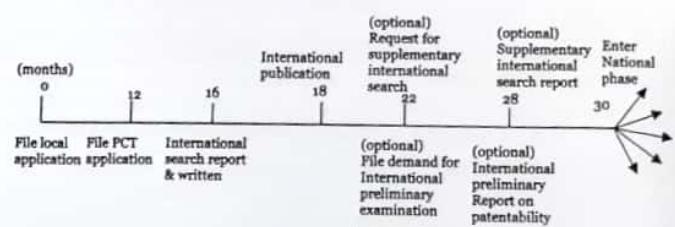


Fig. 1.18 Filing of International Patent Application Through PCT Route

1.5.2 PROCEDURE FOR FILING INTERNATIONAL PATENT APPLICATION

An international application can be filed in any national patent office within 12 months from the date of filing of the first application. Some selected patent office's act as "receiving office(s)" and take the responsibility for coordination of all procedural actions into the international phase, including the receipt of documents, their transfer and other forms as per PCT norms. In the PCT route (Fig 1.18), the International Search Report and written opinion are issued to the applicant (within 16 months) by an International Search Authority (ISA), which is also published in the International publication (WIPO) website. Thereafter, the applicant can demand International preliminary examination (optional) to receive the International Examination Report (IER).

Once the PCT application enters into the national or regional phase in the respective country (within 30/31 months), the patent offices of such national/regional offices are guided by the results of the international preliminary search and international preliminary examination received in the international phase. PCT application may be filed on the basis of a national application and without it. An option is provided to the applicant to cancel his international application or amend the application before its publication (within 18 months from the date of priority application filing) if the search report and written opinion are not in his favor. This allows the

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applicant to work further on the innovation and submit a new application still maintaining the priority date (in case of amendment) (Fig 1.18).

The main advantages of PCT are

- a) International protection of invention via a single patent application,
- b) Cost-effective protection to patents in several countries and extended time for taking the decision to pursue applications in other countries.
- c) The applicant can take the decision to withdraw his application based on the International search report and he can even amend his application based on the preliminary examination before proceeding to the national phase application.
- d) The applicant has 18/19 months more to seek protection in foreign countries.
- e) The applicant can appoint local patent agents in every foreign country.
- f) The applicant can prepare the necessary translations and pay the national fees.
- g) The parent application cannot be rejected on formal grounds by the designated office during the national phase of the processing of the application.
- h) On the basis of the international search report from the International Search Authority [ISA] or the written opinion received, the applicant can evaluate his own application with a reasonable probability of obtaining the patentability of the invention in the regions or countries where the patent is planned to be sought.
- i) On the basis of the international preliminary examination, the applicant has the possibility to amend the international application before the license processed by the designated offices.
- j) The time taken for the search and examination of the parent patent offices can be considerably reduced due to the international preliminary examination report that accompanies the international application.

Nature of Intellectual Property

- k) Each PCT application is published together with an international search report so that third parties are in a better position to understand the need for the invention/innovation of their products.

International publication may attract investors' attention and may trigger a decision to invest in some countries with a view to its implementation and effective commercialisation. Preliminary international search findings are published separately or together with the PCT application and are available to the public on the WIPO website (www.wipo.org). Finally, an applicant(s) can decide to file the application through "national phase" in one or more countries as per PCT within 30/31 months from the priority date. On receipt of the patent application through the PCT route, the Patent Office of appropriate state may accept or reject the application based on the country's law. Details relating to the PCT filing route is given in Fig 1.19.

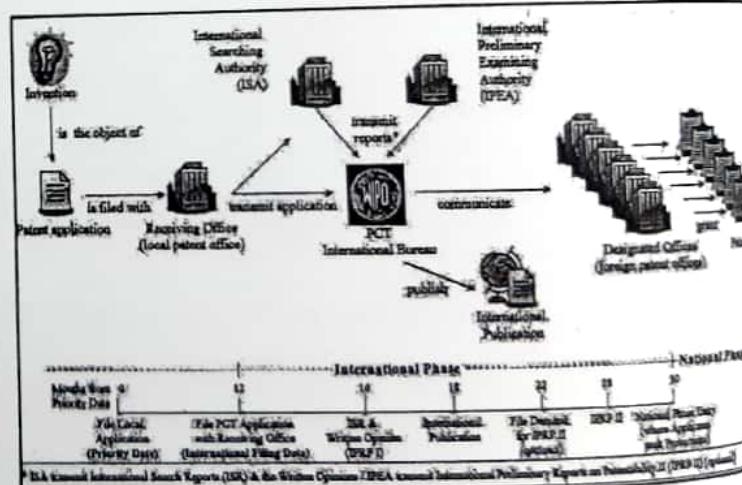


Fig. 1.19 PCT Filing And Entry of National Phase Application

Patent Rights

Chapter 2

PATENT RIGHTS

2.1 INTRODUCTION

This chapter deals with patent rights: scope of patent rights, licensing and transfer of technology, patent information, databases and geographical indications.

2.1.1 SCOPE OF PATENT RIGHTS

The scope of the patent rights provides the Patentee holder (Patentee) an exclusive right (monopoly) to prevent unauthorised persons from making, using, offering for sale, selling or importing the product or process of his/their invention. Though the protection offered by a patent is territorial, covering only the jurisdiction for which the patent has been granted, the information contained in a patent document has global reach, which allows anyone to learn from the patent document and make further improvement in the product or in the process. The scope of patent rights is classified into geographical and content related, which are briefly described below.

(i) Geographical Scope

Once the patent is granted, the patentee has the exclusive right to utilize the invention, issue license to others in the particular country where it is granted and also prevent others (third parties) in that country, to make or use, or sell or licence it. e.g., An Indian patent granted by the Indian patent office does not offer protection or scope, in geographical regions or in other countries such as in USA, China, etc. Therefore, an Indian patent granted is given protection only in India and not in other countries or regions. However, the scope of the patent can be enlarged by applying the same invention in different countries (patent family) through conventional or PCT route applications (Fig 2.1). A large patent family plays a significant role in the generation of royalty.

Similarly, a granted patent is valid only in a small geographical area or in a specific country. However, a large patent family protects the invention in different designated international countries. At the same time, registration of a large patent family results in higher costs during the time

of filing as well as during the annual maintenance or renewal fees (payment towards patent office fees, facilitating fees, etc.).

A patent family is a set or series of patent applications registered in various designated countries in order to protect a single invention (i.e., after filing the first application in the member country and claiming for the priority date in other countries through the PCT route or conventional application route). In other words, a patent family can be described as the same invention disclosed in more than one country.

Fig 2.1 shows a typical patent family of the patent application. The first application is filed in Canada (CA 2904657 A1) and on the same day the PCT application (WO 2014152818 A1) is also filed. The WO indicates World intellectual property organisation. Thereafter, the application is filed in countries like Australia (AU), Chile (CL), China (CN), Costa Rica (CR), Eurasia (EA), Europe (EP), Japan (JP), Korea (KR), Peru (PE), Singapore (SG), United States of America (US).

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 2014152818	A1 25-09-2014	AU	2014236582 A1	05-11-2015
		CA	2904657 A1	25-09-2014
		CL	2015002689 A1	05-02-2016
		CN	105209033 A	30-12-2015
		CR	20150537 A	27-11-2015
		EA	201591677 A1	29-01-2016
		EP	2968239 A1	20-01-2016
		JP	2016517428 A	16-06-2016
		KR	20150130361 A	23-11-2015
		PE	17472015 A1	18-12-2015
		SG	112015072095 A	29-10-2015
		US	2016009707 A1	07-01-2016
		US	2016074370 A1	17-03-2016
		WO	2014152818 A1	25-09-2014

Fig. 2.1 Typical Patent Family

(ii) Content Related

Besides the geographical range, the contents especially (claims) in the patent documents play a major role in the assessment of the scope of the patent. This can be deduced from the claims made in the complete specification (Form 2). The more comprehensive the claims are, the stronger is the protection of intellectual property. The claims must be relevant to the inventions or applications submitted. When the claims are more than 10, there is an increase in cost for each claim towards patent filing.

Patent Rights

Patent Rights

Only a single invention can be claimed in one patent application, even though the claims are many. In general, the claims are written in the patent document as broad as possible, so that it prevents competitors to improve the scope of the patent. Sometimes, it is necessary to apply more than one patent applications for a product. Example: M/s Apple Inc, USA have filed more than 8,000 patent applications for their smart mobile phones, though, they are using only around 350 patents in each of the smart mobile phone (iPhone). This is carried out to prevent others from filing patent applications in their area of interest or allowing the scope for others to improve upon.

2.1.2 LICENSING AND TRANSFER OF TECHNOLOGY

The following section deals with licensing and transfer of technology.

Licensing

A granted patent is a transferrable property that can be transferred from the original patentee applicant(s) to any other person(s) or organisation by assignment or by operation of law called licensing. A patent can be licensed or assigned to others only by the applicant(s) of the granted patent and not by the inventors. In the case of co-owners or joint applicant(s), a co-owner can assign or license the patent only after receiving the consent from the other owner(s)/applicant(s) in written form.

A license obtained from the original applicant(s) or patentee allows any organisation or person to make use of the particular innovation that is protected by a variety of IPRs, including patents. Licensing is primarily involved in the act of permitting an individual or group of persons or an organisation(s) to use the innovation with the permission of the grantor of the license. License is the permission granted by the patent owner legally to another person or organization for using the patented invention with the terms and conditions agreed upon while the patent owner may maintain his ownership of the patent and earn money through royalties or as per the conditions in writing.

The Indian Patents Act, 1970 allows a patentee to grant a license to one or more persons or company by way of an agreement under Section 70 of the Indian Patent Act. A patentee may permit the licensee holder to make, use, or exercise the invention by way of granting a license. A license granted is not valid unless it is in writing. A licence is a contract signed

between the licensor or the patent holder (applicant(s)) and the licensee in writing for terms agreed upon by them including the payment of royalties under the patent. The different types of licenses are Voluntary License, Statutory License (Compulsory License), Exclusive/Limited License and Express/Implied License. They are briefly presented below.

- (i) **Voluntary license:** It is the license given to any other person or company to make, use and sell the patented products/process as agreed upon the terms of the license in writing voluntarily. Since it is a voluntary license, the Controller does not have any role to play. The terms and conditions of such agreement are mutually agreed between the licensor and the licensee. In case of any disagreement, the licensor can cancel the licensing agreement.
- (ii) **Statutory license:** Statutory licenses are granted by the central government by empowering the third party to make/use the patented article without the consent of the patent holder in view of public interest. Such statutory licenses are called compulsory licenses. Compulsory licenses are generally defined as authorisations permitting a third party to make, use, or sell a patented invention without the patent owner's consent. This can be used during needy times like war, escalation of the price of the drug for a particular disease, etc.
- (iii) **Compulsory License:** According to section 84 of the Indian Patents Act, 1970, any person can make an application for grant of a compulsory license for a patent after three years from the date of grant of that patent, on any of the following grounds:
 - a. Reasonable requirements of the public with respect to the patented invention which have not been satisfied.
 - b. The patented invention is not available to the public at a reasonably affordable price.
 - c. The patented invention has not been worked in the territory of India.
 - d. According to Section 92(a) of the Indian Patent Act, 1970, Compulsory License can also be granted for exporting pharmaceutical product(s) to any country incapable of

Patent Rights

manufacturing pharmaceutical product(s) and for the benefit of the people in that country. By a notification by the Central Government, the Controller can grant a license to an interested person. The Central or State Government can use the invention or its process for its own purpose either with or without royalty.

(iv) Exclusive Licenses

Depending on the degree and extent of rights conferred on the licensee, a license may be referred to as an exclusive or a limited license. An exclusive license excludes all other persons, including the patentee from the rights to use the invention. Such a license applies where the patent owner gives the full rights of the invention to only one licensee (Exclusive Licensee). Limitation may arise as to whom, period, place, make, use or sell. This kind of agreement allows both parties to agree that there will be only one licensee.

(v) Non-Exclusive License

It provides several manufacturers to have the right to make the product.

(vi) Partially Exclusive License

Only some portion of the invention is licensed to anyone except for the particular licensee.

(vii) Implied License

When a person buys a patented article, either within a jurisdiction or abroad either directly from the patentee or through his licensees, there is an implied license in any way to resell it in any manner.

Transfer by Operation of Law

When a patentee dies, the right passes on to his legal representative(s). In the case of dissolution or winding up of a company or bankruptcy, the provision relating to the transmission of a patent by operation of law applies.

Patent Rights

Transfer of Technology

Transfer of Technology or Technology Transfer is a broader concept that enables the organisation to up-skill in a particular area of technology. It could involve a license as well, but its primary focus is to educate the licensor working in a particular technology to use the innovation in their product or a process as per the specification. Technology transfer plays a very important role in the wealth generation and is generally covered by a technology transfer agreement. Technology Transfer is not only limited to knowledge and information. It also includes skill transfer, manufacturing process, physical assets, know-how, and other technical aspects. The various stages involved in technology transfer is shown in Fig. 2.2.

Transfer of any technology helps an organisation in further development and bring more innovation in that product through effective initialisation of the technology transferred. A combination of the technology transfer and licensing helps in bringing down the expenses towards the conduct of the research and also the costs towards research and development activities and helps in further development of the technology. Technology transfer brings economic benefits to the company, thereby increasing revenue, which helps in achievement of a higher market share and increased profits. The customer will receive better innovative products or processes and services that lead to increased efficiency and effectiveness.

Once a patent for an invention is granted, it is important to consider the following:

- The patentee may manufacture, market, sell and/or distribute the invention.
- The patentee can license someone else to make for a sum of money or royalty.
- The patentee may give rights to someone else for a sum of money or royalty through the transfer of technology.

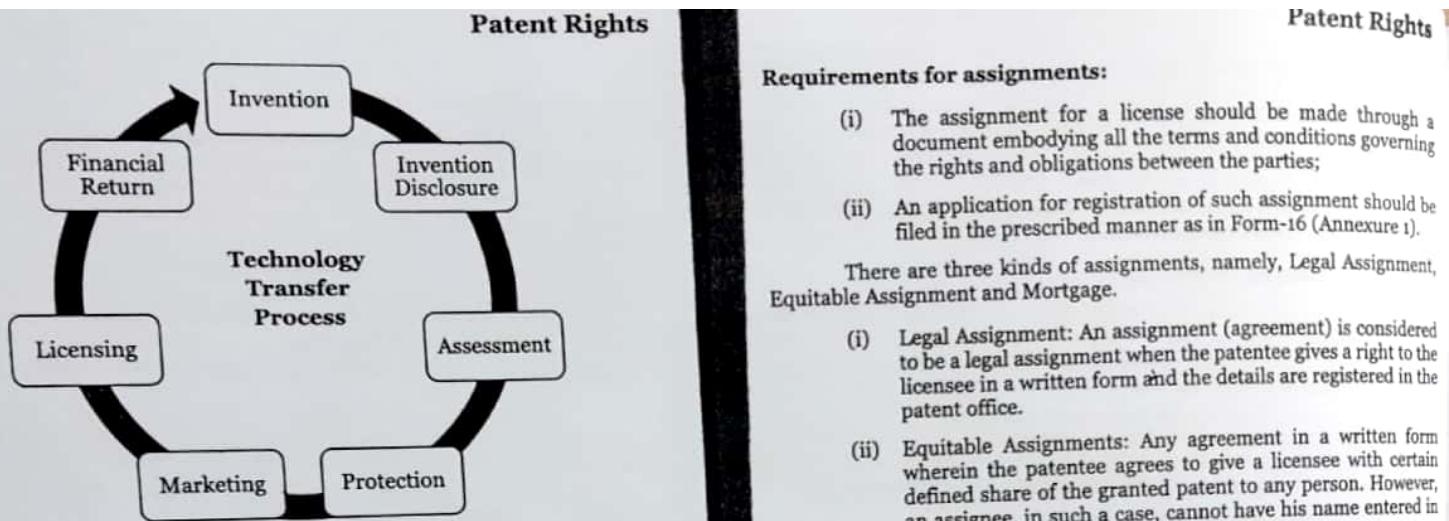


Fig. 2.2 Stages Involved in the Technology Transfer

Forms of Transfer of Patent Rights

The patent can be transferred to another person(s) or organization in three ways namely assignment, license, license by operation of law. They are briefly presented below:

Assignment: The rights of the granted patent is transferred from the patentee to an individual or a group of people or organization in the form of assignment(agreement), which is an assignment legal document in which the patent holder (patentee) assigns the whole or a part of his patent rights to others. The assignment is not valid unless it is duly executed in writing and registered in the patent office. Once the right is transferred to others through assignment, the license holder has the right to prevent others from making, using, selling, exercising or vending the invention embodying all the terms and conditions governing their rights and obligations which are duly executed in the assignment.

Requirements for assignments:

- (i) The assignment for a license should be made through a document embodying all the terms and conditions governing the rights and obligations between the parties;
- (ii) An application for registration of such assignment should be filed in the prescribed manner as in Form-16 (Annexure 1).

There are three kinds of assignments, namely, Legal Assignment, Equitable Assignment and Mortgage.

- (i) **Legal Assignment:** An assignment (agreement) is considered to be a legal assignment when the patentee gives a right to the licensee in a written form and the details are registered in the patent office.
- (ii) **Equitable Assignments:** Any agreement in a written form wherein the patentee agrees to give a licensee with certain defined share of the granted patent to any person. However, an assignee, in such a case, cannot have his name entered in the register as the proprietor of the patent.
- (iii) **Mortgages:** A mortgage is an agreement in which the patent rights are wholly or partly transferred to a mortgagee in return for a sum of money. Once the mortgagee repays the sum to the patentee, the patent rights are restored to the patentee. The person in whose favour a mortgage is made is not entitled to have his name entered in the register as the proprietor, but he can get his name entered in the register as mortgagee.

2.1.3 PATENT INFORMATION AND DATABASE

Access to technology information has expanded rapidly in recent years, as a result of the increasing availability of technical documents in the digital format and the progressive development of electronic means of distribution and retrieval. This section details the search for technology information using patent documents.

A patent document has a rich source of technical, legal and business information presented generally in a standardised format. Patent documents are well-classified and having appropriate technical details about an invention.

Patent Rights

A patent has two important functions such as protection and disclosure, which are briefly presented below.

- a) **Protection.** A patent allows the patent holder to exclude others from commercial exploitation of the invention covered by the patent as specified in the claims in a certain country or region in which the patent was granted and for a specific period of time, generally not exceeding 20 years from the date of filing.
- b) **Disclosure.** The publication of a patent through the patent office journals gives the public to access related information regarding new technologies, which discusses the best possible working, and stimulates innovation further and contributes to economic growth.

Patent information is an important resource for researchers, inventors, entrepreneurs, commercial enterprises, patent professionals and the public in general. Patent information can assist users to:

- a) Avoid duplicating research and development effort
- b) Determine the patentability of their inventions after comparing with prior art
- c) Avoid infringing other patents(infringements)
- d) Estimation of the value of the patents (patent valuation)
- e) Exploitation of technology from patent applications that have never been granted, which are not valid in certain countries, or from patents that are no longer in force (freedom to operate).
- f) To gain knowledge relating to the innovative activities and future direction of business competitors.
- g) Improving planning for business decisions such as licensing, technology partnerships, and mergers and acquisitions.
- h) Identification of key trends in specific technical fields.

Patent Rights

The patent document comprises of various information (Fig. 2.2 and Fig. 2.3).

- a) Technical information- Description and drawings of the invention
- b) Legal information- Claims and its legal status
- c) Business-relevant information- Data about the inventor(s), applicant(s), date of filing, country of origin, etc.
- d) Policy- Filing trends to be used by policymakers, e.g., National industrial policy strategy
- e) Applicant(s) name- Name of the individual or company which applies for a particular invention protected
- f) Inventor(s) - Name (s) of the person or persons who invented the new technology and developed the invention;
- g) Description- A clear and concise explanation of the known existing technologies related to the new invention and explanation of how the new invention could be applied to solve problems, which were not addressed by the existing technologies and specific embodiments of the new invention.
- h) Claims- The legal definition of the subject matter for which protection is sought or granted. Each claim is a single sentence in a legalistic form that defines an invention and its unique technical features. Claims must be clear and concise and fully supported by a description.
- i) Priority filing- Original first filing on the basis of which further successive national, regional or international filings are made within a period of one year from the date of first filing.
- j) Priority date- Date of the filing of the first application for a specific innovation.
- k) Filing date- Date of submitting an individual patent application at a particular patent office.
- l) Designated States- The patent application registered in other countries to which the rights may be extended.
- m) Legal status- Indicates whether the patent has been granted or not. If granted, the countries or regions for which the patent

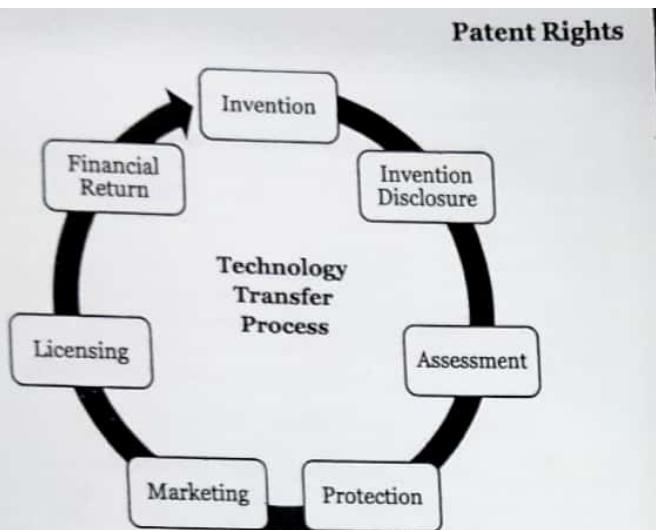


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- e) Applicant(s) name- Name of the individual or company which applies for a particular invention protected
- f) Inventor(s)- Name (s) of the person or persons who invented the new technology and developed the invention;
- g) Description- A clear and concise explanation of the known existing technologies related to the new invention and explanation of how the new invention could be applied to solve problems, which were not addressed by the existing technologies and specific embodiments of the new invention.
- h) Claims- The legal definition of the subject matter for which protection is sought or granted. Each claim is a single sentence in a legalistic form that defines an invention and its unique technical features. Claims must be clear and concise and fully supported by a description.
- i) Priority filing- Original first filing on the basis of which further successive national, regional or international filings are made within a period of one year from the date of first filing.
- j) Priority date- Date of the filing of the first application for a specific innovation.
- k) Filing date- Date of submitting an individual patent application at a particular patent office.
- l) Designated States- The patent application registered in other countries to which the rights may be extended.
- m) Legal status- Indicates whether the patent has been granted or not. If granted, the countries or regions for which the patent

Patent Rights

has been granted, and whether it is still valid or has expired or been invalidated in a particular country or region or abandoned or revoked, etc.

- n) Citations and references- Documents relating to patents granted also include references to related patents not covered by the applicant. This is provided by a patent examiner during the patent granting procedure. These references and citations include both patent and non-patent documents. This will provide knowledge of the closest prior art.
- o) Bibliographic data- Refer generally to the various data appearing on the front page of a patent document or the corresponding applications. It comprises of document identification data, domestic filing data, priority data, publication data, classification data, and other concise data relating to the technical content of the document.
- p) Document kind codes- Used for distinguishing between published patent documents according to the type and status. For example, with respect to published international applications under the PCT, the code A1 denotes an international application published with the International Search Report (ISR), while the code A2 indicates an international application published without the ISR, while the code A3 designates an ISR published with a revised front page (Fig. 2.3).
- q) Codes International Numbers for the Identification of the Data (INID)- Identify different elements of bibliographic data (Fig. 2.4). For example, code number 10 is associated with the patent number and the code number 54 is associated with the title of the invention.
- r) Country codes- The designated stated (countries) are specified by a unique two-letter country code. For example, the code "WO" indicates the International Bureau of WIPO, "IN" refers to the country India. US refers to the country United States of America.

(12) PATENT APPLICATION PUBLICATION		(21) Application No.201831009097 A	
(19) INDIA		(43) Publication Date : 20/09/2019	
(22) Date of filing of Application : 13/03/2018			
(54) Title of the invention : AN OPTIMIZED PROCESS FOR ADDITIVE MANUFACTURING A COMPONENT			
(51) International classification	:B29C47/00		
(31) Priority Document No	:NA		
(32) Priority Date	:NA		
(33) Name of priority country	:NA		
(86) International Application No	:NA		
Filing Date	:NA		
(87) International Publication No	:NA		
(61) Patent of Addition to Application Number	:NA		
Filing Date	:NA		
(62) Divisional to Application Number	:NA		
Filing Date	:NA		
(57) Abstract :			
An optimized process (100) for an additive manufacturing of a component (202), the optimized process (100) comprising step of providing a powder bed of low carbon ultra-high strength (LCUHS) steel powder on a substrate plate; scanning the LCUHS steel powder with a laser to form a first layer of the component (202); replenishing the powder bed and scanning the LCUHS steel powder with the laser to form a next subsequent layer of the component (202) onto the first layer; and repeating the replenishing step to the component (202), wherein, a power associated with the laser is about 100-500W, a scan speed associated with the laser is about 0.85-1.00 m/s, and a thickness of the first layer and the subsequent layers is about 40-50 microns.			
No. of Pages : 15 No. of Claims : 8			
(71)Name of Applicant :			
1)TATA STEEL LIMITED Address of Applicant :Bisnupur, Jamshedpur,Jharkhand, 831001, India			
(72)Name of Inventor :			
1)TRISHITA RAY 2)SOUMYA CHATTERJEE 3)MAHADEV SHOME			

Fig. 2.3 Typical Indian Patent Application (first page)

Patent Rights

Patent Rights

(1) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(2) World Intellectual Property Organization International Bureau
International Publication Date 14 March 2019 (14.03.2019)

WIPO | PCT

(3) International Patent Classification: No classified

(4) International Application Number: PCT/US2018/043558

(5) International Filing Date: 24 July 2018 (24.07.2018)

(6) Filing Language: English

(7) Publication Language: English

(8) Priority Date: 24 July 2017 (24.07.2017) US

(9) Applicant: CALIFORNIA INSTITUTE OF TECHNOLOGY [US/US], 1200 East California Boulevard, MC 4-32, Pasadena, California 91125 (US).

(10) Inventor: CHEN, Sumeer; on California Institute of Technology, 1200 East California Boulevard, MC 4-32, PASADENA, California 91125 (US). SCHERKOW, Axel; on California Institute of Technology, 1200 East California Boulevard, MC 4-32, PASADENA, California 91125 (US).

(11) Title: LOW POWER, CHEMICALLY AMPLIFIED, ELECTRICALLY REMOVABLE BARRIER

(12) Abstract: An implantable device contains a drug or biostimulating compound, protected from the external environment within a housing body by several barriers which are broken upon activation of the device through electrothermal, chemical, and mechanical processes. The device allows accurate and repeated dosing within a human body, thus reducing the number of implantation procedures required. The device extends the lifetime of a biomarker, reducing the number of implantation procedures required.

FIG. 2

Fig. 2.4 Typical PCT application (first page)

PATENT DATABASES

Patent information is made available to the public through a variety of databases (Table 2.1). Each database covers a particular set of patent documents. Indian Patent Advanced Search System (INPASS) covers all patents documents filed in Indian patent office, United States Patent and Trademark Office (USPTO) covers all patent documents submitted in USA. At present no database has complete coverage of all patent documents published worldwide. It is necessary to verify multiple databases in order to find the relevant documents and then access the patent documents relevant to the patent inventors. No single data source covers all available technological information or even all available patent information. The information may be limited to the range of dates or countries for which records are available or in terms of the search facilities offered (it is necessary & critical to keep in mind the limitations of the data in which the search is being carried out).

The typical list of patent service providers is given in Table 2.1.

Table 2.1 List of some of the free and paid database

Free Database	Paid Database
INPASS	Orbit Intelligence
USPTO	Total Patents
Free Patents Online	Thomson Reuters
Espace.net	Pat Seer
Auspat	Dexpat
Google Patent	Innovation Q
Patent Scope	XL Pat

Many national and regional patent offices provide free online access to their own patent collections as well as to selected patent documents from other offices. WIPO offers free online access to all international patent applications within the framework of the PCT and their related documents and patent collections from National and Regional Offices through its Patent scope search service (<https://patentscope.wipo.int>). Patent data can be obtained through national and regional patent offices. WIPO provides access to a broad range of statistics on world patent activity at www.wipo.int/ipstats/en/. Indian applications can be seen in the website of the Indian patent office (www.ipindia.nic.in).

Patent Rights

A number of commercial providers also offer patent information databases online (Table 2.1). Certain commercial providers have established value-added services for access of translations of patent information and additional systematic classification, for instance, by chemical structures and reactions or biological sequences.

Identifying key trends in technology development

Data obtained from patent documents can be used for mapping key trends across different fields of technology among different countries, thereby helping policymakers in making better strategic decisions. The data generally relates to the number of patents filed, granted, and in force in different countries and may be broken down according to the number of criteria including technology group or by country of origin of applicant or inventor. Depending on the criteria, patent data can be used for tracking the growth and changes in patent activity over time, examination of the distribution of patent applications in a country, or identification of the technical areas in which a country is predominantly active in terms of patenting activity, eventually helping to find the grey area (white space) of research and innovation.

Prior art searches

Prior art refers to patent and non-patent literature that is available as evidence related to the invention. The prior art does not need to be a physical product or be commercially available. It is enough that someone, somewhere, sometime previously has described or shown or made something that contains the use of technology that is very similar to the proposed invention.

The criteria used in the determination of the patentability of a claimed invention are

- a) Novelty
- b) Non-obviousness/Existence of an inventive step
- c) Adequacy in the differences between the present invention from the existing technologies.

Prior art also includes the pool of existing knowledge made available to the public anywhere around the world. Patent documents contribute as an important source through which technical information is made publicly available. Consequently, searching patent documents is an important step in ensuring whether the patentability is of an invention.

Patent Rights

Before conducting a patentability search for an existing patent documentation, it is important to determine the following characteristics of the innovation for which patent protection is sought:

- a) What problem does the invention solve?
- b) What does the invention do?
- c) What effect does the invention produce?
- d) How is the invention constructed?
- e) What materials or methods are used in the construction of the invention?

Answers to the above questions provide help to the search for existing patent documentation to the inventor(s) in filing a patent application as per the patentability criteria. A point to remember is that all patents existing in fields of technology may not obviously be related to the innovation. However, they may contain information that has a bearing on the patentability of the invention. e.g., The invention relates to a novel design relating to a blade used in a wind turbine. Patents on the design of helicopter rotor blades, aeroplane wings, or other aerodynamic structures may contain information relevant to prior art related to the blade. As a result, the scope of the search should not be restricted to the collection of the relevant documents pertaining to the blade used in not only wind turbine.

Strategies to search patent information

A search carried out for patent documents allows locating information on recent developments in a range of technical areas. In fact, new developments are exclusively reported in the patent documents in respect to the same fields of technology.

Effective search for patent documentation and other sources of technological information often require solid knowledge of the technical field to which the invention belongs. An awareness of the terminology and issues related to this field are necessary for the identification of appropriate search criteria.

The following are the important search criteria that can be used for locating the relevant patents:

Patent Rights

- a) Keywords-Refer page 21
- b) Patent classification Number (International Patent Classification or Cooperative patent classification (CPC)) or United State (US) classification.
- c) Combination of keywords and patent classification number
- d) Dates (e.g., priority date, application date, publication date, grant date)
- e) Patent reference or identification numbers (application number, publication number, patent number)
- f) Names of the applicant(s)/assignee(s) or inventor(s)

The patent documents that can be searched using the above criteria may also differ between each search engine service provided. Most search services permit users to search bibliographic/front page data. That data contained in a patent application except the description and claims. Some search services, such as Google Patents, USPTO, Free Patents Online, WIPO's Patent scope allow full-text searches, including the description and claims. The range of searchable data may also be limited in the case of older patent documents. In some cases, for instance, these documents can only be searched according to their title or patent reference number.

Search by keyword

Patent information databases can generally be searched using keywords that describe the technology or problem of the technology that needs to be addressed. The following methods are used by the patent examiners effectively by carrying out the patent searches.

- (i) Word operators: Keywords can be combined and/or excluded using so-called "Boolean Operators" such as: "AND", "AND NOT", "NOT", "OR", "XOR", and "NEAR", for example:
 - a) "Tennis AND Ball" shows documents having both the word "tennis" and "ball"
 - b) "Tennis ANDNOT Ball" shows documents having the word "tennis" but not "ball"

- c) "Tennis OR Ball" shows documents having either of the words "tennis" or "ball" or both
- d) "Tennis XOR Ball" shows documents having either of the words "tennis" or "ball" but not both
- e) "Tennis NEAR Ball" shows documents having both the words "tennis" and "ball" within a certain number of words of each other

The 'NEAR' operator may be useful for word pair searches to include variations in phrases containing two terms (e.g., 'metal cutting', 'cutting metal', 'cutting of metal', and 'cutting through metal') but to exclude documents in which the terms appear out of context with each other, which might occur if the "AND" operator is used.

- (ii) Truncation: Words can be truncated, i.e., shortened to their primary root or stem, by reducing their length using operators like asterisk (*), question mark (?), dollar sign (\$), or percent sign (%), so as to increase the coverage of the search, for instance: 'Elect*' shows all documents having words based on the word "elect," e.g., for electricity-related technology "electricity", "electrical", "electron", but will also include words such as "election", "electoral", etc., which might not be relevant to a specific search.
- (iii) Nesting: Nesting refers to the use of parentheses for organising search queries in order to resolve a potentially confusing search or syntax. E.g., '(Tennis AND Ball) OR racket' shows documents having either the words "tennis" and "ball" or the word "racket". "Tennis AND (Ball OR Racket)" shows documents having the word "tennis" and either the word "ball" or "racket". Nesting () must be used when mixing Boolean operators to ensure a search being carried out as expected.
- (iv) Phrases: It is a group of words with quotation marks (""), everything surrounded by those quotation marks treated as a single search term. This allows the search for a multi-word phrase rather than specifying each word as a separate term, e.g., 'Tennis ball' shows documents having both the words "tennis" and "ball" by default of the space between the words are treated as an "AND" clause.

Patent Rights

Classification Search

All patent documents are individually classified using a standardized system identifying the technology group or groups to which the innovation described in the document belongs. These classification systems are independent of language and terminology and are assigned to patent and other technical documents by professional patent examiners. As a result, a search for patent documents by patent classification can help to overcome some of the pitfalls of searching using keywords alone.

A widely used system is the International Patent Classification (IPC) system. The IPC system covers almost every field of technology. It is revised periodically to ensure the improvement of the system and to take technical developments into account. In its latest version, it subdivides technology into almost 70,000 fields or groups. Each group describes a specific technology and is identified by a "classification symbol" consisting of a sequence of numbers and letters. IPC symbols can generally be found in the bibliographic data contained in published patent documents.

The IPC system is organized on the basis of hierarchical levels, from the highest to the lowest; The levels are: Sections, Classes, Subclasses, and Groups (main groups and subgroups). Each section has a title and a specific letter code, as follows:

- A Human Necessities
- B Performing Operations; Transporting
- C Chemistry; Metallurgy
- D Textiles; Paper
- E Fixed Constructions
- F Mechanical Engineering; Lighting; Heating; Weapons; Blasting
- G Physics
- H Electricity

From section (highest hierarchical level) to sub-group (lowest hierarchical level), the code "C21B 7/10" can, for instance, be broken down as follows:

Class C21	:	Chemistry; Metallurgy
Subclass C21B	:	Metallurgy of iron
Main group C21B 7/00	:	Manufacture of iron or steel
Subgroup C21B 7/10	:	Blast furnaces
	:	Cooling; Devices

A search performed using the subclass C21B will return all records classified under the main group C21B 7/00 as well as the main groups C21B 3/00, C21B 5/00, and so forth. Subgroups are further subdivided with one or more dots preceding their title indicating the hierarchical position of each subgroup. A subgroup with a certain number of dots forms a subdivision of the nearest subgroup above it having one dot less. As an example, subgroup Co2F 1/461 and Co2F 1/469 (two-dot level) represent subdivisions of the subgroup Co2F 1/46 (one-dot level) (Fig.2.5).

Fig. 2.5 Typical Classification Numbers

Patent Rights

Other notable classification system used by patent offices is Cooperative Patent Classification (CPC) system. CPC system is developed jointly by the European Patent Office (EPO) and the United States Patent and Trademark Office (USPTO). CPC system is based on the IPC but further subdivided into specific subgroups. The Japan Patent Office uses File Index (FI) system which is based on the IPC but with additional subdivisions and additional classification elements ("F-terms") used for indicating particular technical features or aspects of an invention.

Search by Number and Date

Patent documents are assigned unique identification numbers at each stage in the patenting process. Therefore, each document can also be accessed with:

- a) The application number
- b) The publication number
- c) The granted patent number
- d) Nation wherein it has been granted
- e) Date of filing
- f) Date of publication
- g) Priority date (the date of filing of the patent application on the basis of which priority is claimed)

Patent documents can also be located using identification numbers and key dates assigned to them. Some search services support the use of range operators to narrow the search in numerical fields, including date fields. Common range operators can include: greater than (>), less than (<), greater than or equal to (>=), less than or equal to (<=) and unequal to (<>). The WIPO PATENTSCOPE search service uses brackets [...] TO [...] and the -> operator to specify a range of dates, for instance:

Date and Publication (DP):(20070908 TO 20071231) shows documents with a publication date between 8th September 2007 and 31st December 2007.

Patent Rights

Search by Applicant/Assignee or Inventor Name

Information on the patenting activities of specific individuals, companies or organizations may be obtained quickly by referring to patent documents according to their names. The same techniques as described in the section on searching by keywords can be used for this purpose (word operators, truncation, nesting, and phrases).

Using Citations and Reference Information

Patent applications often contain references to earlier patent documents (e.g., patent applications or granted patents) or to information published in the scientific and technical literature (e.g., journals or handbooks), particularly in the description section of the application. Moreover, in the course of the procedure for obtaining a patent, patent examiners prepare reports in which they may cite patent documents or other documents describing similar or closely related technical solutions to the one for which the patent is being sought. These reports are made available to the public by most patent offices. Citations contained in patent documents can be useful in identifying additional documents related to the technology being investigated or help to uncover further search criteria.

A common standard used for classifying documents cited by patent examiners in their search report is shown in Fig. 2.6. The most used categories are detailed below.

- a) Category X. A document that taken alone, anticipates the claimed invention, as a result of which the claimed invention cannot be considered novel or involving an inventive step;
- b) Category Y. A document that in combination with one or more such documents, anticipates the claimed invention, insofar as such a combination can be considered obvious to a person skilled in the art;
- c) Category P. Document published prior in the international filing date but not later than the priority date claimed.

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- c) Category P. Document published prior in the international filing date but not later than the priority date claimed.

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INTERNATIONAL SEARCH REPORT		
International application No: PCT/US2018/047442		
A. CLASSIFICATION OF SUBJECT MATTER Inv. AS1MS/315 ADD:		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Main classification assigned: Search classes (systems referred by classification symbols) AS1M		
Description of other fields of classification to the extent that such documents are included in the fields searched		
Search was conducted during the international search (name of data base used, where applicable, search terms used)		
EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Character of document, with indication, where appropriate, of the relevant passages	Patent or priority No.
X	EP 1 074 273 A1 (BECTON DICKINSON CO [US]) 7 February 2001 (2001-02-07) paragraphs [0015], [0022] - [0027]; figures 1a,1b,2a,7a	1-27
X, P	WO 2017/198809 A1 (BOCHS GMGH ROBERT [DE]) 23 November 2017 (2017-11-23) figures 1-4	1-27
X	EP 2 182 456 A1 (HOFFMANN LA ROCHE [CH]; ROCHE DIAGNOSTICS GMBH [DE]) 5 May 2010 (2010-05-05) paragraphs [0034], [0035], [0044]; figures 1,3a	1-27
	-/-	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of this C.		<input checked="" type="checkbox"/> See patent family chart
D. SPECIFIC INFORMATION RELATING TO THE INTERNATIONAL SEARCH		
E. DOCUMENTS CONSIDERED TO BE RELEVANT		
F. DATE OF THE INTERNATIONAL SEARCH AND DATE OF PUBLICATION		
Date of the earliest conception of the international search	Date of filing of the international search report	Date of mailing of the international search report
11 December 2018	19/12/2018	
G. NAME AND ADDRESS OF THE ISA U.S. Patent and Trademark Office, P.O. Mail Station 2 1401 L Street NW, Washington, DC 20591-0002 Tel. (202)-707-8400, Fax. (202)-707-8400		H. AUTHORIZED OFFICER Krassow, Helko
Form PCT/ISA/24 (present sheet) Part 2/2		

Fig. 2.6 Typical International Search Report

Best Practices in Searching Patent Documentation

The most effective searches exploit all the search options elaborated above, by using and combining keywords, IPC/CPC/US classification number, and patent number/date ranges, etc. Effective search for patent documentation is a step-by-step process, moving from an initial broad search narrowed down to more focused searches. Ultimately, however, the number of search results must be limited to a reasonable number to allow individual records to be examined in detail.

Avoiding Patent Infringement

Patent infringement has to be avoided by collecting information on the scope of the existing patents and their legal status (regions, date of application, etc.) in the jurisdictions which is planned to enable the establishment of operations by businessman. This information can be obtained through systematic search of patent documents. Having identified the relevant patent documents, the first step is to examine the legal status of the patent application to check whether the patent has been granted, rejected, withdrawn, valid, expired or is it still pending in the countries where it has been applied and also their status.

Potential infringements can be avoided by modifying the innovation by taking into account the claims in the patent documents. Since patent applications are not published until 18 months after they are filed, it is important to continue monitoring patent documentation in the fields of technology related to their product. Many search services have incorporated notification tools, e.g., RSS feeds, that can greatly facilitate this process.

Non-Patent Literature

Non-patent literature includes scholarly journals, textbooks and other sources of scientific and technical knowledge. In many fields of technology, non-patent literature plays a crucial role in defining the prior art and is, therefore, indispensable for determining the patentability of any innovation. A typical example of non-patent literature can be obtained from Springer, ScienceDirect.com, IEEE, etc. A number of free online tools for searching non-patent literature is offered by commercial providers including Google, Google Scholar and Scirus. Certain commercial providers also provide enhanced search services, including cross-references and IPC-classified non-patent documents, on payment basis.

Patent Valuation

Patent valuation provides the economical value of the granted/filed patent product/process, leading to the ability to explore the market value and exclude competitors from making a specific or similar invention. For example, the number of times a patent is cited in later patent documents is indicative of its technical relevance and its value. The commercial value of the patented product/process and the return on investment helps access to the valuation of the patent. Thus, an exhaustive search also helps in analysing the valuation of patents in terms of commercialisation.

2.1.4 GEOGRAPHICAL INDICATIONS (GI)

A geographical indication (GI) is a sign or name used on products that have a specific geographical origin and possess qualities or a reputation commercial value by its mere association with a particular place. (Eg: Tirupati laddu, Darjeeling Tea, etc.). Geographical indications help a consumer/customer to know the origin from which it is made and also associated with the quality of the products. Geographical Indications clearly indicate a clear link between the characteristics of the product and the particular region/place where it was produced. Such links help customers in their decision either to purchase the product's or not to. Therefore, the recognition of the name of the place along with the product(s) by means of geographical indications, helps the organization in promoting the product(s) of the geographic area.

Darjeeling tea, Tirupati laddu, Kashmir Carpets, Kanchipuram Saree, Shivakasi Crackers, etc are all names of products that we hear in our lives almost daily. These names are associated with the origin of these products with some special significance. These products are registered as geographical indications in the Indian Geographical Indication registry at Chennai. Geographical indications like Champagne, Cognac, Roquefort, Chianti, Pilsen, Porto, Sheffield, Havana, Tequila, Darjeeling have acquired high reputation across the world. These indications have valuable commercial assets and are exposed to misappropriation and infringement. Therefore, these indications require protection in order to preserve the property in them. Typical graphical indication of different regions in India is shown in Fig 2.8.

Patent Rights

Patent Rights

There are three conditions under which Geographical Indications are claimed

- It should relate to a specific geographical area
- It should be used upon or in relation to a particular good originating from the geographical area
- In the case of manufactured goods, one of the activities, namely, production, processing or the preparation of the goods concerned should take place in that geographical location.

Geographical indications serve three main purposes. They are:

- Identifying the nature of the goods.
- Identifying the origin of the goods.
- Connecting some quality or characteristic of the goods to the origin of the goods.

As mentioned before, the term 'Geographical Indications' refers to names or expressions used in connection with goods or services in such a manner that the term connects the name of a place or territory to the good. The purpose of this name normally is to highlight the origin/connection of the good/service with that particular place or a territory. Geographical appellations are given the status of an intellectual property simply because the name of the place when attached with the name of the goods, for various reasons, increases the commercial value of the goods. The name of the place can be used only on particular goods that have a connection with the goods leading to its originality/credibility of the goods. More examples of geographical indicators are given in Annexure 12. The recognition process of GI as per the Indian patent office is shown in Fig. 2.7.

TRIPS is the first international agreement that sets forth standards for presentation of the Geographical Indications to regulate international intellectual property protection and minimum standards. There is a distinction between indications of the source and the appellations of origin. Indication of source refers to any expression or sign used for indicating that a product or service originated in a country/ region/ specific place. The appellation of origin indicates the geographical name of a country, region or specific place where the product originated. The use of an appellation of origin requires a quality link between the product and its area of production. This qualitative link consists of certain characteristics of the product, which

Patent Rights

are exclusively or essentially attributable to its geographical origins such as climate, soil or traditional methods of production. The use of an indication of source on a given product is merely subject to the condition that this product originates from the place designated by the indication of source.

The geographical Indication registration process is given below:

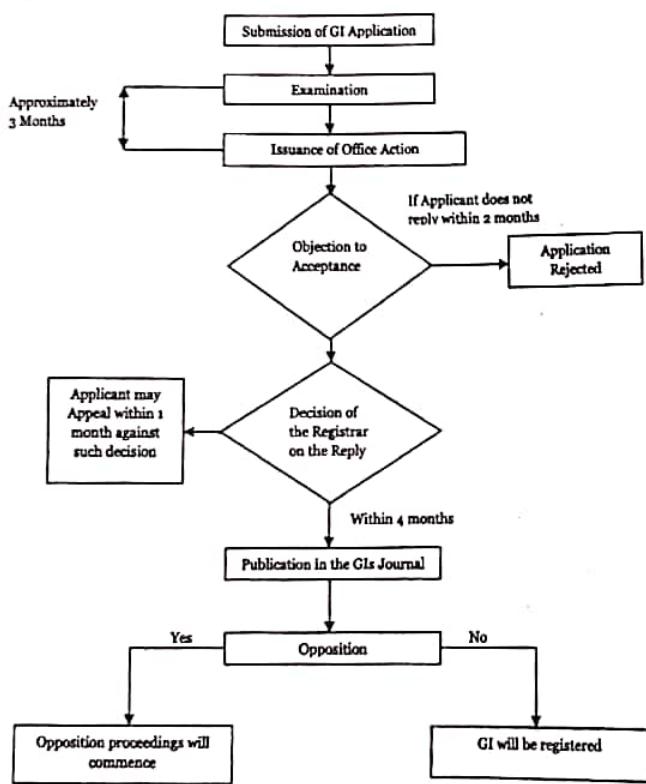


Fig. 2.7 Registration Process of GI

Typical Examples of Geographical Indication:

- a) Basmati Rice: There are at least 400 varieties of rice in India and basmati rice comprises four percent of India's export earnings. India earns the US \$ 800 million annually from basmati rice exports. Ten percent of these basmati exports are consumed in the U.S. In the world markets, Indian basmati rice is the most expensive rice available. In Europe, the best U.S. rice fetches a price of US \$ 500 per metric ton. India's Basmati is sold for US \$ 1200 per metric ton. The European Union provides Indian Basmati rice a duty discount of US \$ 300 per metric ton.

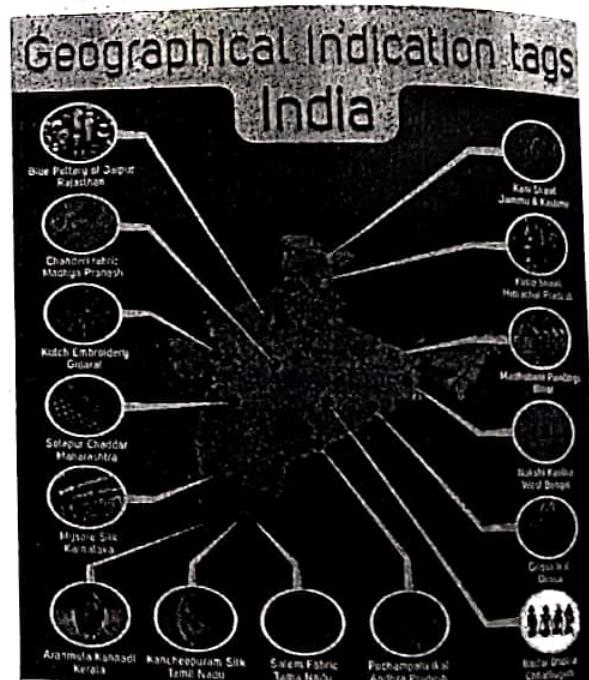


Fig. 2.8 Typical Geographical Indications of Different Regions in India

Patent Rights

- b) Darjeeling Tea: Darjeeling tea is a tea grown in the Darjeeling district, West Bengal, India widely exported. The estimated annual production of Darjeeling tea is 10 million kilos a year, but globally 50 million kilos are sold. Spurious Darjeeling tea originates in India, as well as in Sri Lanka and Kenya. In the 1980s, the Tea Board attempted to introduce logos to distinguish spurious from the genuine one, however, it did not work. Thereafter, Tea Board successfully registered Darjeeling tea in 2004 as GI. Darjeeling tea is the first Indian product to receive the GI tag.

Difference between Trademark and Geographical Indication

The difference between a 'Trademark' and a 'Geographical Indication' is briefly presented here. A trademark creates a nexus between the goods and the manufacturer of the goods. It facilitates identification of the manufacturer to the consumer enabling the manufacturer to indicate the promise of a certain quality through the mark/brand. A geographical indication, on the other hand, links the name of the goods with the area of origin of the goods. It promises the consumer a certain quality/make/character in goods by virtue of the origin of the good from the place indicated.

Chapter 3

NEW DEVELOPMENTS IN IPR

3.1 INTRODUCTION

This chapter deals with the administration of patent system, new developments in IPR, IPR of biological systems, computer software, traditional knowledge, Case Studies, IPR and IITs.

3.1.1 ADMINISTRATION OF PATENT SYSTEM

Indian Patent Office is administered by the Controller General of Patents, Designs & Trade Marks (CGPDTM) (Fig 3.1). This is a subordinate office of the Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, Government of India, New Delhi.

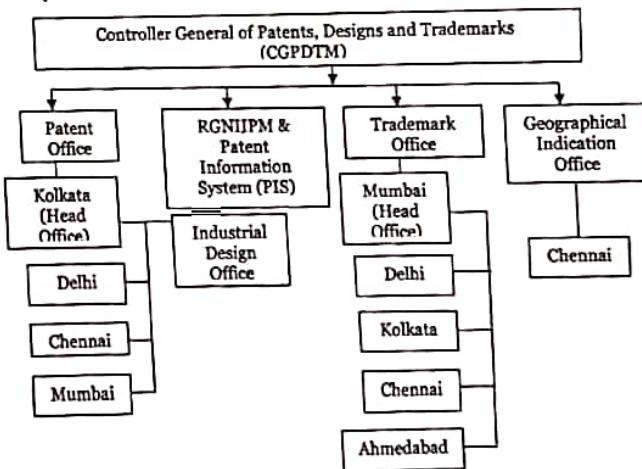


Fig. 3.1 Administration of Indian Patent Office

New Development in IPK

CGPDTM has the following administrative sections namely;

- a) Patent
- b) Industrial Design
- c) Trademark
- d) Geographical Indication
- e) Rajiv Gandhi National Institute of Intellectual Property Management (RGNIIPM), and Patent Information System

The Controller General of Patents, Designs and Trademarks (CGPDTM), supervises the administration of all the patents offices, industrial designs office, trademarks office, geographical indication office, Rajiv Gandhi national institute of intellectual property management and patent information system as per Indian Patent Act, 1970 and its amendments (Annexure 13) and also advises the Government on matters relating to the above subjects.

- a) The office of the CGPDTM is located in Mumbai.
- b) The headquarters of the Patent office is located at Kolkata and has branches located at Chennai, New Delhi and Mumbai.
- c) The Industrial Design office is located at Kolkata,
- d) The Trademark office is located at Mumbai.
- e) The Registry for Geographical Indications has been established in Chennai to administer the Geographical Indications of Goods.
- f) The office of the Patent Information System and Rajiv Gandhi National Institute for Intellectual Property Management is located at Nagpur.

Each office of patent has its own territorial jurisdiction for receiving patent applications and is empowered to deal with all sections of Indian Patent Act, 1970. If the Applicant(s) belong to Tamil Nadu, Bangalore, Karnataka, Andhra Pradesh, Telangana, Pondicherry, they have to file their patent applications in the Chennai Patent Office. The Indian Patent Office has Senior Joint Controller, Joint Controller, Deputy Controllers, Assistant Controllers, and Patent Examiners. The hierarchy of a typical Patent office is given in Fig. 3.2.

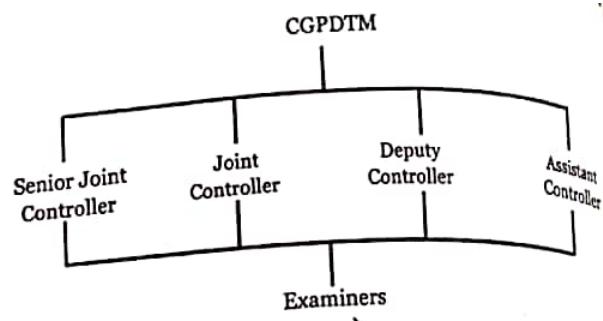


Fig. 3.2 Hierarchy of Chennai Patent office

Although the designations are different, the members (with the exception of the Controller General) have equal authority in administering the Patents Act. An Indian Patent Examiner's job is to search for prior art very close to the submitted applications and ensure that it meets the patentability criteria and raise objections (if any) as per the Indian Patent Act, 1970. Thereafter, the patent examiner submits the reports to the Controller, which is called the First Examination Report (FER). The Controller has the power to either accept or reject the Examiners' report. If he accepts, he forwards it to the applicant with a request for a reply within six months.

Electronic (E) - Filing System

The facility of electronic filing (e-filing) of applications for Patent, Trademark, Industrial Design, etc. was introduced by the Indian Patent Office in July 2007 in line with international requirements. An applicant can benefit by filing his application through E-filing system with a reduction of 10 % of the fees to be paid.

3.1.2 IPR of Biological Systems

Biological system deals with a living organism. Biological systems are broadly classified into macro, micro and nanoscales. Macro scale populations of organisms such as the circulatory, respiratory, nervous systems, etc. In the case of micro and nano scales, the biological systems are classified as cells, organelles, macromolecular complexes, regular pathways, etc.

New Development in IPR

The development of the genetic resources of a biological system is known as biotechnology. Biotechnology includes any technique that uses living organisms or parts of organisms to make or modify to improve plants or animals or to develop microorganisms for specific uses. Biotechnology plays a key role in the areas of pharmaceutical science, genetics, molecular biology, biochemistry, immunology, stem cell-related research, embryology, bioremediation, biodegradation, etc. Biotechnology innovations and research are also instrumental in health care systems, agricultural industry, polymers and materials sectors, etc. The recent development of new biological techniques such as recombinant DNA, cell fusion, and monoclonal antibody technology have raised fundamental social and moral questions and created problems in the issue of IPRs.

The following IPRs deals with biological systems:

- a) Composition of matter (e.g., Pharmaceutical drug)
- b) Article of manufacture (e.g., Surgical instruments)
- c) Process (e.g., Synthesizing a pharmaceutical drug/manufacturing a surgical instrument)
- d) Machines (e.g., Intravenous drip-feed monitor).
- e) Ornamental features of devices (e.g., uniquely-shaped stethoscope or uniquely shaped blood pressure monitoring cuff housing).
- f) Names and logos of surgical, medical, dental and veterinary apparatus and instruments.

In the case of patent protection involving microorganisms, the World Intellectual Property Organization (WIPO) has initiated a single depositing authority system for fulfilling the need of depositing the culture (microorganism). Microorganisms such as bacteria, fungi, yeast, plasmid in a host and/or as isolated DNA, genetically manipulated microorganisms and isolated DNA can be deposited in India. The International Depository Authority (IDA) is located in India at the following locations.

- a) Microbial Culture Collection (MCC)
National Centre for Cell Science (NCCS),
University of Pune Campus,
Ganeshkhind, Pune.

New Development in IPR

- b) Microbial Type Culture Collection and Gene Bank (MTCC), Indian Institute of Microbial Technology (IMTECH), Council of Scientific and Industrial Research (CSIR), Chandigarh.

The Budapest Treaty gave an international recognition of the deposit of micro-organisms for the purposes of patent procedure in the biological field. The Budapest Treaty is a special agreement under the Union of Paris and is administered by the International Bureau of WIPO. In order to solve the non-repeatability of microorganisms, the regulations provide a series of International Depository Authority (IDA), a depository institution located in a member country that has agreed to comply with certain requirements.

The reasons for the deposition of microorganism is detailed below:

- a) Description of a microorganism isolated from soil or any other ecological niche can never be complete, although some properties/features can be documented.
- b) Ensuring isolation of the same strain from an ecological niche is difficult
- c) An exactly identical genetic change (mutation) and selection of a desired strain of a microorganism is extremely difficult to repeat.

The steps involved in the submission of biological samples in the International Depository Authority (IDA) as per the Indian Patent Act 1970 is shown in Fig. 3-3.

New Development in IPR

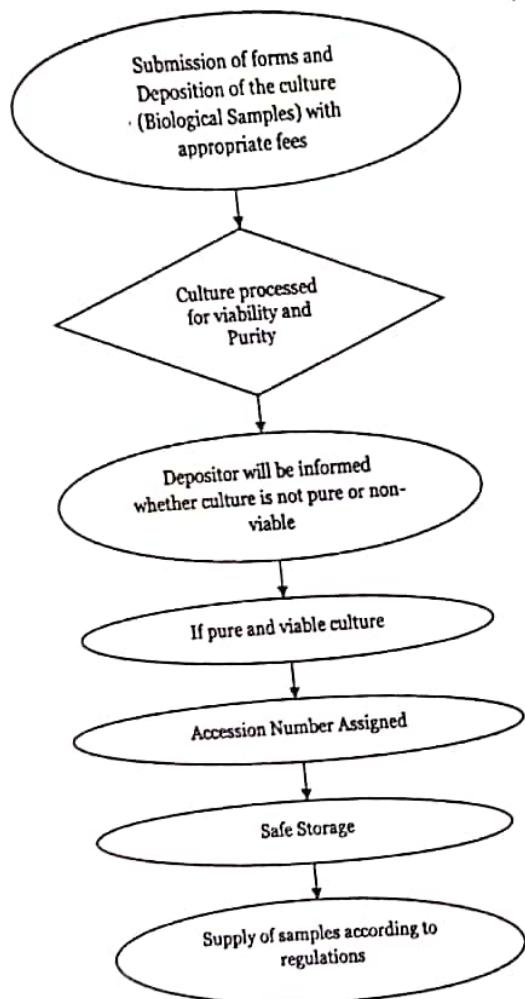


Fig. 3.3 Process of International Depository Authority (IDA)
For Depositing the Microorganism

Indian Patent Act 1970 for Biological System

The Section 3(d) of the Indian Patents Act, 1970 deals with the inventions in the field of biotechnology. The section 3(d) of patents act states that mere discovery of new form of known substances which does not result in enhancement of the known efficacy (efficiency) of that substance or the mere discovery of any new property or new use for a known substance or the mere use of a known process, machine or apparatus unless such known process, machine or apparatus results in a new product employs at least one new reactant which shall not be considered for patent. Hence, while submitting the patent applications related to biological systems, the inventor should ensure that the applied invention has an enhancement in efficacy and difference in properties over the existing product(s)/substance.

Further, Section 3(i) of the Indian Patent Act 1970, excludes medical treatment methods from being an invention. Section 3 (i) states that any process for the medicinal, surgical, curative, prophylactic (diagnostic, therapeutic) or other treatment of human beings or any procedure for a similar treatment of animals to render them free of disease or increase their economic value or that of their products shall not be considered as invention and hence is not patentable.

IPRs OF COMPUTER SOFTWARE

Computer software is considered as a form of intellectual property. A patent will not be awarded for computer programme per se, according to section 3 (k) of the Indian Patent Act, 1970. However, the inventor(s) can register for the same as copyrights as per the Copyright Act, 1957.

According to Section 3(k) of the Indian Patents Act, 1970, mathematical or business method or a computer programme per se algorithms do not fall under the category of items that can be patented in India. Therefore, the Indian Patent Office has been rejecting majority of patent applications for software patent in India, even though they have patentable criteria for innovation. For example, a system or programme developed by a taxi company, which allows any customer to choose a cab which is closest to his location could qualify as a business method.

Copyrights law protects the specific code of a programme written by the creator (programmer), but it does not protect the idea behind the code and also it does not prevent it from being recreated with similar functionality with different code by someone else. Computer patents

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their owners the right to prevent others from using a claimed invention, even if it is independently developed and there is no copying involved. Patent Law dominates over copyrights law. However, the Indian Patent law does not grant a patent for an application showing only pure computer program.

The computer software programs are protected as literary work under the provisions of the Indian Copyright Act 1957. While applying for copyright registration for software, the source code (.exe) must be submitted in a CD along with the application to the Copyright office. However, the copyright law in India protects only the specific code and does not provide any protection to the idea behind that code.

Software copyright in India does not restrict the creation of a different code with similar functionality and idea. For example, if the main essence/contribution/ function of the proposed invention lies solely in the computer program, the invention is not patentable as per Section 3(k) of the Patents Act, 1970. However, if the main essence/contribution/function of the proposed invention lies the computer program and integrated with the hardware(s), the invention will not fall under Section 3(k) and therefore patent may be awarded.

The logic behind denying patents for software per se in India is to promote innovation. If software, per se, is patented a majority of the software inventions will be owned by few people/firms. This scenario is unimaginable in a developing country like India, where programmers must be given the freedom to innovate. To develop better software's, programmers must have access to the open-source. Keeping in line with this spirit, Section 3(k) does not allow the software programs to be patented without any hardware integration.

The Copyright Act, 1957 defines the computer as any electronic or similar device having information processing capabilities. The Copyright Act, 1957 defines the computer program as a set of instructions, expressed in words, codes, schemes or in any other form, including a machine-readable medium, capable of causing a computer to perform a particular task or achieve a particular result. As per the Copyright Act, 1957, it is evident that the term computer means and includes all types of electronic devices which are having the capability to the process of information fed into it. As such, a mobile phone is a computer which is programmed to do among others the function of receiving digital audio signals, convert it into an analogue audio signal and also send analogue audio signals in a digital form externally by wireless technology.

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Source Code and Object Code

Although copyright comes into being with the writing of the source code, it is the object code which is generally protected by copyrights. The object code gives the actual instructions and controls the computer when the program is being executed. In most instances, the source code is never revealed to the public, and thus remains protected as a trade secret even though copies of the program are distributed as object code. The source code contains information about the programme. Even though source code and object code are distinct, it is still useful to maintain the concept that the source code and the object code are just different forms of the same copyrighted work. The Copyright Office considers the source code and object code as an equivalent for purposes of registration.

Case Studies Related to Computer Software

M/s. Accenture Global Service, Dublin, Ireland sought for a patent in India on a method to generate a data mapping document. The applicant claimed for "technical solution to a technical problem of the need for a data document design system and design tools that address one of the most important technical challenges faced by database systems is data migration." After analyzing the inventions on merits, the Indian Patent Office observed that the invention is not software per se, it is rather a system having web-services and software and evaluating it, and does not fall in the category of section 3(k) of the Indian Patent Act and the patent was granted on May 2013.

In 2009, M/s Facebook sought a patent on a method "for generating dynamic relationship-based content, personalized for members of the web-based social network". The objections against the claims were 'the method being nothing but an algorithm implemented through software, thus falling under Section 3(k) and being non-patentable.' The applicant contended that section 3(k) was not applicable in this case because the invention "implements a technical process and has a technical effect" and further went on to explain the intricacy of the method. These amendments to the claims satisfied the Indian Patent Office's objections and thus it granted the patent in February 2017.

Another patent was granted to M/s Facebook titled "for a method of providing access to user profile data maintained by Facebook to third-party application". Facebook submitted that "it has also included hardware and provided technical improvements and benefits like checking privacy setting and the access is provided to the third-party to the use the content

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data after clearance from the user". The Patent Office concluded that this does not fall under the purview of Section 3(k), and duly granted it a patent.

In Feb 2005, M/S. Google sought for a patent on an invention titled, 'phrase identification in an information retrieval system'. The invention also contains a basic mathematical algorithm with the logical steps thus falling under section 3(k) of the Patents Act, 1970 and therefore not being patentable. However, Google submitted that its invention is not an algorithm or a computer program per se, "but provides a technical solution to a technical problem of how to automatically identify phrases in a document collection". It claimed that the technical solution, i.e. the end product, which is an index, stored in a memory consisting of related valid phrases, is inventive. On hearing the above submissions, the Patent Office concluded that it is "a technical advancement over the prior art" and thus granted it the patent in 2017.

In 2009, M/S. Apple applied for a patent on a 'method for browsing data items with respect to a display screen associated with a computing device and an electronic device'. The objections against the invention were that it was merely a software program and thus falling within the scope of computer programs per se, i.e., under the provision of section 3(k) of the Act. Apple submitted that the method "although the steps of the method can be performed by means of software, the method constitutes a practical application of this computer software to produce a useful result bringing an improved technical effect while presenting advantages and overcoming drawbacks of hitherto known techniques." Accepting their submission, the Indian Patent Office granted the patent in 2017.

3.1.3 TRADITIONAL KNOWLEDGE

Traditional Knowledge is knowledge which is gathered by the accumulation of experience tested and tried over a very long period of time in a specific place or community and the people of that particular place are well adapted to those local environments and local culture. Traditional Knowledge is one that has been developed, sustained and passed on from one generation to another, within a community. World Health Organisation (WHO) says that about 80 percent of the World's population depends on traditional knowledge relating to the ancient medical methods for curing disease. Traditional Knowledge is a collective piece of knowledge and only a whole community, but never a single individual can claim a right over traditional knowledge.

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Traditional Knowledge has ancient roots and is often informal and oral, mostly not protected by conventional intellectual property protection systems. This scenario has prompted many developing countries to develop their own specific and special systems for protecting traditional knowledge. India has played a very significant role in the documentation of traditional knowledge, thereby bringing protection to traditional knowledge at the centre stage of the International Intellectual Property System.

India is rich in genetic resources and associated traditional knowledge and has been identified as one of the countries with mega biodiversity. Traditional knowledge has been used for centuries by Indian indigenous and local communities, especially in key sectors such as food, health, etc. In addition, Traditional Knowledge also plays a vital role in the conservation of biodiversity in the country. For instance, some tribal populations in India, like the Garo and Khasi tribes of Northeastern India have created "sacred groves" in forest areas that help the conservation of the forests and their inhabitants. Similarly, the Ongees of the Andaman and Nicobars and the Cholanaickan tribals of Kerala have devised elaborate social procedures for conservation and sustainable exploitation of natural resources.

The other areas of traditional knowledge are as follows:

- a) Ulcer treating medicine in Thai traditional healing method is by the use of "plao-noi"
- b) The Western Amazon tribes preparation of medicines of various kinds using a plant called "Ayahuasca" vine.
- c) The San people starve off hunger by using "hoodia" cactus while hunting.

Traditional Knowledge Digital Library (TKDL):

In the year 2008, India came out with Traditional Knowledge Digital Library (TKDL) in an effort to protect traditional knowledge and traditional cultural expression. The traditional knowledge digital library (TKDL) is a database which integrates many diverse knowledge systems of traditional knowledge. This was created on the base of 148 books in India. The main purpose of TKDL is to prevent the misuse of Indian Traditional Knowledge and to safeguard the interest of India on its own Traditional Knowledge, especially in ancient medical matters. India has signed an Access Agreement with the European Patent Office (EPO) and with the

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Patent offices of several countries such as Australia, Germany, USA, UK and Canada.

Case Studies

(i) Traditional Knowledge of Neem

Neem has its own healing property and has been in use as medicine in India for a period of more than 4000 years. Not only the Neem leaves are used in medicine, but the tree itself is also used as medicine. It is used as anti-inflammatory, anti-pyretic, antiseptic, anti-fungal, antiviral medicine.

In the year 1971, a timber company from the USA imported neem seeds from India to plant neem trees in the USA. They also registered a patent on the basis of the pesticidal properties of neem and got clearance from the US Environmental Protection Agency. After three years, the patent granted was sold to a multinational company M/s W R Grace and Co in 1985.

Dispute: A group of individuals and several NGO's initiated a campaign against the patent granted for Neem. According to their claim, it was stated that Neem is an indigenous product and it is still in practice as a form of Traditional Knowledge in India. If Neem is granted for a patent, it would affect the poor farmers all over the world and also affect the Indian Economy.

Judgement: On 30th July 1997, the European Patent Office (EPO) accepted the arguments and revoked the granted patent by the US patent office to M/s W R Grace and Co.

(ii) Traditional Knowledge of Turmeric

Turmeric is a tropical herb and widely used in India as a cosmetic agent and also in most of the dishes as a colouring agent. The turmeric powder is deep yellow in colour and has a slightly bitter taste when raw. It has been in use by Indians since ancient period of time. In the year 1995, an US Patent was granted for turmeric to the Medical Centre of University of Mississippi as wound healing property.

Dr. R.A. Mashelkar, who was then the Director of Council of Scientific and Industrial Research (CSIR), India and his team opposed the patent granted to the Medical Centre of Mississippi University. The claim was supported with documentary evidence from an old newspaper dated 1953 printed and published by the Indian Medical Association. Evidence

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was also produced which included old and ancient texts in Sanskrit in palm sheet. Based on the argument and documentary evidence, the judgement was issued in favour of CSIR.

(iii) Traditional Knowledge of Basmati Rice

Basmati rice has been grown in the foothills of the Himalayas for thousands of years. Basmati is a long-grained variety of rice with a fine texture and is the costliest rice in the world. It was a favourite item for emperors and praised by poets for hundreds of years. According to the Agricultural and Processed Food Products Export Development Authority (APEDA), India is the second-largest producer of rice after China and one grows over a tenth of the world's wheat. Basmati rice has been one of the fastest-growing export items from India in recent years. Exports from India have been around \$ 250 million.

In 1997, an American company M/s RiceTec Inc was granted a patent (Granted Patent number 5663484) by the US patent office for 'Basmati'. In their invention, they stated that their rice grains have characteristics similar or superior to those of good quality Basmati rice. M/s RiceTec Inc entered into the international Basmati market with brands like 'Kasmati' and 'Texmati'.

The Government of India reacted immediately after hearing that patent has been issued to 'Basmati' to M/s RiceTec Inc and opposed as it belongs to Indian traditional knowledge. A high-level inter-ministerial group comprising of representatives from the departments of commerce, industry, external affairs, Council for scientific and industrial research (CSIR), Agriculture, Biotechnology, All India Rice Exporters Association (AIREA), APEDA, and Indian Council of Agricultural Research (ICAR) was formed by Government of India. Based on the arguments, the US patent office revoked the granted patent on 'Basmati'. If the patent had not been revoked, RiceTec Inc. can now sell its rice under the brand name 'Basmati', that will facilitate the rice grown in the US which would be sold cheaper as Basmati, than the Indian and Pakistani original Basmati.