

Patent Information and Search

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ABSTRACT

An important purpose of working of the patent system has been to ensure that the complete details of the inventions sought to be patented pass in the public domain. Governments compensate the inventor for this public disclosure by granting patent. However, access to this information was limited to the 'on site' availability in the patent offices and a limited number of libraries. Globalisation of economies forced international cooperation in the field of patents and this coincided with the advent of internet. Today more than 95 per cent of the patent information published worldwide is available on internet for anyone to access it freely without any user fee. However, except for those who are very closely associated with the patent system, it is still not understood that there is much more to patent information than being a reluctant disclosure of the invention by an applicant for patent who tries to hide more than what is disclosed. This article attempts to dispel the myths by explaining the nature of patent information and the contents of its carrier, namely, patent document. It further surveys the availability of the patent information on internet, explains the structure of the free patent databases including some basic features of searching patent information on internet.

Keywords: Patent information, patent search, patent database

1. INTRODUCTION

'To secure the knowledge of the invention from being lost' was the stated objective of first Indian Patent law promulgated in 1856¹. Since then, the patent law has undergone many changes. However, this important role of patent system has never been forgotten. The patent offices all over the world are under obligation to publish the knowledge of the invention which the applicant for patent is obliged to disclose. Unfortunately, it has never been utilised to its full potential due to various reasons ranging from total ignorance of its existence to the lack of this information was cumbersome. Since then, appreciation of its multiple uses. Until early 1980s, access to there has been a sea change. What was available only within the four walls of the patent offices and a few libraries serving as inspection centers, has now become available at the click of the mouse, thanks to the advent of internet and the very proactive decision of the patent offices to make their patent databases available through internet, free of charge. Cooperation between patent offices such as trilateral agreement² between the US Patent and Trade Mark Office (USPTO), European Patent Office (EPO) and Japanese Patent Office (JPO) has ensured that the patent information of more than 80 countries is available in searchable form in English, free on internet. Today, the

precision of the result of patent search is limited only by the skill and knowledge of the searcher, the limitations of the databases and the search engines.

2. PATENT INFORMATION

In the context of patents, an invention is an industrially applicable, technical solution to a technical problem. Besides industrial applicability, novelty and inventive ingenuity of an invention are essential qualifications for grant of a patent by the patent office. Novelty and inventive ingenuity of the invention is judged by the patent office with respect to the body of published knowledge (prior art) as on date of filing the application for patent. Thus, all applications for patents must add to the technical knowledge existing as on date of filing the application for patent.

All such applications for patents are published by the patent office unless the applicant for patent withdraws it within the permissible period. Since a grant of patent creates property rights, armed with which the patentee seeks commercial exploitation, this technical knowledge has legal and commercial connotations. After the first publication, the application for patent may be further published at various stages of the process of grant of

patent and thereafter, incorporating amendments if any. There are many other variants of patents such as utility models, etc. which are also published. Patent document is a term used for all such publications and the information contained in these documents is called Patent Information.

3. NATURE OF A PATENT DOCUMENT

Since patent document is the primary source of patent information, it is essential that a user understands the nature of contents of the patent document clearly. Fortunately, patent documents are written and published in a standard format and even the legalese of the patent documents follows a more or less standard pattern and terminology. The patent document published by the patent office has four distinct parts: (i) First page, (ii) Drawings, (iii) Description, and (iv) Claims.

The first page³ is added by the patent office at the time of publication. It functions as a cover page and provides complete bibliographic data of the patent document. The description of each bibliographic data is preceded by a number given in bracket. These numbers are Internationally Agreed Numbers for Identification of Bibliographic Data often referred as INID codes⁴. They are useful to identify the nature of bibliographic data on the first page, even if the reader is not familiar with the language of the document. Thus, data against INID code 21 will always be 'Application Number' even if it is written in a German patent in German language as '*Aktenzeichen*'.

The use of these INID codes still continues to be important during physical inspection of the patent document or its image but it has really no significance in searching patent information on patent databases online. Besides, the purely legally relevant information, the technical information, that the first page provides includes: (i) Title, (ii) Abstract, (iii) Representative drawing, and (iv) Patent classification. Search reports (result of search carried out by the examiner of patent) may be part of the first page (US patents) or may be included as an additional page.

The full list of bibliographic data and the INID codes is available in the publication of World Intellectual Property Organisation (WIPO) titled 'Handbook on Industrial Property Information and documentation'. It is available on WIPO's website in downloadable form. The drawings are generally given on independent pages and are referenced in the description specifically. The drawings illustrate the most important embodiment of the invention. The drawings may be provided for other variants of the invention as well. In case of chemical patents, the formulae or flow diagrams may be given in the drawings but it is not uncommon to find them embedded in the description.

The description is sequenced more or less in a standard format. To begin with, it may reiterate the title of the invention, followed by identification of the field of invention. An example of a typical statement of field of invention is⁵:

"The present invention relates to wireless communications and, in particular, to a modified EVDO wireless interface to facilitate communications from a mobile terminal via a satellite relay".

This is followed by a section on background. This section provides survey of relevant prior art as known to the applicant along with a recital of problems that have been left unsolved. Thus, it brings into focus the need for the invention. This narrative is followed by a summary of the invention which the applicant for patent has proposed. Next is the specific reference to drawings and their brief description. This is followed by a full and detailed description of the invention with reference to drawings. The applicant for patent is under obligation to disclose at least the best embodiment of the invention fully and upfront.

In addition, the applicant, in a bid to show the versatility of the invention and also to create a basis for claiming as many embodiments as possible, gives several examples and then invariably specifies that his/her claim is not limited to the examples but also covers other obvious variants. A typical statement⁵ reads

"The description of the embodiments is intended to be illustrative, and not to limit the scope of the claims. As such, the present teachings can be readily applied to other types of apparatuses and many alternatives, modifications, and variations will be apparent to those skilled in the art."

The claims are at the end of the patent document. The claims clearly define the invention as claimed by the applicant for patent. The scope of the claims is entirely dependant on the disclosure in the description.

Hence, it can be surmised that the patent document is technical document, written in a most precise and clear manner so as to stand scrutiny of the court of law. It must be noted, however, that the applicant for patent is not obliged to provide any theoretical explanation for his invention. One can not also expect the patent document to read like a recipe. It is addressed to the mythical 'man in the art' who may be an excellent workman but not a theoretician or a genius.

4. TYPES OF PATENT DOCUMENTS

For a single invention and from a single application for patent there can be a series of publications, such as those published:

- Before examination by the patent office: As filed by the applicant for patent
- After examination: Incorporating changes agreed between the patent office and the applicant
- After disposal of opposition to grant: Incorporating changes as ordered by the hearing authority
- After the grant: The document which is the basis for enforcement of patent rights
- After post grant amendments: As may be ordered by the competent tribunal/court of law
- In between the above stages with additional information: There may be other publication events such as publication with search report, etc.

Each such individual patent document for the same invention is identified by assigning a unique code called kind of document code⁶ but, generally, the word description of the kind of document is also available on the patent document. All such publications disclose the information about the same invention. However, their contents may vary in details. For example, the patent document published before examination may contain a set of claims which may get modified later as a result of examination proceedings. The purpose for which patent information is to be used decides which kind of patent document should be searched, retrieved and read. Thus, for ascertaining the rights conferred on the patentee as on date, the latest publication of a granted patent with amendment if any will have to be looked at.

5. PRIORITY DATA⁷

Although the reference date for decision regarding novelty and inventive ingenuity of an invention is the date of filing an application for patent in a given patent office, Paris Convention⁷ allows the applicant to file an application for patent in one office (say his/her own country) and then file application elsewhere within 12 months from the date of this earlier filing with the reference date for these later filings being taken as date of filing in the first patent office. However, to claim this advantage or priority⁷, the applicant has to claim it and declare the name of the country where he filed first (priority country), the date on which the application was filed there (priority date) and the unique identification number allotted to the application by the priority country (priority number). These three together constitute priority data.

6. PATENT FAMILY⁸

From the above two sections, it is clear that for a single invention the process of patenting can give rise to a large number of patent documents within the country of

filing or across the countries wherever the patenting process proceeds. It is important to remember that these documents may not be exactly identical but certainly contain information regarding the same invention. All such documents which have at least one unique priority data common are members of a patent family. This feature not only helps the searcher by drastically reducing the actual number of documents to be searched but also helps in surmounting the language barrier. To know the details of an invention disclosed in a Japanese patent it may not be necessary to know Japanese language or to get it translated because one can access the US patent document (if it exists) which belongs to the same family. As explained later, searching to retrieve all family members of a patent family is easy.

7. PATENT SEARCH

Patent search means search and retrieval of relevant patent information contained in patent documents to meet the needs of the intended use. A searcher is also expected to analyse the information so retrieved and present the results of the analysis to the end user. Hence, patent search is a domain of experts who not only understand the nature of patent information and possess the skill to search and retrieve relevant patent information but also have technical capacity to read, interpret and analyse the patent information. Almost the whole world's patent information is available online in searchable patent databases, the focus of this paper will be entirely on searching patent databases online.

8. PATENT DATABASE

A patent database is constituted by a collection of patent documents and/or elements of information units concerning these documents. Each unique patent document constitutes a record and series of information units concerning the patent document constitute fields of the database. These fields correspond to the bibliographic data (including abstract) and claims and full patent specifications. Some databases offer many more searchable fields. Respective websites hosting the databases provide full list of such searchable fields. Many patent databases are available for searching. List of some of these which provide free access^{9, 10}:

- Australia
<http://www.ipaustralia.gov.au>
- Canada
<http://patents1.ic.gc.ca/intro-e.html>
- European Patent Office.
<http://www.espacenet.com>
- India
<http://ipindia.nic.in/ipr/patent/patents.htm>

- Japan
http://www.ipdl.inpit.go.jp/homepg_e.ipdl
- New Zealand
http://www.iponz.govt.nz/cms/_template/IPPATENT
- People's Republic of China
http://www.sipo.gov.cn/sipo_English/
- Singapore
<http://www.epatents.gov.sg/PE/>
- United States of America
<http://www.uspto.gov/patft/index.html>
- United Kingdom
<http://www.ipo.gov.uk/patent.htm>
- SurfIP
<http://www.surfip.gov.sg/>
- Freepatentsonline
<http://www.freepatentsonline.com/search.html>
- Google
<http://www.google.com/patents>
- PatentScope (WIPO)
<http://www.wipo.int/pctdb/en/>
- Patent lens
<http://www.patentlens.net/>

Some examples of licensed and fee-based databases are *World Patent Index (WPI)*, *Marpac*, *MicroPatent Patent Index (MPI)*, and *QPAT*. These fee-based databases provide many specialised services and these are value added databases. For patentability searches (mentioned later in this article), their quality is unbeatable, but for most other purposes the free patent databases are adequate. The above lists are not exhaustive though. No attempt is made here to describe the contents and features of the individual databases because the respective websites will provide help in understanding and using the databases and the reader will enhance his knowledge and skill in patent searching by trying out simple searches using the help provided in the respective databases.

9. PATENT DATABASES SEARCHING

Searching for patent information in patent databases is an intellectual activity. Developing correct search strategy is the key to a successful search. The strategy for search will depend on the purpose of the search. One or more strategies need to be developed and then prioritised. Each strategy may be tried on sample basis and then refined. For each strategy, one or more search queries (which define the fields to be used, search terms to be used in each field, operators to be used within the field or across the field and order of precedence which the search engine should follow) will have to be framed to ensure that all the patent information required to fulfill the

purpose of search is obtained as a result of search. Next step is the choice of the database(s) which will accept the search query. However, one may be required to alter the search strategy according to the database(s) available. In fact, the choice of the data for selection of a database, a thorough knowledge of the database is essential. Besides the knowledge of the contents of the database (the coverage by country, type of patent documents, the publication dates of earliest and latest document covered, gaps within the stated range), the fields that are searchable, and operators that are acceptable for operation within the individual search fields and across the search fields must be known. A database may allow the searcher to build his/her own complex search query by use of various operators but some databases provide easy to use stepwise formats and search windows which can be used to build a fairly complex search query. It is very important that the searcher knows the format in which an entry in a search form is to be input. The rules and methods governing manner of entry of query in the searchable fields are given with examples in all the databases and searcher should familiarise himself/herself with the same.

Various levels of searching such as quick search, smart search, expert search, advanced search are offered by the databases. These levels differ in the complexity allowable in the search. Searcher must also know the extent of information which can be retrieved and the stepwise method of getting it. Generally, the databases provide a list of patent documents with title of the invention (and some very important bibliographic data such as publication date, etc.) as a first step result. The searcher may select one or more of the documents from this list and ask for next level details which generally include full bibliographic data and an abstract of the invention. In the next step (menu driven) one may get to see claims, description and drawings or even the facsimile image of the full document. The databases allow downloading of search result at every step. Some databases allow the searcher control over the display formats and the contents. Based on knowledge of all these features and matching the same with the search query requirements selection of one or more databases for searching is done. Searching in some typical fields is explained as:

9.1 Document Number Fields

Searching under document number field may be performed for specific published patent document and patent family.

9.1.1 Searching for a Specific Published Patent Document

Typical and most commonly used field is the '*publication number*'. The patent document number usually incorporates the code for publication country. The

search may have to be refined by using another distinguishing identifier of a document such as kind of document or date of publication in corresponding fields if available and necessary. Result will invariably be a single document.

9.1.2 Searching Patent Family

Using priority data in priority number field (if available) will enable retrieval of all patent documents belonging to the same patent family. Although, at least one priority data is the common strand of a patent family, there may be patent documents for the same invention which do not share this common strand because the applicant may not have claimed a priority. The solution is to use inventor name (please see below) for searching. While it is not mandatory to claim priority, it is mandatory that the name of the inventor is disclosed.

Even if the applicant for patent has filed in two different countries without claiming priority, the inventor name will be same for documents published in both the countries. Hence, by using inventor name as the search term, such family members can also be retrieved. If the field provided is simply "Document Number Field" then the appropriate document (s) out of the list of documents bearing same number can be selected based on the other bibliographic data displayed.

9.2 Name Fields

Searching under name field may be performed for specific published patent document in the name of a specific applicant or assignee and by inventor name.

9.2.1 Name of a Specific Applicant or Assignee

The search in the field for applicant/assignee name has to be carefully executed taking into consideration the variations in the names of the same parent company in different countries. Some databases provide facility to use codes assigned to such companies and it may be useful to use these codes instead of names in the assignee code field. These searches help in tracking inventive and consequently likely commercial and business activity of the chosen company. If the company is active in several technology fields then adding parameter of the technology in the appropriate search field (e.g. patent classification for the technology) with 'AND': Boolean operator will give this perspective technology-wise.

9.2.2 Searching for Patent by Inventor Name

The use of inventor name to locate patent family members has been mentioned above. This search is useful for tracking inventive activity of a chosen inventor. The most common problem in name searches is the possible variations in the spellings of a name.

9.3 Technology Fields

Patent documents for specific technology may be searched using patent classification and by using keywords. Citation search is a specialised technology search as described in section 9.5

9.3.1 Searching for Patent Documents for Specific Technology by Patent Classification

Patent classification is an excellent tool to search patents pertaining to a technology to the level as specific as the definition of the scope of a classification symbol. There are several patent classification systems in use. While national patent classification may be the most appropriate search field for searching patent documents of that specific country (e.g. use US classification for searching US patent documents in the patent database of USPTO), searches for patents of other countries are best done using IPC field. A problem with using IPC for search is the inconsistency in classification amongst different countries. The European Patent Classification may be the best option to search patents in the worldwide patent database hosted by the European Patent Office because of its unbeatable consistency. Each patent document that is included in the worldwide database is reclassified by the European Patent office as per the European Patent Classification. The result is unbeatable consistency in classification. The prerequisite for searching by classification is thorough knowledge of the classification system chosen. However, those unfamiliar with the classification system may simply copy the classification symbol assigned to a known patent document pertaining to the technology under consideration. Function oriented and application oriented patent classifications relevant for a technology can be used with Boolean operator OR to get patents from both these perspectives. For obtaining patent documents for inventions which have identifiable multiple facets or relevance, one can use more than one classification, each representing a specific facet and then use the Boolean operator 'AND' between them.

9.3.2 Searching for Specific Technologies by Keywords

Appropriate field to be used may be title of the invention or abstract of the invention or the claims or the full specification. Search through title may suffer because of very less number of key words or presence of generic terms and searching full patent specification may suffer from too many words to search through. Searching claims suffer from the words used being too legalese and generic. By and large, abstract field is generally used for keyword searching. The advantage of the abstracts is that these abstracts are either the abstracts as considered appropriate by the applicant and/or the patent office which has the responsibility of first page and reflect the characteristic features of the invention and use as well.

Some databases revise the titles (calling it extendable title) and also rewrite the abstracts for greater utility. Use of unique keywords, use of phrases and intelligent use of synonyms (with 'OR' Boolean operator) are the important prerequisites for good search results. If at all search is conducted in full patent specification then use of proximity operators is recommended.

9.3.3 *Date Fields Searching for Patent Documents Applied/Published*

These fields are rarely used if at all alone. The date field is always used in conjunction with other fields. The Boolean operator used between the date field and other field will invariably be 'AND'. Within the date field operators which define cut off dates (from this date onwards, between two dates, prior to this date) need be correctly used as per requirement.

9.4 Date Fields

9.4.1 *Searching using Documents Cited in Search Reports and References in Patent Documents*

This is one of the most important and yet simple method to retrieve patent documents pertaining to a given technology. The premise is that if document A has been cited by the examiner of patent in the search report for an invention described in document B then A and B must have closely related technical features. Now a document (say C) cited in the search report of document B should be close to B and hence A, B, and C all will be close relatives of each other, A being the youngest and B being the oldest. Hence, if one has retrieved (by any other means) document A. it is possible to retrieve all its older close relatives. To get the relatives younger than A, it will be necessary to conduct a search for all documents in which the document A (or B or C) has been cited. Theoretically, one may obtain a good collection of patent documents from latest to the oldest pertaining to a given technology. Patent databases provide for such searches.

9.5 Some Important Patent Searches using Technical Fields

9.5.1 *Search to Decide Patentability of Invention*

This search is conducted for ascertaining whether the invention under consideration is novel and whether it possesses inventive ingenuity. The search seeks to retrieve all patent documents which disclose one or more or all of the characteristic features of the invention as claimed. The period of search may extend (backwards) from the date of priority claimed to say 25 years (though theoretically this limit can not be specified it is practical). The patent documents will include patent documents from all the countries (but generally restricted to what is called PCT minimum documentation).

This search is needed by: (i) inventors/applicants for patents who would like to be sure about the novelty and/or inventive ingenuity of their invention before filing an application for patent, (ii) By examiners of patents of the patent office before recommending grant of patent, (iii) By those who are challenging the grant of patent, (iv) Those who want to challenge allegation of infringement.

9.6 State-of-the-Art Search

This search is carried out for patent documents pertaining to a very specific technology and the purpose is to know different technical solutions that have been offered to specific problems in the technology under consideration and to determine the state of development of the technology. The period of search depends on the rate of development in the technology but in general can be restricted to last 5 to 15 years.

These searches are generally carried out before initiating research to solve a technical problem. This search may also be useful to find trends in the development of technology in general or by specific companies. For the later the applicant/assignee field will have to be used in AND relationship with the technical field.

10. CONCLUSIONS

Globalisation has brought importance of patents and patent information into focus in last 20 years as never before. The easy, quick (and free) availability of patent information makes it imperative that every body in the business of searching and retrieving technical information is fully aware of the value of patent information and acquires knowledge and skills for retrieving patent information. The brief introduction to patent information and patent searching may help the uninitiated to take first steps in searching patent information for profit.

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Dr Pradeep P. Paranjpe, former lecturer in Nagpur University, served for more than 5 years as an Examiner of Patents and Designs in the Indian Patent Office, and later worked in the Patent Information Systems, Nagpur for more than two decades, with 11 years as Deputy Chief Executive Officer. He received training in Patent Searching and Patent Information Management at the then USSR Patent Office in Moscow and The European Patent Office in The Hague. Presently, he is associated with SEARCH, an NGO at Gadchiroli and as a visiting faculty at various institutes, imparting training in patent information.