

WIPO/IP/ET/00/9

ORIGINAL: English

DATE: March 2000



GOVERNMENT OF THE FEDERAL DEMOCRATIC
REPUBLIC OF ETHIOPIA



WORLD INTELLECTUAL
PROPERTY ORGANIZATION

WIPO ROVING NATIONAL SEMINAR ON INDUSTRIAL PROPERTY

organized by
the World Intellectual Property Organization (WIPO)
in cooperation with
the Government of the Federal Democratic Republic of Ethiopia

Dire Dawa, Ethiopia, March 29 to 31, 2000
Awassa, Ethiopia, April 3 to 5, 2000

PATENT DOCUMENTS AS A SOURCE OF TECHNOLOGICAL INFORMATION

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Introduction

The Patent System in its modern form dates back to the 19th century - to the industrial revolution. With the advent of industrialization the patent system took an increasingly international character. The great World Fairs during that period provided an incentive. The intention was to disseminate information concerning new industrial progress, but as a result the inventors found themselves incapable of acquiring patent protection as the national legislation of patent anticipation could prove a hindrance. In connection with the Paris 1878 World Fair a set of conferences was initiated which resulted in the Paris Convention 1883. Thus was formed the Paris Union whose participant states adhere to regulations concerning the design of industrial legal protection.

There can be no doubt that the possibilities of extended exploitation of inventions provided by the convention and the resulting dissemination of innovative processes, have been markedly affected by the convention.

The role of patents

The primary role of patents is to encourage the disclosure of inventions for the benefit of the public at large in return for an exclusive right to exploit the invention commercially (a monopoly) for a limited time granted by the issuing government. The basic principle is simple. It is in the public interest that industrial advances are made. In order to encourage advancement, and to encourage the disclosure of advancements in patent documents instead of keeping them secret, an inventor of an improvement of a manufactured article, or a machine, or method of making it may upon disclosure of it can ask for and be granted (under specified procedures) a monopoly for a specified period of time. As a result, the collected patent literature of any major industrial country contains an important source of valuable technical information which can be used by inventors, researchers and in industry for the development of new products and processes.

The concept of the patent document as a piece of important technical information certainly isn't new. As early as 1873, a patent conference held at the World Fair in Vienna, a resolution was taken implying among many other things the following:

'A patent protection system is, provided that the invention is properly disclosed, the only practical means to bring new technical ideas to the public in a quick and credible way. Through patent protection the need for manufacturing secrets - the greatest enemy of technical development - is eliminated'.

When an inventor wishes to have his invention protected he has to apply to the competent government authority (the industrial property office) for a patent. In his application he describes his invention and the description must be so detailed that a person skilled in the art can perform the invention without further information,

In many countries a patent is granted only after the industrial property office has examined an application for the patent and only if and to the extent to which it is found, on the basis of such examination, that the claimed invention is really new and represents an inventive step. In such countries, there is frequently a substantial difference between the contents and the scope of the application and the patent, since examination frequently forces the applicant to clarify and restrict his original claims and description.

In other countries, a patent is granted without an examination of the application as to the novelty of the claimed invention. The applications are only examined as to form. This means of course that the contents of the application is more or less identical with the patent.

When a patent is granted the industrial property office in most countries having such offices publishes a patent document, which means that copies can be made thereof and sold to any person wishing to buy them. The documents are published in the language of the publishing office.

In some countries also the applications are published, usually within 18 months of their filing (or, if applications for the same invention have been filed earlier in other countries, within 18 months from the earliest of such filings).

Content of the patent document

The patent document and the patent application is worded by the applicant and the document contains three basic parts of information:

- (a) Bibliographic data such as symbols of patent classification, publication number, date of application, name of inventor etc.;
- (b) A detailed description of the invention, sometimes supported by drawings;
- (c) Claims giving in exact words the essence of the invention and defining the scope of protection.

The published patent document includes a condensed version of the content of the patent application known as the abstract. The abstract describes in a few sentences the main features of the invention. It normally appears on the front page of the patent document together with the most relevant drawing. In some countries the abstract is also published separately.

Patent documents are published in about one hundred countries. In recent years the total number of published patent documents has passed 2,000,000 each year.

Inventions are made and patent applications are filed in practically all fields of science and technology, that is, to use the most common basic subdivision into three main fields - the chemical, the electric and physics, and the mechanical fields. Patent

documents do not deal solely with sophisticated matters such as supersonic aircrafts, computers, cellphones and process control in oil refineries. Inventions concerning fertilizers, lightweight building design, hand driven pumps as well as technically very simple inventions like spades, chairs etc. are also to be found in patent documents.

The amount of information contained in patent documents is immense. They contain practically everything that represents contribution to the knowledge of mankind in the field of technology back to the end of the nineteenth century and can, properly used, serve as a very valuable source of technical information.

The existence of all these patent documents in different languages, and the relatively easy access to the information contained therein by means of a finely subdivided classification system - in particular the IPC system - represents a source of technical information which is not appreciated to its full value. Yet, there is no doubt that the patent documentation will become increasingly important as a source of information to patent offices, scientists, corporations, financial institutions and government agencies. The main reason is that proper use of such information enables the users to save money and the corporations to increase their profits.

In any country that is to some degree industrialized and where there exists technical know-how sufficient to formulate questions concerning practical technical problems the patent documentation offers particular advantage.

Advantages of patent documents as sources of technological information.

For the purposes of maintaining search files and performing searches for the state of the art, patent offices classify patent documents according to the fields of technology to which their contents relate. A number of different classification systems exist. The system that is used by most of the patent offices today is the International Patent Classification System (IPC). This classification system allows retrieval of the patent documents belonging to any given branch of technology.

Patent documents bear a date (the filing date) from which conclusions can be drawn about the age of an invention and as to the question whether the inventions described therein may still be under legal protection. The maximum period for protection is normally 20 years from the filing date. If they are no longer legally protected, they can be used without the consent of the patentee.

Patent documents have fairly uniform presentation also with reference to lay-out and bibliographic data and frequently have explanatory drawings. The claims show what the essence of the invention is likely to be. Since the description must be such that the specialist should be able to execute the invention on the basis of the patent document, consultation of patent documents allows such execution: in theory, always; in practice, frequently.

Patent documents disclose technological information by describing the inventions in accordance with the requirements of applicable patent law and by

indicating the claimed novelty and inventiveness by reference to the existing state of the art. They are thus sources of information not only on what is new (the invention) but also on which is already known, and in many cases furnish a history, in summary form, of the technological progress in the field to which they relate.

Patent documents normally contain information earlier than other documentary sources of technological information, such as technical periodicals.

At least in some countries in which applications are likely to be made for important inventions, the documents are published quickly (from 3 months after application in the country to 18 months after first application in any country).

Many patent documents contain an abstract. Abstracts allow a general idea to be formed of the contents of the document within seconds or in a few minutes and - in any case - in much shorter time than would be required to read the full text of the document.

Patent documents published in different countries but relating to the same invention are generally called a patent family. Patent documents pertaining to the same family are frequently in a number of different languages. The reader may choose the document that is in the language most familiar to him.

Patent documents indicate the name and address of the applicant, the patentee, and the inventor, or at least one or two of these persons. Such indications allow any potential licensee to contact those persons in order to find out under which conditions he may be authorized to exploit the invention.

Patent documents pertaining to a given classification subdivision contain a highly concentrated and usually technically advanced cluster of information on any given technological field.

Patent documents often contain information, which would not be divulged through articles or journals as such information is divulged only in view of the legal protection, which a patent affords.

Patent documents often disclose not only concepts concerning the general utility of the invention but generally also detailed information on the possibilities of their practical application in industry.

The main part of the high costs of processing and classifying most patent documents contained in search files, and of keeping the classification system up to date, is borne directly by the patent offices which publish large numbers of patent documents; other users have access to the patent system without having to incur, in addition to their costs as users, the cost of maintaining, developing and classifying the information base.

Limitations in the usefulness of patent documents as information sources.

The advantages referred to above - although generally present - do not always exist.

Even a patent granted in an examining country may relate to an invention that is not substantially novel, that is to say, an invention for which no patent should have been granted.

Whether the invention is such that, in practice, it will be economically desirable to use is a question whose solution requires great experience in the technical field concerned. This is the case in particular concerning sophisticated technologies. Even highly specialized experts may make mistakes in judging this question. It is clear that purely technological information as contained in patent documents often need to be complemented by information of others sorts (e.g. commercial, economic information).

Although patent documents should be, and generally are, written in a way which allows the invention to be performed on the basis of these documents, it will probably be cheaper and more efficient in practice to perform in cooperation with the inventor (for example, by acquiring his know-how and blue prints under a contract concluded with him) than without such cooperation. For very simple inventions or when the user is a very skilled person the information contained in the patent document will be quite sufficient.

In most fields of technology virtually all significant inventions are the subject of patent applications, but in a few fields this is not consistently the case; not all technology is sufficiently inventive to be patented, which means that it will not be incorporated in the patent document collection. (In the latter connection it is significant that, whereas non-patent literature forms a very small part of the patent office search files, the information service of most research and development institutions probably handle more non-patent literature than patents).

A full collection of the patent applications and patents published since 1920 contains about thirty million documents, of which many refer to inventions of transient, or little technological significance.

It can be difficult to find the relevant information among the many million documents for those who are not familiar with the classification system.

The structure and the language of the patent documents are specific and tailored to suit the legal and technical purposes of the patent. For those who are not familiar with the features of the patent documents this literature could give a somewhat repelling impression. On the other hand readers who have acquainted themselves with this type of technical literature appreciate its standardized form, precise wording and practical orientation.

The full patent document collections are normally stored only in one place in a country - in the national industrial property office. This means that it may be difficult to use the information, at least for those who do not have their place of business in the same city as the industrial property office. Today patent documents do not only exist in paper form but other types of carriers for the information is used like CD-ROM. This makes it possible to build patent document collections in more than one place in the country.

Users of information contained in patent documents

The most frequent user of patent information is the patent offices. They use it to establish the novelty of inventions for which patent protection has been claimed.

Other users are:

- * the executive management of companies
- * researchers
- * scientists
- * product designers
- * economists
- * university students
- * inventors
- * patent agents.

The list of users is not intended to be exhaustive - there could be a number of other types of users.

Use of patent information

Basically, patent information appears in two forms - raw data and enhanced data. Raw data are data contained in patent documents and patent office gazettes and made available without any further refining. As a rule, the patent documents are systematically arranged in numeric and classified collections in order to facilitate searching. Successful searching in such collections requires a good deal of familiarity with the material and sometimes expertise, which is rarely found outside patent offices.

Enhanced data are raw data that have been refined, sorted, compiled and adapted to specific needs. Such data are available from a number of corporations and institutions operating on the information market and to some extent from patent offices.

In addition to the enhanced data arranged for multiple use, data can also be enhanced on individual request. Some patent offices, including the Swedish Patent and Registration Office, are offering such data in response to external demands for information on the technical state-of-the-art, the activities of specified inventors or

companies etc. Novelty search reports, not associated with formal patent applications, also contain enhanced data.

It is a well known fact that patent documents are only to a limited extent used a source of technical information by users outside the patent offices.

The hardening competition climate as well as the economic difficulties in the industrialized countries has created a need in industry for new ideas, productive inventions and improved modifications for innovative activities.

In developing countries governments are striving for intensified industrial development and transfer of technology.

In this situation there has developed a worldwide tendency towards an extended use of patent documents as an important aid in technological development, technical research and in the commercial transfer of technology.

The use of patent documents in research and engineering activities can for example have the following purposes.

- * to avoid expensive duplication of research work,
- * to start research from a higher or new level of knowledge,
- * to confront a new problem with old solutions in order to generate new ideas,
- * to find out the scope of patent protection in respect to a particular area of technology,
- * to follow technical and commercial trends in certain countries or certain fields of technology,
- * to have an invention examined as to novelty even before the filing of a patent application.

For the transfer of technology patent documents could be of great help to

- * find technical solutions suitable to technical and industrial development on various levels,
- * identify enterprises, which are active in a specific fields of technology
- * facilitate a choice between different techniques offered for licensing.

A very special form of information is technological forecasting based on patent documentation, which is an area of great interest to industry and research institutions. In Sweden the Patent and Registration Office has for some time now used patent statistics for the purpose of ascertaining general or specific trends in the technological development. This information is based on the salient feature of patent documentation that it is published very early in the development process. In many countries the patent application is made available to the public 18 months after filing. In any case a patent document is published when the patent is granted. A marketed innovation is often the result of many years of research and development. This period is often filled with many problems, many ideas of how to solve the problems and many patent applications, of which some are rejected and some are granted. At the end the most

suitable and most economical solution is chosen and an innovation is born. It is easy to realize that one result of this work is a number of patent documents and that a trained patent documentalist would be able to trace new trends long before an idea has become a marketed innovation. It is also obvious that it is a difficult task. The type of forecasts that the Swedish Office undertakes is restricted to specific sectors of technology in which the user takes a particular interest. On a broader scale forecasting activities will be the charge of a special project group composed of technical specialists and economists and using the search facilities of the Swedish Patent Office. The organization and working methods for such an extended activity is now under consideration between the Office and interested circles.

A patent information center

In Sweden the patent Office has taken great interest in the furthering of the use of patent information. This question has been regarded as an essential part of the policy of the office since the publication of the patent applications and granted patents would be of reduced value if the documents were not exploited informatively in the technical development work.

The content of this policy of the office can be summarized as follows:

- (1) The technical information in patent documents is unique and indispensable;
- (2) The Patent Office is the sole possessor in the country of a complete collection of patent documents and the prime holder of the know how with regard to the use of this documentation;
- (3) It must be the responsibility of the office to introduce the patent documentation as a source of information and to encourage the use of it;
- (4) The knowledge and use of the documentation must be spread to all involved in technical development and the expertise of the office must be engaged in the search activities.

In 1972 the Swedish patent Office set up a special unit - The Information Service Center (INTERPAT) for services not connected with the processing of patent applications. Such services were introduced already in 1947 when an official agent was appointed at the office. His duty was to give information on the basis of all public patent documents and publications available in the office. He was the link between the public and the authority, and he handled requests and inquiries concerning technical information. By 1969 the number of requests had increased to the extent that the agent could not cope with all of them himself. Therefore the Patent Office took over the activities of the agent and organized them in INTERPAT.

The program of INTERPAT comprises three main tasks:

- *search services
- *consultative services
- *information and education.

The activities of INTERPAT are self-supporting leaving no profit to the Patent Office. All services are carried out at cost price, and the client may ask for a specification of the cost before requesting the service.

WIPO Patent Information services for developing countries.

In the framework of its program of development cooperation with developing countries, WIPO has been offering, since 1975, free-of-charge patent information services supported by agreements concluded between WIPO and contributing industrial property offices in industrialized countries.

The WIPO Patent Information Services (WPIS) include the provision of confidential reports on technological information in response to requests received from governmental institutions in developing countries. Such reports identify the “state of the art” in respect of a technical problem described in the request as reflected in patent documents and in relevant non-patent literature. The search is performed by highly skilled specialists of industrial property offices in their collections of patents and published patent applications as well as relevant non-patent literature. Some searches are performed in, or assisted by reference to, computer data-bases outside industrial property offices, several of which are available for on-line searching.

Any report on technological information lists patent documents and non-patent literature relevant to the technical problem described in the request, with brief descriptions explaining their relevance. Most references are to patent documents, and full text copies of those may be provided with the report.

Agreements for the provision of reports on technological information have been concluded between WIPO and the industrial property offices of the following countries: Australia, Austria, Canada, Finland, France, Germany, Japan, Norway, the Russian Federation (former Soviet Union), Sweden, Switzerland and that United Kingdom. In addition, other offices provide assistance in particular cases, and some reports are provided by WIPO itself.

The WIPO patent information services also include the possibility of supplying, free of charge, copies of specific patent documents upon request. The industrial property offices of Australia, Austria, Canada, France, Germany, Japan, Portugal, the Russian Federation, Spain, Switzerland, the United Kingdom and the United States of America as well as some developing countries and the European Patent Office contribute to this service.

Information concerning the procedural status, on a given date, of published patent applications and of patents under the applicable legislation in certain countries can also be obtained using the WIPO patent information services. Such information can assist in taking decisions on, for example, exporting, or in the negotiation of license agreements. It can also give guidance on the value attached to a particular patent by the patentee. For the moment, this service is restricted to patent documents published by the industrial property offices of Australia, France, Spain, Switzerland and the United Kingdom and by the European Patent Office. It is emphasized that patent rights only extend to the territory covered by the industrial property legislation of the country concerned, and that the status of a patent application or a patent can change from day to day.

WIPO has published a brochure “WIPO Patent Information Services for Developing countries” which contains the guidelines on the use of this program and the forms to be submitted by the requesters. Copies of this publication No 705 in English, French and Spanish are available at WIPO upon request.

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