INFORMATION SYSTEM FOR RESEARCH AND DEVELOPMENT IN INDIA

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1 The Industrial Scene in India

The Research & Development (R & D) activity is the life blood for a country's industrial development leading to its economic advancement. For India the need for R & D activity has never been so vital and great as it is to-day. Prior to India's achieving independence there was very little industrial development in the country because the British Government being not interested in the industrialisation of the country, offered little incentive and encouragement for that purpose. Rather the British Government wanted India to be the export market for the goods manufactured in U.K. Whatever industrialisation took place in India, prior to the attainment of independence, it was mainly due to the individual initiative, zeal and efforts of a few industrialists who had an inborn urge for adventure in the field of industrialisation and they established the industry in India against heavy odds.

After the attainment of independence, with a truely national Government in power, the country embarked upon industrialisation. Since the Indian industrialists had no much experience in this field and not being willing to go in for an industrial adventure, they took the most safe and secure course of relying upon the experience of foreign industrialists and went in for foreign collaboration in establishing the industry in India. There was nothing unusual in that but something quite natural. This act of going in for foreign collaboration by the Indian industrialists may be compared to that of a child, while learning to walk, to catch hold the hand of an adult for the purpose. As is well known the child does so till he overcomes his initial nervousness and builds up his own potential, strength and confidence to toddle about alone and then slowly perfects his walking by himself. It appears that the phase of the Indian industry going in for foreign collaboration is fast coming to an end as it has been able to overcome its initial diffidence. During the post-independence era the Indian industry has dug in its sound foundation and has reached the take-off stage. For its further development it needs to be fed constantly with new inventions which are so essential for its survival and development.

A vast amount of scientific and technical knowledge has accumulated in the two centuries since the beginning of the industrial revolution. This technological knowledge has been beneficially utilized in the industrialized countries to raise the living.


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standard of their people. The income per head in these countries is now at least 10 times than that in the developing countries where about three fourths of the world population lives. This state of affairs in the developing countries is mainly due to their isolation from the technological developments utilized by the developed countries, for their economic advancement. Easy access to technological knowledge and its selective and proper utilization is the key to raising the living standard of the people in the developing countries.

One important factor responsible for the limited utilization within developing countries of the existing technological knowledge is the lack of essential information in the developing countries about this technological knowledge available in the industrialized countries. Geographical frontiers which once stood as obstacles in the flow of technology from one country to another have started crumbling and the developing countries have comparatively an easier access to the technological advances being made in the industrialized countries. It is now universally acknowledged that technical information is as vital a tool as finances, equipment etc. not only for the industrial development but also for those engaged in research work. Since the developing countries are embarking upon industrialization to improve their economic condition, it is imperative to build up an information system to feed the industry and those engaged in research work with information about the latest technological developments being innovated in the industrialized countries.

2 Need of Information about Technological Developments.

With a view to survive the ever-existing challenge from the rivals in the trade, the industry has to constantly strive either to improve upon its products or to cut down its cost of manufacture or to develop new products. For that purpose the industry has to be constantly fed with new inventions. This need of new inventions could be met in two ways:

(a) From industry’s own R & D activity.

This R & D activity is a very important and useful source to meet the industry’s requirements by studying the defects and shortcomings in the existing processes, machinery and equipment being used by the industry and to find out ways and means to obviate these defects with a view either to improve upon its existing products or to cut down their cost of manufacture or to develop new products and has the added advantage of meeting the requirements in a tailor-made fashion. It is only through its own R & D activity that an industry generates its own potential. Without it the industry would get into stagnation in no time and ultimately would be run over by its rivals in the trade.

(b) From outside sources.

For obtaining new inventions from outside sources the information about new inventions in respect of the latest technological advances made in that particular field of technology throughout the world must be made available to the industry to enable it to select suitable and useful inventions and take necessary steps towards their utilization for its development.
The information about the latest scientific and technical developments is also very useful to the research workers in the following ways:

i) It would enable the research workers in the country to know in what channels the research work is being done in the foreign countries. This information would be extremely useful in providing necessary guidelines to research workers in the country.

ii) It would enable to avoid duplication of research work already done in other countries. In the absence of information about the latest scientific and technical advances being made in the various technological fields in foreign countries research workers in this country would be toiling and spending their energy, time and finances in research work which ultimately may turn out to be a mere duplication of that what has already been done abroad. Instances when research work done has turned out to be a mere duplication of what was already done in other countries are not lacking e.g.

  a) Work done in a Scandinavian laboratory on the validity of Lambert’s law relating to photometer was discovered to have already been done in Germany. Similarly work done on the design and development of a frequency multiplier for frequency modulated radiophony was found to be a mere duplication.

  b) Research on electronic translation equipment carried out for 5 years in U.S.A. turned out to be mere duplication of work done in Russia.

  c) A method developed for the dispersion of sulphur in ceramic batches in a Scandinavian laboratory was found to be a mere duplication of the work done by I.C.I., U.K.

  d) U.S. Department of Defence Survey has reported that research work done for the development of advanced weapons and missile systems since World War II turned out to be a mere duplication of the work done 30 years earlier.

  e) Work carried out in Australia on the Physics and Chemistry of boiling water in 1946 turned out to be mere duplication of the work done in Japan 12 years earlier.

Timely information about the research work being done in foreign countries would avoid duplication thereof and thus would save valuable man-hours and finances.

3 Patents as Source of Technical Information.

Of the various sources of information regarding the latest scientific and technical advances being made all over the world, a very important, useful and in a way unique source is the patents granted in the various countries throughout the world.

A patent, generally speaking, is a grant from the Govt. to an inventor of a new and useful invention or his assignee conferring on him for a limited period the exclusive privilege of using the patented invention and authorising others to do so in exchange of a full and detailed disclosure of his invention to the public. Publication of the detailed description of the patented invention is an essential function of the patent system. This publication is not limited to the country in which the patent is granted but is available.
to the whole world. This public disclosure adds to and extends the frontier of knowledge. This disclosure function of the patent system constitutes an essential component of modern systems of technological information.

The practical functions of the disclosure of the technical information contained in patents are:

(a) to supply the general public with a complete survey of the recent state of technological development;

(b) to provide the necessary information and stimulation for continuing developments on the basis of patented inventions; and

(c) to direct those interested in the exploitation of an invention to the relevant source of technology.

4 Uniqueness.

Patent as a source of technical information is unique for the following reasons:

i) In many cases it provides information about the latest inventions which has not yet been published in any technical book or journal.

It is an essential requirement of the patent law that an invention to be patented should not be published before an application for the grant of a patent therefor is filed in the Patent Office, otherwise it would prejudice its patentability. After an application for the grant of a patent is accepted by the patent office, the accompanying patent specification is published. In most of the cases this publication of the invention in the Patent specification is the first such publication because on account of pressure on space in technical books and journals the publication of a detailed description of new inventions in books and journals takes considerable time.

ii) Information available in the patent specifications is much more detailed and exhaustive than that available in any technical book or journal.

It is a statutory requirement of the patent law in most of the countries that the description of the invention in the specification accompanying the application must be sufficiently clear and complete to permit others skilled in the art to use the invention. Some laws however, require in addition to this disclosure, the best method of putting the invention into practice. The Indian patent law is even more specific. It requires that the complete specification must fully and particularly describe the nature of the invention, its operation and use and the method by which it is to be performed and must also disclose the best method of performing the invention known to the applicant. The description of the invention in the complete specification is required to be sufficient to enable any person skilled in the art to work the invention without any further assistance from the inventor. From that standpoint the applicant is required to give in his specification a detailed and exhaustive description of his invention supported by sufficient number of drawings and practical examples to fully illustrate his invention. There are at time quite voluminous patent specifications especially those relating to computers, calculating machines, telephone exchanges and
A very familiar criticism against the sufficiency of the description of the invention in the Patents is that the technical information which is essential for the most efficient working of the patented invention generally called as "know-how" is not disclosed in the patent specification. It may be true in respect of some of the cases but not in all cases. Primarily it may not be due to any secretiveness or desire on the part of the applicant for patent to keep some details regarding his patented invention up his sleeves but possibly it may be so on account of the inevitable result of the "first to file" rule of the patent system. With a desire to get the earliest priority date, the application for patent is filed as soon as an invention is conceived and put in a working order. It is only after obtaining the patent or at least after filing the application for patent, that the applicant applies his mind to work out the most economical method to carry out his invention on commercial scale either generally or under some particular local conditions. It is thus quite possible that the best method to work the invention economically and thus competitively commercially may not be known to the applicant at the time of making the application for patent. There is nothing to find fault with him if the applicant has disclosed all what he knew about his invention at the date of filing of the application. However even if some working details are missing in the patent specification, it does not completely negative the contribution the patentee has made to the storehouse of knowledge of the human society. The patentee may be quite willing to give this "know-how" to any person who obtains a licence to work his patented invention. Even otherwise this missing "know-how" may be worked out by any person interested even without the help of the patentee without much difficulty. It would certainly be comparatively much more convenient and less costly to work out a few essential missing details of the invention than to work out the invention as a whole.

iii) In some cases it is the only source of information. An application for the grant of patent is filed as soon as a new invention, having a prima-facie utility is made. Its actual usefulness and utility is in fact established only after it is commercially worked. As for the publication in technical books and journals is concerned, generally only those inventions which possess great commercial feasibility and utility, find place and others which do not fulfill this criteria are either completely ignored or dealt with in a passing reference manner. In the case of latter inventions the patent specification is the only source of detailed information in respect thereof.

iv) Information regarding all inventions in respect of any particular subject-matter is available very conveniently at one place under one classification 'Heading'.
patented in respect of that subject-matter in a very convenient manner. On the other
hand information about any particular technical subject-matter may be scattered in
various technical books and journals and thus may not be readily and conveniently
accessible.

5 Retrieval of Information from Patents.

Retrieval of information contained in patents is needed by the potential applicants
for the grant of Patents, patent issuing authorities, inventors, research workers and all
those who are concerned with the application or development of technology. With a view
to achieve quick and convenient retrieval of the information contained in patents, the
Patents are classified according to their subject-matter. Each country has its own
national classification system for the classification of patents. To bring about uni-
formity in the classification being done in the various countries a classification system
known as International Patents Classification (IPC) has been developed based on
Strasbourg Agreement which was concluded in March, 1971 within the framework of the
Paris Convention For The Protection of Industrial Property. The IPC has been adopted
by most of the countries. Classification according to IPC is considered to be more
systematic, sufficiently exhaustive and precise and therefore retrieval of information
from patents classified according to IPC would be comparatively much more convenient
and less time consuming. In all such countries where IPC has been adopted, classifi-
cation of patents is done both according to their national classification system as well
as according to IPC.

According to IPC, the entire field of technology for which patents can be granted
is classified into 8 Sections - Sections A to H namely

Section A - Human necessities.
Section B - Performing operations.
Section C - Chemistry and Metallurgy.
Section D - Textile and Paper.
Section E - Fixed Constructions.
Section F - Mechanics, Lighting and Heating.
Section G - Physics.
Section H - Electricity.

Each Section is further sub-divided into sub-sections, classes, Sub-classes,
Main groups & sub-groups. Thus the IPC comprises 8 Sections, 115 classes, 607
sub-classes, 5885 Main groups and a total of 40325 Sub-groups. Each sub-group covers
a very narrow and precise technological field making the retrieval of the information
regarding the subject matter of the patents quick and convenient.

In addition to Patents, it is generally a standing practice with most of the
Patent Offices in the world to prepare abstracts (called abridgements) of the inventions
for which the patents are granted. These abridgements are also classified in the
same manner in which the Patents are classified. The abridgements give a preliminary
insight into the subject matter of the patents and a search through abridgements is
much more convenient and less time consuming than that through patents.
For providing an easy access to the technology covered by patents, various countries have established Patents Documentation and Information Centres for documentation of Patents and dissemination of technical information contained therein such as The International Patent Documentation Centre, Vienna (INPADOC), The Japan Patent Information Centre (JAPATIC), The International Patent Institute, The Hague (IIB), The GDR Information and Search Centre.

To make available to the industry and research workers in this country information about the latest advances being made in the various technological fields in the industrialized countries which are generally covered by patents, a Patent Information Centre (PIC) should be set up in India. The main objectives of PIC would be:

(a) To procure patents granted in some of the important industrialized countries of the world such as U.K., Federal Republic of Germany, German Democratic Republic, France, U.S.A., U.S.S.R. and Japan and also those granted in India. If and when the European Patents Convention comes into force, instead of patents granted in U.K., France, Federal Republic of Germany, German Democratic Republic, only the European Patents would be procured. This would cover practically all the important inventions made throughout the world because generally speaking all important and useful inventions are patented in one or more of the aforesaid industrialized countries.

(b) To provide a storehouse of latest technical information contained in Patents which in most of the cases might not have been published in any book or Journal before the publication of the Patent.

(c) To provide documentation service for patents to serve as a convenient means for retrieval of the information contained therein as and when needed.

(d) To be a clearing house for the scientific and technical information available from patents for dissemination to the industry and research workers in the country.

(e) To be a partner in the integrated development of the various documentation and/or information centres that may be set up in the country to meet the need of the industry and the research workers.

The main functions of the PIC would be:

Classification of patent

a) Classification of patents granted in Indian and the aforesaid foreign countries as well as their abridgements subject matter-wise according to IPC to provide for subject matter search through patents.

b) Preparation of industry-wise classification of aforesaid patents.

c) Preparation of the Name Index of the Patentees of the aforesaid patents to provide for Name-index search through patents.
d) To have a liaison with the industry and the research workers with a view to identify their requirements regarding technical information.

e) To make available for reference all the aforesaid classified patents and their abridgements to the public.

f) To supply the technical information contained in patents to industry and research workers in respect of any subject matter.

g) To prepare translation of patents which are in a language other than in English whenever necessary.

h) To supply reprographic copies of the patents or their abridgements to the public whenever required.

7 Utilization of the Technical Information by Indian Industry.

Through the documentation and dissemination service of the PIC, the information about the latest developments in the various technological fields contained in patents would be made available to the Indian Industry, which may beneficially be utilized by it in the following ways:

(a) If the invention which is desired to be worked by any Indian Industry has been patented only in any foreign country and a corresponding patent for the same invention has not been obtained in India, the invention may be worked in India without payment of any royalty or remuneration to the patentee.

(b) In case the said invention has also been patented in India and the Indian patent is in force, the patentee may be approached for the grant of a licence to work the said invention on terms mutually agreeable to the parties.

(c) In case the patentee in respect of a patent granted in India is not willing to grant a licence or the terms thereof are not mutually agreeable between the parties, any person interested to work the patented invention may at any time after the expiration of three years from the date of the sealing of the patent, make an application to the Controller of patents for the grant of a compulsory licence to work the patented invention on the ground that the reasonable requirements of the public with respect to the patented invention have not been satisfied or that the patented invention is not available to the public, at a reasonable price. The Controller if satisfied on the grounds relied upon may order the patentee to grant a licence upon such terms, as the Controller may deem fit.

(d) The Central Govt. have been empowered under Section 86 of the Patents Act, 1970 to apply to the Controller of Patents, at any time after the expiration of three years from the date of sealing of a patent granted in India for an order that the patent may be endorsed with the words "Licences of right" on the ground that the reasonable requirements of the public with respect to the patented invention have not been satisfied or that the patented invention is not available to the public at a reasonable price. Patents relating to substances intended for or capable of being used as food, medicines or drugs and chemical substances are automatically deemed to be so endorsed from
the expiration of three years from the date of sealing of the patent without any application being filed by the Central Government to that effect. The effect of this endorsement is that a licence under the patent so endorsed may be obtained by making an application therefor to the Controller of Patents, more or less as a matter of right.

(e) A patent granted in India ceases to have effect either on the expiry of its prescribed term or if the prescribed renewal fees in respect thereof are not paid within the prescribed period. When a patent so ceases, the invention covered by the said patent becomes public property and may be worked by anybody without payment of any royalty or remuneration to the patentee.

The establishment of an Information Service for the documentation of the patents granted in the industrialized countries and the dissemination of the technological information contained therein to the industry and the research workers in the country would greatly contribute towards the industrial development and consequent economic advancement.