# PATENTS FOR THE SPORADIC SEARCHER

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## INTRODUCTION

Patents are an important component of intellectual property law. In the past, patents were of interest to the research and development areas of a corporation, because patents were the source of new inventions and technology. Today, patents are managed as assets to the entire organization because the patent portfolio is an indicator of future strength. Together, corporate management and R&D plan strategies for the patenting of an invention. Such strategies include the timing of the filing of the patent and the countries where the filing will occur. Global business requires global patent management. The role of the information professional is to understand the patents and the patenting process so that he or she can provide support for patent management.

What are patents? Why are they important? How is information about patents obtained? This paper will provide a beginning to the patent journey, that is, an overview of the filing (prosecution) process, the information contained in the patent, and suggestions for searching. Finally, this paper will provide sources and exercises to further the reader's knowledge of patents and patent searching.

## WHAT IS A PATENT?

A patent is a legal document granting a limited monopoly for a period of time to the holder of the patent in exchange for the disclosure of information about the invention. The authority for United States patents is from the U.S. Const. Art. 2, sec. 8, clause 8. That clause is

"The congress shall have the power to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries".

A patent granted in the U.S. after June 8, 1995, provides the owner the right to ***exclude others from practicing, making, using, or selling the invention*** for 20 years from the date of the application for the patent. The June 8 date resulted in trade agreements with the World Trade Organization (WTO) affecting intellectual property.

The patent statute is 35 US Code. The Rules of Practice is 37 Code of Federal Regulations. For an invention to be patented, the invention must be useful, novel (35 US Code. Sec. 102), and non-obvious (35 US Code. Sec.103). The standard for novelty is "not known in US or other country or in use prior to 1 year before filing." The standard for unobviousness is the invention is not obvious "to person having ordinary skill in the art."

Simply put, the process of patent prosecution is to reduce the idea to practice and submit an application to the U.S. Patent and Trademark Office (USPTO). The application, detailed in 35 US Code. Sec. 112, must include the identification of the inventor(s), the enablement/best mode, a drawing, and a claim. The specification, which is detailed in 35 US Code. Sec.112, shall describe the invention "in exact terms as to enable any person skilled in the art to which it pertains...and set forth the best mode contemplated by the inventor." The claim must contain language that will be "particularly pointing out and distinctly claiming the subject matter." (35 US Code. Sec 112). If these elements are present, a serial number and application date are issued. The application date may or may not be the priority date. The priority date is an initial filing date of a patent application. The priority date may be received from a filing in another country. The priority date allows the inventor to establish the novelty of the invention. The application is then assigned to a patent examiner, who reviews the application for usefulness, novelty, and nonobviousness. The inventor and the examiner have correspondence and discussions about the invention until a decision is made either grant or abandon the patent. Any information concerning the application, including the application itself, any amendments, and all correspondence between the inventor and the examiner, is not public until the granting of the patent. The file, which contains this information, is called the patent wrapper. In the U.S., the granting of the patent is the first publication of the patent. Actually, the inventor has already received a notice of allowance. The actual issue date is determined after the fees are paid.

The U.S. patenting process differs from the patenting processes in other countries in that the U.S. does not publish the patent application, only the granted patent. Also, the U.S. is a "first to invent" rather than a

"first to file" country. If there is interference (two patents with competing inventions), the first to invent will prevail.

The inventor may file the patent application or the inventor may use a Patent Agent or a Patent Attorney. The Patent Agent is a person with a technical background who has passed the Examination For Registration To Practice Before The U.S. Patent and Trademark Office. A Patent Attorney is a person who is an attorney with a technical background who has also passed the Examination For Registration To Practice Before The U.S. Patent and Trademark Office. The Patent Agent may practice only before the USPTO, that is, the agent may work with the inventor and the patent examiner until the patent is granted or abandoned. The Patent Attorney may perform these same tasks, as well as participate in any litigation after the granting of the patent.

In a granted patent, the inventor has the ***right to exclude others from making, using, or selling the patented invention throughout the U.S.*** The claims in the patent define the metes and bounds of the patent. The interpretation of claims lies solely within the power of the court. To maintain enforceability, the owner of the patent must pay appropriate fees to the USPTO. If the fees are not paid, the patent is no longer in force.

Once a patent is granted and the appropriate fees are paid, any enforcement is decided by the courts. The party that initiates the suit alleges infringement, that the defendant is practicing the invention without permission, while the defendant alleges that the patent is invalid. The case is heard in the District Court; on the appeal, the case will go to CAFCA and then to the Supreme Court.

New U.S. patents are announced Tuesday at noon and are available on many of the databases by Thursday of that week. The announcement is in the U.S. Patent and Trademark Gazette published weekly by the USPTO.

## WHAT CAN BE PATENTED?

There are three kinds of patents: Design, Plant, and Utility. Design patents are "any new, original, and ornamental design for an article of manufacture."(35 US Code. Sec. 171) The patent has a claim, and a drawing and the term is 14 years. Plant patents are awarded to whomever "invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state."(35 US Code. Sec. 161) Utility patents are "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." (35 US Code. Sec. 101) This paper will concentrate on searching and locating utility patents.

Utility patents are mechanical, electrical or chemical. The kinds of things that cannot be patented are laws of nature, mathematical algorithms, and things that occur in nature. Biotechnology patents occur here, not in plant patents, because they are a new composition of matter.

## INTERNATIONAL PATENTS

Since each sovereign nation retains the right to grant patents, there are no international patents. This means that no patent granted by one sovereign nation is enforceable in another sovereign state. For example, a valid U.S. patent is not enforceable in Japan or any other country. However, since the Paris Convention for the Protection of Industrial Property in 1883, harmonization efforts have progressed. Harmonization is an attempt to bring patent laws into some kind of unity. From the Paris Convention, eleven countries agreed that an inventor who files a patent application in any of the participating countries may use that date to establish priority for other filings within those countries and foreigners have the same rights as nationals to establish priority.

More of the harmonization continues to be standardizing the beginning of the process. The same requirements for an application allow for one application to be used in several countries. The Patent Cooperation Treaty (PCT) in 1979 provided for the application to require similar elements – identification of the inventor(s), a specification, a drawing, and a claim. Although the official office of the PCT is in Switzerland, filings may be made in the U.S. at the USPTO and in Tokyo at the Japanese Patent Office to obtain filing and priority dates. PCT is an application process only. Patents are never granted by PCT. Patents are actually granted by participating countries. An inventor may file a PCT application, designating several countries, and then each country must examine the patent application. The PCT application is published 18 to 24 months after filing. These applications are made public on Thursday. More information about PCT is available on the website, http://www.pct.org.

One entity that transcends political boundaries is the European Patent Office (EP). This office accepts applications and will grant patents that are enforceable in several countries. The EP applications will be published 18 to 24 months after filing and are made public on Wednesday. Nineteen countries participate in this process and the list is available at http://www.epo.org/. Each application must be examined and will be granted or abandoned.

With the globalization of commerce, several of the treaties negotiated contain regulations for intellectual property. With NAFTA and the new WTO agreements, the US patent laws had to be changed to accommodate the treaties. The most significant change involved the alteration of the patent term from 17 years from date of grant to 20 years from date of application.

This has been a cursory overview of the major patenting offices. Other patent conventions are developing, such as the African Intellectual Property Organization (OAPI) and the African Regional Industrial Property Organization (ARIPO).

## BASIC PARTS OF THE PATENT OR PATENT APPLICATION

The basic parts of the patent or patent application include the identification of the inventors, the filing date, the title, an abstract, background, a summary, a brief description of the drawing, detailed description, and the claim or claims. The title on a patent is often too short or too general to yield much information. The abstract enables the reader to ascertain the purpose of the patent. The background section provides specific details of the prior art and will often include references to prior journal articles and patents, along with analysis of the problems encountered in the prior art that are alleviated by the present application. The summary of the invention succinctly states the nature and purpose of the invention. The drawing accompanying the application is described. A detailed description explains how to make and use the invention. The claim or claims must precisely define the patent.

The front page of the patent document contains the title, the name of the patent owner (at the time of granting), inventors complete name, serial numbers, and dates (application, priority, and issue), the abstract, patent classification numbers (International and National), patent examination information (field of search, cited patents). On the front page of the patent, each of the parts has a number in a bracket called an INID (Internationally agreed Numbers for Identification of Data) codes. These codes were established by WIPO and the World Intellectual Property Organization and are consistent across patent publications. For instance, [54] is the title, [11] is the patent number, and [45] is the date of the patent. This standardization is useful for finding numbers or other information on patents without knowledge of the language of the patent.

## WHY SEARCH PATENTS?

Patents contain a wealth of information that never appears in other sources of technical information. The USPTO estimates the amount to be as high as 70 percent. Searching the content of the patent provides the searcher with a variety of information. The information may be the directions for making a product or a state-of-the-art analysis in a subject area. Also, since patent protection provides a competitive advantage to an organization, the enforcement of that patent is important, and conversely, if the patent has expired, the invention may become a business opportunity. Therefore, searching for patent information is approached differently with different purposes.

To discover the legal status of the patent, that is, is the patent in still in force, have the fees been paid, or has the court declared it invalid? The answers to these questions are of interest to organizations, which want to make or use the invention. In addition to contacting the specific patent office, several databases provide this information.

Another approach is to search the content. The inventions themselves are of interest because of new technology. A search of the content provides a snapshot of the state of the art in that technology. Also, searching the content for specific areas provides information about who is working in this area and is the basis for competitive intelligence.

## SEARCHING THE PATENT LITERATURE

Journal literature is theoretical, is subject to peer review, has systematic nomenclature, indexes entire documents, and uses systematic indexing. Those who have searched MEDLINE and used MeSH (Medical Subject Headings) know how comforting it is to search knowing that the terms are consistently applied throughout the database. Chemical Abstracts, with its chemical structure searching and registry number system, also promises reliable indexing across the database.

Patent literature, on the other hand, is practical and generic in scope, has highly stylized language, has creative nomenclature (the inventor is his own lexicographer), and indexes only what is in the claims. Patent offices devised classification schemes for their own internal use. Fortunately, an International Patent Classification scheme has been introduced and is widely used. This classification scheme is revised every five years by WIPO. The U.S. continues to use its own classification scheme and U.S. patents will have two classification numbers on the front page. Both of these schemes are hierarchical. These classification schemes are available in print or CD-ROM versions. While the classification schemes are updated and revised, the patent retains its original classification once it is published. Classification schemes work with the mechanical and electrical patents quite well. For chemistry, the chemical substructure programs developed by Chemical Abstracts, DerWent Publications, and Questel/Orbit provide powerful searching tools for new chemical entities.

In searching the patent literature and looking at the technical content, the searcher may be doing a state of the art analysis by seeing what has been patented recently. The search may also be trying to discern whether this invention is patentable. In this case, the searcher is hoping to find nothing, but must be exhaustive in the searching process. The searcher might be looking for information on how to make something – the technical information. The classification schemes available are too general and too inconsistent.

## SEARCHING FOR US PATENTS

A searcher could go to the USPTO and conduct a search. The information is organized by the U.S. classification scheme. A searcher goes to that area or "shoe" and literally looks through the printed patents. For librarians, two problems are readily apparent - misfiled patents and missing patents. The USPTO has an electronic system specifically for in-house use and a full text search system on the USPTO website (http://www.uspto.gov/patft/index.html).

Patent and Trademark Depository Libraries also have all of the U.S. patents on CD-ROM or microfilm. The Indianapolis-Marion County Public Library (IMCPL) Central Branch is such a library and has personnel trained to aid in patent searching.

## SEARCHING THE PATENT DATABASES

The databases that have patent information will contain legal status information, bibliographic information, subject information, full-text, and full-text with images. Obtaining information from the patent databases provided by the commercial vendors – DIALOG, STN, QUESTEL-ORBIT – utilizes field-directed searching, set building and manipulation, multi-file searching, and cross-file searching. The content providers – Chemical Abstracts, DerWent Information, IFI, INPI, and INPADOC provide extensive indexing of the patent unit record. The fields in most patent records are application information (country, date, inventor, assignee); dates (priority, application, granted,) for all countries; published information (granted, status, patent number, assignee, claims, reexamination information); and content (subject keywords, chemical substructure, and classification codes). The description for these major databases can be found in the database summary sheets for DIALOG, Questel/Orbit, and STN.

DerWent Information, Ltd., produces World Patents Index (DIALOG, Questel/Orbit, STN), U.S. Patents (Questel/Orbit), Patent Citation Index (DIALOG, Questel/Orbit, STN), Biotechnology Abstracts (DIALOG, Questel/Orbit, STN), and GENESEQ (STN). Chemical Abstracts produces USPATFULL (STN), CA File, CA Plus (STN), MARPAT (STN), and CA SEARCH (DIALOG). Other patent databases are IFI/Plenum's PATFULL (DIALOG) and CLAIMS (DIALOG, Questel/Orbit, STN) and International Patent Documentation's INPADOC (DIALOG, Questel/Orbit, STN). These are the large general databases. Several specialty files are also available and information about these can be obtained from DIALOG, Questel/Orbit, and STN.

Successful searching for chemical entities must include using one of the chemical structure coding products. Chemical Abstracts (via STN) has two such routines: structure and MARPAT. DerWent Information has the fragment code and a MARKUSH product. DerWent coding is available via STN, DIALOG, and Questel/Orbit. MARKUSH is available via Questel/Orbit. In chemical structure searching, a MARKUSH structure is a general structure for a chemical entity, with descriptions of the variations of bonds, atoms, and functional groups. The chemical program to search general structures is called MARKUSH for the DerWent version and MARPAT for the Chemical Abstracts version. Both vendors provide extensive training for information professionals.

Another type of information that can be obtained from these databases is patent family or equivalent applications. Patent family information, as described below, is that information that shows the countries where the application was filed and when and if a patent has been granted.

The Internet patent sites have arrived on the scene within the last two years and provide more ease in finding patent information. These sites are great because the actual patent can be seen and copied. However, the search engines for these sites are not as sophisticated as for the commercial sites. Also, each site has to be searched individually. The information from one site cannot be searched in the other.

## SEARCH EXAMPLES

***Novelty searches:*** As previously mentioned, patent searches can be grouped into several groups. The first is the novelty or patentablility search. This search answers the question – Is this invention known? The information searched is not only for that idea but also any similar ideas or inventions. The search is not limited to only the recent patent literature; the search must encompass the journal literature and other sources of information. The search is not limited to years, so information that is not in machine-readable form must be searched. A comprehensive search is conducted by the person/company pursuing the possibility of applying for a patent. After a patent application is filed, the examiner also conducts an exhaustive search of the prior art.

***Infringement Searching:*** Infringement searches are intended to look for new products or repackaged

products that might infringe on the patent. Searching needs to be done only for patents in force in the areas where the new product is active.

***Validity/Opposition:*** Here the searcher, who is probably not acting for the owner of the patent but for another party who is interested in the technology, is searching all of the literature at the time of the patent for novelty or nonobviousness.

***State-of-the-art:*** The searching is done for a background to see what the business environment looks like for new and forthcoming products.

***Alerting:*** This type of search looks at new patent publications (both granted and applications) for new entities altogether or for new publications of competitors.

***Family and equivalent searching:*** The example below is from DIALOG®File 351:DERWENT WPI bluesheet unit record to show the patent family. In the DerWent system, the first patent application that is published becomes the basic patent from which the bibliographic and content indexing information is obtained. As other patents or patent applications from the same invention appear, a family develops. The commonality is based on the priority filing. Each family member cites the same priority information. In this case, it is a US priority of 19900222. DerWent accumulates this information into the patent record. In the example below, a patent number WO9112850 is the basic number. Although there are no world patents, the two-letter designation "WO" is from the PCT filing at WIPO. The two letters at the beginning of the patent number indicate the country of the application. In this example, WO is the PCT application, AU is Australia, US is the United States, EP is the European Patent office, JP is Japan, and DE is Germany. The EP also shows the designated nations where the filer wants protection. The letter following the number is the kind code, which can be decoded on the databases. Kind code "A" usually means an application, except for the US, where that is a granted patent. The kind code "B" indicates a granted patent and the date of the grant. The other columns provide the application number, the date filed, and the main International Patent Classification code. In later records, the language of the application or patent is given. From the example, it is apparent that the EP patent has been granted. For content, either the application or the patent will provide the necessary information. For information about what is enforceable, the claims of the granted patent must be examined. The patent family information can provide a language equivalent to examine, rather than requiring that a potential inventor or company pay for a translation in the preliminary stages.

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  NP=   Number of Countries: 017  Number of Patents: 008
      Patent Family:

     Patent No  Kind  Date   Applicat No Kind  Date   Main IPC  Week

    WO 9112850  A  19910905                                    19913B
Designated States (Regional): AT BE CH DE DK ES FR GB GR IT LU NL SE
    AU 9173372  A  19910918                                    199150
    US 5092332  A  19920303 US 90483455  A  19900222          199212
    EP 516699   A1 19921209 EP 91904930  A  19910206 A61N-001/05
199250
   Designated States (Regional): DE FR GB IT NL SE
    JP 5504495  W  19930715 JP 91504692  A  19910206 A61N-001/30
   199333
   AU 648782    B  19940505 AU 9173372   A  19910206 A61N-001/05
   199423
    EP 516699   B1 19940824 EP 91904930  A  19910206 A61N-001/05
199433
Designated States (Regional): DE FR GB IT NL SE
    DE 69103623 E  19940929 DE 603623    A  19910206 A61N-001/05
199438


Priority Applications (No Kind Date): US 90483455 A 19900222 ; WO
91US810   A  19910206
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***Classification Scheme searching:*** Although the individual patent authorities assign a classification code that is published with the patent or patent application, the schemes are constantly revised as technology changes. To do a search using the codes, the searcher must have the latest edition of the code and its changes close at hand. The USPTO web site has an overview of the classification system for retrieval.

## SEARCHING PATENTS ON THE INTERNET

Searching patent information on the Internet has become more sophisticated within the last two years. The Internet sites described below provide full-text searching, front page searching for free, and document delivery; the searcher can either order from the supplier or print using the browser. These sites provide content, bibliographic searching, and document delivery. Comprehensive chemical searching still needs to be performed on Chemical Abstracts and DerWent World Patent Index.

USPTO - Welcome to the USPTO Web Patent Database
http://www.uspto.gov/patft/index.html

This database can be searched two ways: Full-text or Bibliographic (front page only). Both databases support boolean, manual or advanced, and patent number. The database includes utility patents back to 1976, design patents back to 1976, and plant patents back to 1976, as well as reissues, defensive publications, and SIR (statutory invention registrations). U.S. Patent Classification data in the full-text database (Issued U.S. Classification) correspond to classification data that appear on the printed patent and may not match current classification data. U.S. Patent Classification data in the bibliographic database (Current U.S. Classification) has been updated to reflect the most current Master Classification File (1 July 1999) and may not match the classification data that appears on the printed patent. The fact that an invention cannot be found by searching in the PTO's patent databases does not mean that the invention is patentable. A complete patentability search must consider all prior art, including earlier patents, foreign patents, and non-patent literature.

IBM Intellectual Property Network - http://
www.patents.ibm.com/

This site contains several databases. The patent collections available for searching are U.S. Front Pages, U.S. Front Pages & Claims, U.S. Titles & Abstracts, U.S. Inventors & Companies, Espace-A (Applications)(1979-), Espace-B (Issued)(1980-), Patent Abstracts of Japan, and WIPO PCT Publications (1997- ). All U.S. databases are from 1971 to the present. In addition to searching patents, this site also has documents that can be viewed using a standard web browser. They are US 1974-, ESPACE – EP-A (1979-), Ep-B (1980-), and PCT (1998-). The fields that are searchable are title, inventor, assignee, abstract, claims, agent, and combinations of these fields. This site has bi-directional hyperlinks on all patents to provide easy access to a referenced patent or to all other patents that reference the original.

The following sites provide full text searching and document delivery for a fee.

QPAT (http://www.qpat.com/) has full-text of U.S. patents from 1974.

Chemical Patents Plus (http://casweb.cas.org/chempatplus/) offers full-text for all classes of patents issued by the U.S. Patent and Trademark Office from 1975 to the present, including partial coverage from 1971-1974. Complete patent page images are available for patents issued from 1 January 1995.

Micropatent (http://www.micropat.com) provides access to U.S. Patents, European Patents (applications and granted) and PCT applications.

Patent Explorer (DerWent) (http://
www.patentexplorer.com/) provides access to U.S. Patents, European Patents, and PCT applications.

## SUMMARY

This paper has been a quick overview into the world of patents and patent searching. The information is fascinating and searching is challenging. Exercises, tutorials, websites, and a bibliography have been included for further information.

## TO GET STARTED:

Patent Searching Tutorial (http://
www.lib.utexas.edu/Libs/ENG/PTUT/ptut.html) presents the basics of patent searching. The specifics were written for patrons of the Patent and Trademark Depository at the Richard W. McKinney Engineering Library, the University of Texas at Austin.

PIUG Patent Information User's Group (http://
www.piug.org). PIUG is an organization of individuals having a professional, scientific or technical interest in patents. Through this forum and discussion, PIUG tries to promote and improve retrieval and dissemination of patent information.

## EXERCISES

1. What is the design patent for the Steinway piano, the Rhapsody? Ans. Design patent 414797

2. I noticed that on the Furby box, it said patent pending. Is it possible to find the patent? Look for assignee Tiger Electronics.

3. Is there a patent for a rose named Lady Diana? Ans.USPP005360 issued to Lowell L Hoy, Jr. of Richmond IN.

4. What did Lanny Potts invent? Ans. Exercise equipment assigned to Stairmaster Sports Medical Products, Inc.

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U.S. Constitution, Article 8

US Code – Title 35 – Patents

USPTO Patent Class Definitions: http://www.uspto.gov/web/offices/pac/clasdefs/index.html


## VENDORS

STN (http://www.cas.org) - provides online access to scientific and technical information

Dialog (http://www.dialog.com)

Questel-Orbit (http://www.questel.orbit.com/)

## CONTENT PROVIDERS/DATABASES

Chemical Abstracts (http://www.cas.org), supplier for chemical and related information.

DerWent (http://www.derwent.com) Derwent World Patents Index (DWPI), produced by Derwent Information, provides access to information from more than 18 million patent documents, giving details of over 9 million inventions. Each week, approximately 20,000 documents from 40 patent-issuing authorities are added to DWPI.

CLAIMS from IFI is a database of US chemical patents from 1950. Mechanical and electrical patents were added in 1963 and design and plant patents from 1976.

INPADOC is a family and legal status database produced by the European Patent Office. The database consists of patent family information from 66 countries and organizations and legal status information for 22 countries.

## PATENT OFFICE WEB SITES

European Patent Office (http://www.european-patent-office.org/index.htm)

Japanese Patent Office (in English) (http://www.jpo-miti.go.jp/)

United States Patent and Trademark Office (http://www.uspto.gov)

World Intellectual Property Organization (http://www.jpo-miti.go.jp/)