October 2007

Patent Information in Science, Technical, and Medical Library Instruction

Virginia A. Baldwin

University of Nebraska-Lincoln, vbaldwin2@unl.edu

Abstract:
Patent information is now freely available online from many patenting authorities. Online tutorials for patent searching are available from engineering, business, and other library Web sites. This article highlights some areas to consider covering in library instruction, reviews patent tutorials, and gives some suggestions for delivering patent searching information to our students and library patrons.

Patent Information in Science, Technical, and Medical Library Instruction

"It is dangerous for modern design engineers not to be familiar with the role of patents in a competitive industry." Charles A. Garris Jr.

We can open the door of the world of patent searching to our science, technical, and medical (STM) students. While Garris,[1] as a Professor of Engineering, calls for an understanding of such concepts as designing around a patent, patent litigation, and patent rights as assets, it is easily within our purview to explain the basics of patent searching in the United States patent system, as well as in the systems of other patenting authorities.

When we instruct our students in searching databases that cover patent literature we are potentially exposing them to records for patents. Varying by database, *Compendex*, *Inspec*, and *SciFinder Scholar* records provide the following: title, assignee, inventors, patent number, filing date, patent issue date, country of application, and abstract. *Compendex* only indexes selected patents before 1970. With additional subscriptions, later United States Patent and Trademark Office (USPTO) patents and European patents are included. *Inspec* only includes selective patents and all are from 1976 or earlier. Almost all of the Patents included come from the U.S. and U.K. *SciFinder Scholar* searches USPTO, European, and Japanese granted patents and USPTO and World patent applications and gives the International Patent Classification (IPC) code of the invention.

Patent information is now freely available online from many patenting authorities. Online tutorials for patent searching are available from engineering, business, and other library Web sites. The following highlights some areas to consider covering in library instruction, reviews patent tutorials, and gives some suggestions for delivering patent searching information to our students and library patrons.

SEARCHING UNITED STATES PATENTS

Searching patents on the United States Patent and Trademark Office (USPTO) Web site at http://www.uspto.gov[2] has major drawbacks: keyword searching is not available prior to 1976 and accessing and printing the patent image is not seamless.

Accessing the patent image can be easily resolved by downloading the online viewer, *Alternatiff*. However the resulting images can only be viewed, and thus printed, one page at a time, for patents that can be dozens or even hundreds of pages long. Direct links to Front Page, Drawings, Specifications, and Claims are available from any patent image screen. It is the claims in a patent that define the invention and the scope of the protection.

Google Patents, accessed from the http://www.google.com or directly at http://www.google.com/ptshp?ie=UTF-8&tab=wt,[3] has resolved these drawbacks to a large extent. By OCR scanning of the earlier USPTO patent images, *Google Patents* provides patent keyword searching of USPTO patents back to the earliest patents called "X patents." The *Google Patents* record links directly to the Abstract, Drawing, Description, and Claims in the USPTO patent image and provides links to the USPTO bibliographic record for the patent and to a PDF of the scanned image. The OCR scanning is less than perfect, and is especially sketchy with the early handwritten patents. The Advanced Patent Search interface in *Google Patents* accommodates searching by class/subclass and other fields of search.

While not necessarily a model for patent information, this author's engineering library instruction blog at http://unlresearch.blogspot.com[4] has a section "Patent Searching" that contains some information about the subject. Quoting from the blog, the following are among the reasons to do patent searching:

"(1) To find information about an area that is a candidate for a utility (based on usefulness) patent. Often there is an early insight into groundbreaking accomplishments in an area that are not published elsewhere.
(2) You have an idea and you want to see if there is a patent out there that is related to your idea. You will want to do a "prior art" search (search for granted patents, patent applications, or publicly disclosed technology in the same area). For USPTO patents this search can only be considered a complete search if you are searching for all patents in the class(es)/subclass(es) related to your idea."

Whatever the reason to perform a patent search, the key for the USPTO system is to uncover what class(es) and subclass(es) the invention falls under, and there could be several. For any number of reasons, keyword searching is unlikely to retrieve all patents with relevant technology. For the undergraduate STM student, however, an understanding of the very basics of patent information and searching will be valuable career preparation. Furthermore, a simple keyword search, while not comprehensive in its results, has the potential of calling forth technology related to a graduate student's research or to the information needs of the science, engineering, and medical professional.

For the inventor or the researcher who wants to review a complete list of patents in a technology area, a class and subclass search is imperative. For the USPTO, the classification schedule and definitions are available at the USPTO Web site (http://www.uspto.gov/web/patents/classification/)[5] with an index to the United States Patent Classification (USPC) system at

http://www.uspto.gov/web/patents/classification/uspcindex/indextouspc.htm.[6] The hierarchical structure of the classification system subclasses is defined by the Classification Schedule.

The USPTO Web site also has a complete 7-step strategy for patent searching for prior art. The Web site can be accessed from the main page through the "Patents" - "About Patents" link on the left, then under "Help," the link "How to search patents and more" then "How to search for patents at a PTDL." Or it can be accessed directly at http://www.uspto.gov/web/offices/ac/ido/ptdl/step7.htm.[7] The first four steps deal with the classification system, the fifth is to search each of the two USPTO databases, one for issued patents and the other for published applications. Finally, the last two steps are to review each aspect of the patents, then to review the referenced patents. More detailed aid for navigating these portions of the USPTO Web site is available from the Patent and Trademark Depository Library Association (PTDLA) Web site (http://www.ptdla.org),[8] under "Handout Central" (USPTO Website Guide). Not explained in the seven steps is the usual need to review enough issued patents in a potential class and subclass to determine similarity of technology. Similarity will give the inventor or researcher some clarity regarding the applicability of the class and subclass to the technology of interest. Once these are identified a complete review of all the patents in the applicable class(es) and subclass(es) in both the issued patents and the published applications database is required. A useful way to become familiar with the USPTO classification schedule is to review the complete list of classes in alphabetical order by title that is also available from "Handout Central" (US Patent Classification Guide – Classes by Title).

The USPTO will not grant a patent for a claimed invention for which its examiner finds a patent or description elsewhere in the world. On its Web site the USPTO has revealed the strategies patent examiners use to make the search for prior art more complete. Called "Search Templates," they are available by class, and for some classes differentiated by subclass as well. A link to the Search Templates screen is available from the USPTO Web site, under "Patents" – "About Patents", then under "Search Aids." As stated, "The templates provide more structure to the search activity and set a standard to measure the completeness of any search."[9] Developed for periodical indexes that are available at one institution (University of Nebraska-Lincoln), a sample checklist is available from the PTDLA Web site, again under "Handout Central,"[10] linked as "PTDL LIST: Patent Search Checklist."

SEARCHING EUROPEAN AND JAPANESE PATENTS

European and Japanese information is available at the European Patent Office (EPO) Web site, *Esp@cenet,* at http://ep.espacenet.com,[11] where all patent titles and most abstracts are in English. Many inventions have patent protection in more than one country, and many United States patents are available from this site. The *Esp@cenet* record for a USPTO patent includes a link to the original patent in Portable Document Format (PDF), thus alleviating the accessing and printing difficulties. *Esp@cenet* also provides keyword searching for many patents granted before 1976. The International Patent Classification (IPC) is used for all records. The USPTO Web site has a

concordance that goes between the USPTO classification system and the IPC, available from the above classification Web site (http://www.uspto.gov/web/patents/classification/).

OTHER SEARCH INTERFACES

Another valuable Web site is that of the World Intellectual Property Organization (WIPO) at http://www.wipo.int/ where the link to "Patent Search" brings up the search interface *Patentscope,[12]* the new WIPO search screen for international patent applications, currently numbering 1,314,346. WIPO does not issue patents; it provides information about published PCT (Patent Cooperation Treaty – since 1970 "makes it possible to seek patent protection for an invention simultaneously in each of a large number of countries by filing an 'international' patent application")[13] international applications in image format available from 1978 to present. The *Patentscope* interface provides 29 different fields of search.

A separate section of the WIPO Web site contains statistical information of potential value to the scientist, engineering, and medical professional. Under "Gateway to Patents" the link to "WIPO Patent Report: Statistics on Worldwide Patent Activity (2007 Edition)" gives filing data for patent offices in 20 countries, non-resident filing data for 28 countries which have the highest proportions of foreign patent applications, PCT international applications published by technical field, and an array of other statistics in table, graph, and chart form.

Fifteen engineering and science societies have collaborated to produce a federated search interface for their publications as well as United States, European, and Japanese patents. Called *Scitopia,[14]* the advanced interface has options for full record, title, author, abstract, affiliation, date range, and publishers search terms. Tabs on the search results page differentiate and identify each of the three sources for the record, society documents, patents, and government documents. When a search result produces a record for a patent that is only granted in the United States, the record from *Scitopia* is that of the bibliographic record in the USPTO database. If an EPO patent is available the record is from *Esp@cenet* and thus the patent image is easily viewed and printed.

PATENT TUTORIALS

The following is a review of several patent searching tutorials that are available online:

1. University of Texas at Austin McKinney Engineering Library's Patent Searching Tutorial at http://www.lib.utexas.edu/engin/patent-tutorial/index.htm[15] covers (1) idenifying keywords to describe the invention for use with the USPC Index (2) accessing the Index, use of the Manual of Classification and the Class Definitions, (3) reviewing patents in potential classes and subclasses to ascertain similarities with the invention (4) use of keyword searching as an alternative to the Index, and (5) concluding remarks.

2. Penn State University's Schreyer Business Library's Patent Search Tutorial at http://www.libraries.psu.edu/instruction/business/Patents[16] is an extensive tutorial on patent searching complete with short movies that demonstrate how to use the USPTO Web site.

4. University of Utah's J Willard Marriott Library's "Searching US Patents and Trademarks on the Internet" http://www.lib.utah.edu/govdoc/pto/PTDL4.htm[17] is another extensive tutorial that covers the 7-step strategy. A key chart (slide 3) covers the why of searching patents. Patent databases "contain technical information that is never published anywhere else", and, because of patentability restrictions, "new technology is submitted to the USPTO before presented at conferences or submitted to technical journals."

5. North Carolina State University's Basic Skills for Assisting Patent Patrons at http://www.lib.ncsu.edu/ptdl/patentsref/ptutorial.html[18] gives a basic intellectual property review, links to resources for inventors, gives advice on best practices for assisting patent patrons, and includes a case-based tutorial that goes through the step-by-step process of helping a patron who is looking for patents associated with guitar strings.

CONCLUDING REMARKS

Having sufficient class time for library instruction is rare. Below are some ideas for giving students access to basic patent searching information.

1. Include basic patent information in instruction blogs, wikis, handouts, and/or Web sites.
2. Place icons that link to patent searching tutorials and/or search interfaces of patent authorities on public computer desktops in science, engineering and medical libraries.
3. Dedicate five to ten minutes of each class to explaining why learning about patent information is important and how they might learn more.
4. Have separate classes on patent searching.
5. For many academic engineering programs ethics is an important part of the curriculum. Instruction in intellectual property, to include patents, trademarks, copyright, proper citing, etc. is often welcome as pertinent to engineering ethics. The same may be true for medicine and other science fields.

Lifelong learning is stressed by many accrediting bodies.[19] Certainly continued involvement in education and knowledge attainment is important in any scientific, medical, or engineering profession. Knowledge of patent information and how to obtain it is vital to STM information literacy.

NOTES

---

[1] Garris Jr., Charles A. "The United States Patent System: An Essential Role in Engineering Design Education." Journal of Engineering Education 90, no. 2 (2001): 239-246. Garris is a

Professor in the Mechanical and Aerospace Engineering Department at Georgetown University and fellow of the American Society of Mechanical Engineers. His Web site is http://www.seas.gwu.edu/~garris/ .

[2] "United States Patent and Trademark Office Home Page." [cited 2007]. Available from http://www.uspto.gov /.

[3] "Google Patents." [cited 2007]. Available from http://www.google.com/ptshp?ie=UTF-8&tab=wt .

[4] "Library Research Resources and Services." [cited 2007]. Available from http://unlresearch.blogspot.com/ .

[5] "Patent Classification Home Page - Internet." [cited 2007]. Available from http://www.uspto.gov/web/patents/classification/ .

[6] "Index to the USPC." [cited 2007]. Available from http://www.uspto.gov/web/patents/classification/uspcindex/indextouspc.htm .

[7] "Seven Step Strategy." [cited 2007]. Available from http://www.uspto.gov/web/offices/ac/ido/ptdl/step7.htm .

[8] "Patent and Trademark Depository Library Association." [cited 2007]. Available from http://www.ptdla.org/ .

[9] "Patents." [cited 2007]. Available from http://www.uspto.gov/main/patents.htm.

[10] "Handout Central | Patent and Trademark Depository Library Association." [cited 2007]. Available from http://www.ptdla.org/handouts.

[11] "Esp@cenet — Home Page." [cited 2007]. Available from http://ep.espacenet.com/ .

[12] "PatentScope Search - International Patent Applications." [cited 2007]. Available from http://www.wipo.int/pctdb/en/ .

[13] "About the Patent Cooperation Treaty." [cited 2007]. Available from http://www.wipo.int/pct/en/treaty/about.htm .

[14] "Scitopia.Org: Integrating Trusted Science + Technology Research." [cited 2007]. Available from http://www.scitopia.org/scitopia/ .

[15] "Patent Search Tutorial and Information - University of Texas." [cited 2007]. Available from http://www.lib.utexas.edu/engin/patent-tutorial/index.htm .

[16] "Patent Search Tutorial." [cited 2007]. Available from http://www.libraries.psu.edu/instruction/business/Patents/ .

[17] "Marriott Library - U.S. PATENTS AT THE MARRIOTT LIBRARY." [cited 2007]. Available from http://www.lib.utah.edu/govdoc/pto/PTDL4.htm .

[18] "Patent Tutorial: NCSU Libraries." [cited 2007]. Available from http://www.lib.ncsu.edu/ptdl/patentsref/ptutorial.html .

[19] An example from the Accreditation Board for Engineering and Technology, ABET, criteria for Engineering Programs and for Applied Science Programs at http://www.abet.org/forms.shtml stipulate that "graduates have … a recognition of the need for and an ability to engage in life-long learning."