

## Patent information in the classroom

Crawford, Julia

Students preparing research projects should be encouraged to explore the patent literature, and two patent Web sites provide easy access to a wealth of information.

Engineering students working on individual or group senior projects outline hypotheses, examine scientific literature, design research, conduct experiments, and summarize findings. But despite that exhaustive process, many projects are incomplete because the students ignore patent literature.

Students (and professors) need to be aware of patent literature and the associated patent process for several reasons, not the least of which is the fact that any search of relevant technology cannot be considered thorough if patent literature is not included.

Also, studying existing patents can lead a researcher to propose improvements that are themselves patentable. A student researcher who discovers that his or her product/process has already been patented can sometimes develop improvements and enhancements not covered by the legal language of the patent.

### Real-World Applications

Students enjoy the sheltered learning environment afforded by the university experience, but the research and development world is driven by production and profit. The reality of the workplace is that engineers are hired to research and design marketable, patentable products. When introduced to this concept while in college, graduates will better understand the legal ramifications associated with their creative work. Intellectual property is just that—property. Patents, trademarks, and copyrights assigned to a company or corporation are considered tangible assets. Students who understand the processes involved in acquiring intellectual property can better appreciate their contribution to the company's welfare. Engineers design new products and manufacturing processes; patent specialists research the literature; attorneys draft and prosecute patent applications; and marketing departments create demand—all to get a product into the hands of the public.

### Wading Through the Literature

A researcher approaching the patent literature must possess a thorough working knowledge of how an invention functions. Ideas themselves cannot be patented, but an idea that is translated into a literal working process or machine may be patentable.

The patent literature is organized according to form or function in a very detailed and precise manner. The classification system that dictates the organization of patents is of considerable size and is referred to as The Manual of Classification. Similar subject matter is grouped together in broad categories called classes and is divided into smaller subclasses.

There are approximately 150,000 individual class/subclasses in The Manual of Classification, and each class/subclass has a list of patents associated with it. For example, class 43, "fishing, trapping, and vermin destroying"; and its subclass 42.06, "artificial lures..." includes hundreds of patents with titles such as "fish attractants," "fishing scent delivery apparatus," and "scent dispensing worm lure." Class 43, subclass 42.06, is referred to in the patent literature as 43/42.06.

Performing a preliminary patent search, often called a patentability search, first requires a determination of the appropriate class/subclass(es) in The Manual of Classification for the invention in hand. Once a class/subclass is deemed appropriate, the researcher can generate the corresponding list of existing patents and then begin looking at other inventions comparable in nature to the device under consideration. The key to patent searching lies in the crucial step of determining the appropriate class/subclass(es). (For an excellent online tutorial, see the University of Texas-Austin's, Engineering Library at [www.lib.utexas.edu/Libs/ENG/PTJT/ptut.html](http://www.lib.utexas.edu/Libs/ENG/PTJT/ptut.html).)

Many researchers prefer to perform keyword searches, readily available on CD-ROM or on patent information Web sites. The advantage of these types of searches is finding other patents that have been described with vocabulary similar to the invention in hand. However, a patent search that relies on keyword searching alone will be woefully inadequate. There is no controlled vocabulary for the patent literature, and patent applicants can refer to their invention in any number of ways. To counter this, after discovering other patents described in a comparable fashion, the searcher should study the assigned class/subclass(es) for appropriate placement within The Manual of Classification. Patent Information Sources

Many universities have access to a Patent & Trademark Depository Library (PTDL), which is the best place to do patent research. For a list of locations, see [www.uspto.gov/go/ptdl](http://www.uspto.gov/go/ptdl). The primary mission of the PTDL program, which is administered by the U.S. Patent & Trademark Office (USPTO), is to make patent and trademark literature available to the public. The PTDLs provide copies of patents and trademarks, information regarding the acquisition of intellectual property, assistance performing preliminary patent and trademark searches, and referrals to USPTO agency contacts.

There are, however, alternatives available for researchers who do not have access to a PTDL. IBM and the U.S. Patent & Trademark Office have free Web sites, searchable back to 1971 and 1976, respectively. Both sites are limited in the amount of information they provide: neither provides full copies of patents free of charge; patents issued between 1790-1970 are not indexed; and only the IBM site includes patent drawings. Also, patents too old to be included in these databases have expired and are in the public domain. However, the material contained in expired patents cannot be "repatented" without significant improvement. Excluding the patents not available online (pre-1971) from a search ignores a vast amount of patent literature. But despite these drawbacks, online patent sites are still a valuable resource.

IBM's Intellectual Property Network. IBM's site ([womplex.patents.ibm.com](http://womplex.patents.ibm.com)) includes all U.S. patents issued since 1971. The keyword search engine is intuitive but provides no linkage to class/subclass definitions. Each entry contains information from the "front page" of a patent. A search by class/subclass is not an option. However, when a searcher examines an entry obtained by keyword, the patent's class/subclass is listed. By selecting or clicking on the highlighted class/subclass, a list of other patents in the same category is provided. An increasing number of entries on the IBM Web site include the full text of the claims (the legal description) and one or more of the drawings. USPTO Web Patent Databases. The U.S. Patent & Trademark Office site ([patents.uspto.gov](http://patents.uspto.gov)) includes abstracts, "front page" information, and full-text search results issued search page access/search-adv.html class/subclass searching as well as clean searching of 25 different fields. The advanced search page is useful for executing intricate queries such as "patents issued to Oklahomans, assigned to companies in Texas, since 1982."

### Search Tips

For the most thorough search, it is best to use keyword searching as a way to find the most appropriate class/subclass, and then study those entries.

A researcher interested in patents for scented artificial fish lures would enter keyword terms such as "artificial and bait and scent" in the search form. An even more desirable search, formulated on the USPTO advanced search page, might include the following: artificial and (bait\* or lure\*) and (scent\* or coat\*). Be certain to select the "all" button and not the "97-98" button.

The search engine looks for patents that have these words in the title and/or abstract. The truncation or wild card term ( \* ) instructs the search engine to retrieve words with the indicated root such as lure, lures, scent, scents, scented, coat, coated, coating, coats, etc. The resulting list includes the following: \* 5172510 Semi Artificial Fish Lure, Current U.S. Cl.: 43/42.36, 43/42.06 5 5170579 Artificial Fish Lure, Current U.S. Cl.: 43/42.06, 43/42.22 a 5063703 Artificial Fish Bait, Current U.S. Cl.: 43/42.06, 43/42.53

The researcher would review each entry, with special attention "Current U.S. Cl." The codes in that field are as PTO patent examiner. s is assigned for each claim in the legal description of the patent. Further "field of search" results indicate the class/subclasses that the patent examiner considered. The examiner looked at every patent issued in the specified class/subclasses to determine if the claims of the patent were valid over the prior art and to determine the appropriate classification for the invention.

Notice that several of the patents have 43/42.06 listed in the "Current U.S. Cl." field. By selecting the highlighted class 43 from the active link that appears in the "Current U.S. Cl." field, the researcher can view the definitions from The Manual of Classification. After examination of the definition, if available, the researcher would print the list of patents classified at 43/42.06, and study each one in detail. The query for the USPTO advanced search page would be: ccl/43/42.06, again making certain to select the radio button for "all" and not "97-98."

If there is no PTDL in close proximity to the researcher, the IBM site can be used to view drawings and some of the text of the claims. The researcher can enter keywords from the title of one of the patents in class 43/42.06, then click on the highlighted "43/42.06" in the body of the retrieved patent. Unlike the USPTO engine, where the searcher is connected with The Manual of Classification organization and corresponding definitions, such a link on the IBM site supplies a list of patents classified at 43/42.06. Available drawings are provided with each individual patent.

Full patents can be ordered from the PTDL in the researcher's state, the USPTO, or commercial vendors such as Rapid Patent, Derwent, or Intelligence Corporation.

#### A Useful Tool

The patent researcher who uses computer resources in this fashion can be assured of more reliable search results. The researcher who uses the computer tools for keyword searches only, and never explores or selects appropriate class/subclasses, should understand that numerous applicable patents will be missed.

Patent literature can make even good engineering research projects more complete, and students should be encouraged to conduct and use patent research. With easy-to-use Web sites readily available, there's no excuse for ignoring patent literature, and the experience will definitely come in handy in the workplace.

Julia Crawford is a visiting assistant professor and the patent and trademark librarian at Oklahoma State University (see [www.library.okstate.edu/dept/patents/index.htm](http://www.library.okstate.edu/dept/patents/index.htm) for more information.) She can be contacted via e-mail at: [juliac@okway.okstate.edu](mailto:juliac@okway.okstate.edu).