

Competitive Intelligence Patent Searching Lab & Exercise

Contributed by:

Ron Simmer, Patent Service Librarian, University of British Columbia

Copyright R. V. Simmer, 2001

Contents

Competitive Intelligence Patent Searching Lab & Exercise	1
Summary/Objectives, Resources.....	3
Lab Presentation	4
Competitive Intelligence Web Search on "The Club".....	5
A Subject Matter Patent Search for a Prosthetic Device.....	6
Conclusion, Discussion Exercise	11

Summary/Objectives

The purpose of this lab is to conduct hands-on web searches and explore various websites to determine where to find patent and IP information. This lab also allows you to follow a specific example through the US and Canadian patent office. You should come away with an understanding of the available search tools, how to use them, and what information may be discovered.

Resources

Search Resources

www.cipo.gc.ca

www.uspto.gov

www.patscan.com

Preparation for Class

Go to the PATSCAN website and review the first pages of the major patent and trademark databases.

Lab Presentation

Background: Searching IP

Database quality and coverage are the principal challenges of conducting Intellectual Property searches on both free Internet and Commercial databases. Few patent databases are searchable further back in history than 1970, so it would be difficult to find patents by Buckminster Fuller or Nikola Tesla. Another issue is currency. Patents commonly change ownership as they are re-assigned when corporations merge, change, or dissolve. Many databases only record the first assignment on the face of the patent as issued in one country, and do not record changes from that date.

The better databases are updated with amended records including changes in status. Patents often become invalid due to failure to pay maintenance fees or through litigation or re-examination. Certain databases, such as INPADOC or Derwent's World Patent Index maintain status information on members of patent families. Never assume that the records for all countries attain the same standards or include the same data. Bear in mind that the "status letter" codes are all different for every country.

While recent patent data is well covered, databases for design patents, utility models, industrial designs, petty patents, and inventors' certificates are scarce. These lesser forms of protection based generally on the appearance of an article are often confused with utility patents. Trademark databases are well developed for US, Canada, Australia, Europe and Japan. The only database of copyrights is that supplied by the US Library of Congress on their webpage at www.loc.gov/copyright/ or through commercial database services such as Dialog.

Searching for Assignees/Patentees/Owners

One of the simplest inquiries an IP administrator must deal with is the question "Does XYZ co. own a patent on this product, and if so in what countries is it valid?" Checking the relevant patent databases may yield a quick yes/no answer regarding registrations under the current corporate name. Unfortunately answers to questions of assignment and ownership are often more elusive - many large corporations use a wide variety of corporate names. Is the patent owned in Canada by Shell Canada, or Royal Dutch Shell, or Shell Inc.? Is a consortium the assignee of which Shell is a partner? Has the consortium allocated the same patent rights to specific corporations in different countries?

Patents missing from a corporate portfolio may be held personally by the CEO or founders of XYZ co. - if the original inventor started the company he or she could still be listed as patent owner. XYZ co.'s patents could also be owned by a subsidiary or parent company, even a numbered company. Check with such corporate directories as the Thomas Register of American Manufacturers, Dunn's Million Dollar Directory, or the Directory of Corporate Affiliations for information on subsidiaries and branch companies. Most databases only go back three decades, so conducting a thorough historical assignee or inventor search may require going to print indexes such as the Patent Office Record published by CIPO or commercial databases such as IFI Claims.

If a company's patents cannot be found, competitive intelligence sleuthing through newsbases and annual reports may turn up evidence of license agreements indicating XYZ co. is using valid patents from other sources such as joint venture partners. Unfortunately registration of patent licenses are not required in most countries. The better commercial patent databases such as Lexpat and IFI Claims Reexamination/Reassignment indicate changes in patent ownership. Sometimes re-assignments of patent rights are not properly registered

Often patents are missing because they are alleged to be pending. However, even the United States now publishes some patent applications after 18 months, so the "patent pending" excuse wears thin after a couple of years. Provisional applications of course are held in secret for one year.

In order to verify whether a patent is issued, pending, or designated for a given country, reliable patent family databases must be checked to discover all the patents for a given invention based on a common priority filing date. Such information is included in INPADOC, Derwent's World Patent Index or STN's Chemical Abstracts. Note that INPADOC and Derwent have a different philosophy regarding patent families - Derwent is more inclusive on borderline patents, while INPADOC rigidly follows the common priority date rule.

Lab Example: A Competitive Intelligence Web Search on "The Club"

Let us assume you are a small manufacturer in Canada who wishes to make and sell a steering wheel locking device, possibly for export to the US. You notice that the most popular model is called "The Club", and there seem to be a number of similar products in stores. You must conduct a search to discover what valid patents covering steering wheel locks are in force in Canada and the USA.

Step One

Assuming "The Club" is a trademark, go to a trademark database such as appears on the CIPO or USPTO websites and enter the terms "the Club" in the search menu. Several marks turn up by the same owner, the Winner International Corp.

Step Two

Further assuming that the owner of the trademark would also be the assignee to the patents, search the name "Winner International" in the assignee field of the USPTO database. A wide range of automotive security device patents turn up. But close scrutiny reveals that these are more advanced than the basic "Club" locking device for which you are searching.

Step Three

On the USPTO database check the earlier patents cited by some of the more recent Winner International patents such as US 5600979 "Vehicle Anti-Theft System". You will notice that some of the oldest indicate James Winner as Assignee (US 4738127 and US 4856308) rather than the Winner corporation. Upon reviewing these two patents (the latter of which is a continuation) entitled "Automobile Steering Lock" they appear to cover the original "Club" device.

Step Four

Go to an international database such as Inpadoc and view the patent family for these patents to see if there is a Canadian equivalent. Or go to the CIPO patent site and search for patents with James Winner as assignee. The result indicates Canadian patent CA 1283301 was filed on Aug. 13, 1986. Adding 20 years for the life of the patent to this date produces the conclusion that the patent protection will expire in the year 2006 in Canada, the USA, and in any country with an equivalent filing.

Step Five

Conclusion: Anyone will be able to make or sell a product within the claims of the original "Club" patents when they expire in 2006. However, any enhancements or improvements to such a device would have to be carefully searched for infringement of existing valid patents. The USPTO database indicated over 80 patents citing US 4738127 as prior art, evidence that there are very many patents on similar products. A

subject search using the relevant patent classifications produces even larger results. (Review US class 70/209 to see over 300 wheel lock patents.)

The reason the earliest "Club" patents could not be found on Internet databases such as the Espacenet, CIPO or USPTO databases is that they only indicate the original assignees to a patent - subsequent reassignments are not recorded. If a commercial database such as Lexpat or IFI Claims had been searched for the assignee Winner International, the earliest two patents assigned to James Winner would have appeared with the information they were reassigned from James Winner to the Winner International Corp. If the database had not made these connections, the patents would not be found unless searched under the original assignee - James Winner. Such a situation is common with young companies that undergo rapid changes in ownership and corporate name.

A review of the "Winner International" patent portfolio indicates that this company owns scores of US utility and design patents, but files relatively few counterpart patents in Canada and other countries. The company also owns over 100 active trademarks. Winner has been very active in the field of vehicle security locks, and places high value on new and improved products. The Winner International Corporation is quite vigilant against "knock-off" products, initiating 40-50 legal actions per year against firms that infringe on its intellectual property. Although most of these actions settle out of court, Winner claims a 28-0 record in favorable judicial decisions.

Lab Example: A Subject Matter Patent Search for a Prosthetic Device.

An inventor requires a patentability search to ensure his invention is novel. The task is to discover prior art patents which would either anticipate his invention on all points, or that could be used collectively to indicate that it would be obvious to assemble a combination of known elements to make such an invention.

The invention at hand is a prosthetic knee joint for amputees with artificial legs. The principal element is an air-spring mechanism that causes the knee to extend forward at every step. The plan is to find all patents including spring loaded prosthetic knee joints, and compare the mechanical elements of the invention against those disclosed in prior art patents.

Step One: Analyzing the Question - What to Search

The first step is to analyze the invention in terms of its function, and decide what novel elements would logically be claimed when the patent was drafted. If it is a device, one must understand how it is structured, how it works and the effects it produces. If it is a process, one must detail the sequence of steps involved. The invention may be a combination apparatus and process also including the end product, thereby broadening the scope of the search. If the invention relates to a new substance or recently discovered protein a chemical structure search or sequence search may be in order. If it is a new use for a known substance a broad search of the chemical and patent literature for such applications is required.

Regarding the search for the prosthesis as described above, the question is quite clear - the answer is defined as spring loaded mechanical device functioning as a human knee.

Step Two: Finding the right pond to fish in - Patent Classification.

A serious patent search should include use of patent classifications. These would reflect the claims of patent and are usually the most convenient method of retrieving patent literature on a given subject. The USPTO classification, the European Patent Office classification (ECLA) and WIPO's International Patent

Classification will be used as examples. To perform a US search, one must first examine the functionality of the invention in order to think of how it might be classified in the USPTO scheme of classification. For example if the function of the intermittent windshield wiper is analyzed, it works by use of a periodically activated electric motor. The correct classification is thus 318/444 defined as:

PERIODIC, REPETITIOUS OR SUCCESSIVE OPERATIONS CONTROL OF MOTOR, INCLUDING "JOG" AND "INCH" CONTROL Variable periods or intervals between controlling operations

The IPC of course is tends to be an "application oriented" classification, so many of these devices would be classified with windshield wipers with electrical drives (B60S-001/08) . The ECLA classification adds a further distinction:

B60S1/08F [N: including control systems responsive to external conditions, e.g. by detection of moisture, dirt or the like]

The objective is to locate relevant classifications which may be of assistance in conducting the search. One can use the alphabetical class index to the classification manual to locate the classification, or go directly to the relevant part of a classification manual to see if the most important classifications can be spotted. For instance the alphabetical index on the USPTO website (www.uspto.gov) under "knees" lists "knees - artificial" at the subclass 623/39, which is a clue where to begin examining the class manual . Looking up "prostheses" in the same index produces the general classification for "prosthetic articles" at class 623.

Some analysis should be done here, since several classifications may be applicable depending on the view of the invention. For example, in the case of a prosthetic knee joint, there are very specific US classifications for different kinds of mechanical knee joints according to function or structure. Such knee joints almost always employ springs.

In the following example, subclass .027 "LEG" is a main line or first line subclass in classification 623. Indented subclasses beginning at .039 "Knee" up to and including ..046 all relate to indented subclasses concerning knee prostheses. The single indented subclass .047 commences the next subject "Ankles". There are two locations that indicate springs in the class schedule, one included under combined knee and foot actuators (...042) and one indented directly under knee (...046).

026 HAVING FLUID ACTUATOR
027 LEG

-
. 039 Knee
.. 040 Combined knee and foot actuator
... 041 Latch
... 042 Spring
.. 043 Brake or latch
... 044 Weight or position responsive
... 045 Adjustable friction joint
.. 046 Spring
. 047 Ankle

The USPTO website links subclass numbers directly to the subclass definitions, explaining the scope of the particular subclass. The classification definition of a "spring" in these two classes is stated as: "Subject matter having an elastic device which regains its original shape after being compressed or expanded." Technically this is a very broad definition of a spring, composed of any substance in any configuration.

In order to conduct a search of Canadian or international sources, it would be necessary to discover the relevant International Patent Classification. The best place to search is the WIPO Internet site where both the Catchword Index and the sections of the IPC are browsable. IPC Class A61F includes a range of medical devices including prostheses. A61F-002/50 is the general subclass for prosthesis not implantable in the body, knee joints per se being found in the single class A61F-002/64.

A61F ...PROSTHESES; ORTHOPAEDIC, NURSING OR CONTRACEPTIVE DEVICES

- 2/50 .Prostheses not implantable in the body.
- 2/52 ..Mammary prostheses
- 2/54 ..Artificial arms or hands
- 2/56 ...Adjustable
- 2/58 ...Elbows; Wrists
- 2/60 ..Artificial legs or feet or parts thereof
- 2/62 ...adjustable
- 2/64 ...knee joints
- 2/66 ...feet, ankle joints
- 2/68 ..Operating or control means
- 2/70 ...electrical
- 2/74 ...fluid

In the IPC there is only one subclass for external prosthetic knee joints with no distinguishing subclasses including springs. There is however another subclass for "fluid operating or control means" (A61F-002/74) which could be useful, as the search parameters include an air-spring and air and gases technically are fluids.

On the Espacenet database it is possible to search either the IPC or the related European Classification (ECLA). Finding a relevant patent record (such as GB 2181352) and clicking on the ECLA classification allows a view of the relevant page from the ECLA manual, in which the following appears:

- A61F2/64 ... Knee Joints**
- A61F2/64P [N: Polycentric Joints, without longitudinal rotation]**
- A61F2/64P2 [N: of the single-bar linkage type]**

ECLA in this case provides a finer division than the IPC, but it is not helpful in this search since these classifications do not involve springs. Comparing the results of entering the Class number A61F2/64 in the IPC and the ECLA fields in Espacenet produces useful but almost completely different results. This indicates considerable lack of consistency in applying classification to records. Another useful strategy would be to combine the general classification for springs (F16F9) in the IPC and ECLA fields with that for knee prostheses.

[F16F9/00](#) Springs, vibration-dampers, shock-absorbers, or similarly-constructed movement-dampers using a fluid or the equivalent as damping medium ([F16F5/00](#) takes precedence; connection of valves to inflatable elastic bodies [B60C29/00](#); [N: braking devices, stops or buffers for wing-operating appliances [E05F3/00](#), [E05F5/00](#)]) [C9907]

Step Three: Deciding on the search strategy

Having located relevant US and IPC classifications concerning prosthetic knee joints, the challenge remains to harvest the relevant items from the two hundred or so patent documents found. Strategies must be developed to effectively search for the concept of an air-spring.

One can combine the relevant classifications for artificial knees with selected key words used as synonyms for air-springs such as "gas spring" or use more generic terms such as "pneumatic" or "brake" or "retarder" or "fluid power." Another tactic is to simply combine the knee subclassifications with other general classifications for springs. For instance US Class 188 "Brakes" includes retarders or shock-absorbing type fluid springs.

Patent searching is a multi-stage, iterative process. Often performing preliminary keyword searches is a useful early step to identify additional relevant key terms and classifications. Assuming you retrieve a small group of patents that are close to the invention, you may perform the following analysis:

Which classifications are most important and which seem marginal? What is the generally used terminology in the field that would be useful? Are there British or European terms which should be used as well as American terms? For example, is the subject matter tar, asphalt, bitumen, blacktop or an aggregate composite? Use your thesaurus! Would some application-oriented IPC or ECLA classes be more useful than US classifications that deal with functionality?

Focus on a particular classification if it contains exactly the data set you need in a "rifle" approach. Search ranges of classes when necessary, using the "shotgun" approach. The broader the search strategy the more irrelevant or "garbage" patents will turn up. Sometime use of generic key terms will bring up patents that actually include the specific item for which you are searching. Chemical patents commonly use such approaches. For example the term "alkali salts" includes the specific salts of sodium, potassium etc.

Write down the best classifications and keywords and combine them in all possible ways. This includes classes and classes (Classification for knee joints and classifications for springs), ranges of subclassifications (623/4* includes everything from 623/40 to 623/49), classifications and keywords, and all keywords. Use wildcards (the * symbol in the examples below) liberally to catch all possible plurals and variations on words, and to truncate classifications wherever you want.

188/* and 623/4* (Broad search including all patents classified with braking devices in the range of US patents for artificial knees.)

623/4* and 623/26 (All patents classified with knee prostheses also in the classification for prosthetic fluid actuators.)

623/4* and brake or retarder or shock absorb* or air spring or gas spring or pneumatic* (General range of US patents on prosthetic knees combined with selected keywords.)

A61F2/64 and A61F2/74 (Specific IPC classification for external prosthetic knees with that for fluid operating or control.)

A61F2/64 and F16F9 (Specific IPC classification for external prosthetic knees with the general class for springs - strategy works both in the IPC and ECLA).

A61F2/64 and brake or retarder or shock absorb* or air spring or gas spring or pneumatic* (IPC or ECLA class with selected keywords.)

When using keywords it is necessary to search all the text fields possible besides the abstract field. In free Internet databases probably the most important field to search would be the claims field. For instance, US 5201776 "Orthopaedic and prosthetic joint", only provides mention of a gas spring in claim 4. Though the drawings of this patent clearly illustrate a gas spring, the classification does not reflect this, nor is it discussed in the abstract or the specification. One of the frustrations of patent searching is such variability.

Another important point is that a patent may disclose elements of an invention in the specification, such as in the discussion of prior art, while it claims a slightly different invention. Full text keyword searching can often discover such hidden gems. Use of commercial databases, such as Derwent and Chemical Abstracts with highly indexed records designed for good retrieval, will produce better results than free Internet databases which are mere downloads of US or EPO abstracts.

Be aware of the "Patentese" or patent jargon that surrounds many subjects. The trademarked substance "Velcro" is often described as "hook and loop" or "hook and pile" fasteners. Pencils are classified under "Coating implement with material supply."

If you cannot find all the elements of the invention in one patent (A + B + C) the next logical thing to do is to find patents which combine A + C or B +C or A + B. That way it may be possible to infer that A+B+C would be an obvious combination to make. Another tack is to look for general rather than specific elements to combine. For instance, rather than look for a screw in a machine, search for any kind of fastener.

Step Four: The Search Process - Go Fishing

Often a preliminary keyword search will produce results of hundreds of candidate patents, many of marginal relevance. Such a large hit list can be reduced to manageable size by a variety of methods.

1. Use proximity operators when possible to specify that keywords be near each other rather than using the "and" operator. Results are more meaningful when keywords are in the same sentence.
2. Restrict the keywords to the claims rather than the whole patent specification if you are using a full-text database. Or if you are using a database with only abstracts, restrict the search to patent title.
3. Use classifications as filters or screens. For example if you are searching for a particular kind of alarm system, then combine the result of the keyword search with all database records in class 340 (covering electrical alarms). If the US classification is not convenient, then screen US patents with the IPC system. For instance, the IPC code G06F will pick out most computer applications if you are looking for software patents.
4. If the subject matter is recent, just restrict the search to the last few years of pending and issued patents.

Searching requires experimenting with different approaches. Apply new tactics when search results indicate additional paths to follow. To conduct a thorough search, rotate all the keywords and classes through your search engine as many ways as possible.

When you have a handful of good patents, or possibly one patent which stands out, conduct citation searches on them to discover recently issued patents and applications. Also review the relevant old art cited in important patents and check new patents that may cite this seminal art.

After you have exhaustively covered one database, go on to verify the results on other sources using different classification systems. Compare results with those from a commercial database or request a search from a professional search agency. Check current affairs and scientific databases for news in the specific subject area. Follow up with patent searches on companies or individuals active in this field of inquiry. Don't be afraid to ask experts for help.

If after all leads have been explored and all strategies have produced the same results using all possible relevant classifications and key terms, then you can confidently conclude the search.

Conclusion

Much patent searching is brutally tedious and time consuming. While there are ways of searching smart there are not many for doing an exhaustive search quickly. Patent searching tends to follow the 80/20 rule. To do a perfect search, you must spend the same or more time retrieving the last 20% as you spent on the previous 80%. Use resources such as the PATSCAN web pages for hints, links, and tutorials for patent searching.

Discussion Exercise:

Look up patents in the CIPO, USPTO, and Espacenet databases for the large chemical Corporation known as "Dupont". See how many variations can be found on the corporate name.

Who owns the patents filed by Simon Fraser University researcher Konrad Colbow?

Check the following classifications related to steering wheel locks and compare the results. What conclusions can you reach regarding classification searches on the Espacenet database, comparing ECLA with the IPC?

ECLA Class B60R25/02C5 on the Espacenet database

IPC Class B60R25/02 on the Espacenet database

US Class 70/209 on the USPTO database

Inventor Jerome Lemelson allegedly invented the bar code. Find his patents. Scroll through the file history to discover the original filing dates and compare the issue date. How many of Lemelson's patents have a similar history? Why is this?

In which countries does rock star Eddie Van Halen have a patent?

Copyright R. V. Simmer, 2001