



The basics of patent searching



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ABSTRACT

Some aspects of patent searching are similar to searching other kinds of technical literature, such as articles in popular science magazines or papers in professional and academic journals. However some aspects of searching patents are sufficiently different from searching conventional literature, that a dedicated mindset, strategy and tactics need to be applied to the task. The difference between searching conventional publications and patents arise, amongst other things, from the nature of the patent documents themselves, the interrelations between them and the unique way in which patent databases are constructed. This article describe an approach, and initial techniques for searching patents, which will enable the absolute beginner to make a start, and gain confidence in searching patent literature.

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1. Introduction

This article is based on a presentation delivered by the author at the Search Matters Seminar held at the European Patent Office (EPO) in The Hague in June 2016. The presentation was commissioned by the Search Matters organisers expressly to cater for those participants who were complete newcomers to searching patents. This article covers some useful basic concepts in patent searching and some “tips and tricks” which hopefully the absolute beginner might find helpful. The article also incorporates ideas presented by the author over many years, in the “European Patent Information Beginners’ Seminar” series and in introductory webinars [1,2].

The article is also about the psychology of patent searching, the mind-set, concepts, strategies and tactics, and is deliberately intended to be a general introduction only. It is not intended to promote any particular search tools or databases. However, by way of example only, search results and techniques in this article are illustrated by use of EPO tools and databases.

2. The 64,000 dollar question: why search patents?

The trivial answer to this question is “because they are there” [3]. However there are many genuine and justifiable reasons for searching patents [4]; to find out about the most recent inventions, to study the development of a particular technology, or to find the

patents by an eminent academic, for example. The publication of patent documents, which necessarily contain a full technical description of the invention, is a mandatory step in the patent process. Patent offices around the world are required by convention to publish the patents registered with them. *A patent cannot be a patent unless it is published* [5].

Most patent offices publish patent applications before any other publications. The existing volume of patent documents is huge. Publicly available free patent databases, for example Espacenet, PatentScope and DepatisNet [6] give access to tens of millions of patent documents. The cumulative volume of patent documents is growing rapidly too; 2.9 million patent applications are reported as having been filed in 2015 worldwide [7]. The patent process requires that all of these be published. Despite the volume and rapid growth in publications, searching patents is assisted by indexing or classification schemes which allow you to focus your search direction early on. Patents not only contain technical information about inventions. Patents are legal instruments and confer rights and privileges on their owners. So it may be that you would want to identify and characterise the legal status of particular patents. The patent documents also contain contact information about the applicants, the people or organisations who filed the patent application in the first place. Patents also list inventors, the clever individuals who had the ideas, and did the work in laboratories or factories or workshops. Inventors and applicants can be identified by searching patents, and this information can be commercially important.

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2.1. About you, your occupation, your project, your task

In the author's experience of teaching patent searching to novices, it's worth reflecting on a few points to orientate yourself. As new recruits or newly appointed patent searchers, most of the participants of the EPO's Beginners' seminars [1] were bewildered at the work situation in which they had suddenly and perhaps unexpectedly found themselves.

A good tip is to consider such questions as:

- Who are you?
- What's your background?
- How did you get to be “assigned” to patent searching?

It is important to know who you work for, not only your immediate boss and line management, but also the company.

- What is its business?
- What does it stand for?

Why are you searching for patent information?

- Is it part of the normal business process?
- Is it to keep an eye on technological developments?
- Is the company planning new products?
- Is it to defend your portfolio?
- Are you on the lookout for mergers and acquisitions?
- What level is the search work you will be doing?
- Is it mission critical, crisis management?
- Damage limitation?
- Is it strategic, long-term?
- Is it tactical, short term?
- Do you engage in one-off searches?

Who sees the results of your work?

- What decisions are based on your results?
- Who takes those decisions?
- What format do they want your reports and analyses in?

What kind of information are you looking to extract?

- Purely technical, invention information?
- Legal information – are patents in force or not?
- Do you want to avoid infringing third parties' patents?
- Do you want to enforce your own?
- Do you want to extract commercially relevant information?
- Who are your competitors?
- What are they doing?
- Who are the most prolific inventors?
- The most active applicants?
- Where are the technological hot spots?
- What information do others need?

If you are a novice searcher, an understanding of the above will give you a comfort zone, some orientation, encouragement and confidence in the value of your work. It will enable a better search mentality and thus establish a sense of your own real professional status. Indeed the establishment of patent searching as a profession in its own right, is in progress [8].

3. Before you begin

Before you begin your patent search, take stock of what you already know or can find out. Do make use of internet search

engines, and online encyclopaedias and thesauri. Newspaper articles, magazines, trade journals and scientific publications are all useful at the beginning of a patent search. Use this knowledge to help you start. Be observant about the objects around you. Sometimes familiar items will carry references to patents (pat. pending, pat. app. for). If you know a market leader for a particular product, finding the corresponding patents may lead you to finding other patents from their competitors. Indeed you may find patents for inventions for which a market leader is not well known.

4. Types of patent search

There are a different types of patent search depending on the questions you are being asked. These standard types of patent search are: state of the art, prior art/novelty/patentability, freedom to operate, opposition, and (in)validity searches.

4.1. State of the art search

This is probably the simplest type of search. This is essentially a survey of all the relevant documents published in a given technical field or fields or patents filed by particular applicants or inventions invented by given inventors. In all types of search it will also be necessary to include searches in the conventional literature, such as scientific articles, theses and dissertations, the press, and in “grey literature” such as instruction manuals and promotional literature. The search may turn up many documents according to the extent of the technical field, or the productivity of the applicants or inventors. The State of the Art search is not necessarily a precursor of any further action such as filing a patent application. It is simply intended to establish that knowledge and information which is available to the public by means of written or oral descriptions, by use, or demonstration, advertising, publicity or in any other way, at the time of the search. It does not mean a search for the latest leading edge, technology as many advertisers would have us believe [9].

4.2. Prior art/novelty/patentability search

This search is a particular and restricted type of State of the Art search. It is typically carried out in industry before filing a patent application. The majority of patent offices carry out these searches as part of the search examination work they do once a patent application has been filed, and before continuing to the substantive examination (if requested to do so by the applicant). The object of the search is to test whether the invention in the patent application is novel, inventive, industrially applicable and is not an invention excluded from patentability (such as a scientific discovery, a mathematical formula, or artistic work etc.) The result of such a search, should ideally be a comparatively short list of publications (not only patents but other technical publications) which encompass the *closest prior art*. In other words, publications made available to the public before the date of filing of the patent application and which are the nearest in terms of technology to the invention in the patent application.

4.3. Freedom to operate search

The freedom to operate (FTO) search, sometimes called freedom to act search [10], is probably the trickiest and riskiest, and most costly type of search. Patents are exclusionary rights, that is, they give the patent owner the right to prevent others from exploiting the invention defined in the patent. Patents are territorial and time limited. That is, patents can be valid in certain countries or territories but only for a limited period, generally up to a maximum of

20 years from the date of filing.

One object of a freedom to operate (FTO) search is to discover where, geographically, no patent protection exists, and to identify from which date patent protection if it exists today, will cease, because patents will no longer be in force.

Imagine you have invented a unique technology, let's say a special type of domestic waste collection machine which automatically sorts household waste into metal, paper, plastic etc., and packages it for recycling. You see immediately an international market for this. But you're also aware that eTrash PLC has patents for the identical technology. In order to find if you can commercially exploit your invention, you carry out an FTO search. You find that eTrash PLC has valid patents for the invention in all European countries, and the US but nowhere else. Immediately you see that you have FTO in other countries such as Australia, Canada, and South America and even Asia. So you may think of setting up production sales and distribution in those countries because eTrash PLC does not have any patents there. (You must make sure that no other companies have patent rights for your product there either!) However if the biggest markets for you are indeed Europe and the US, your FTO search must also be directed at identifying when eTrash's patents will expire (or have expired). This can be really tricky, a patent may appear to be invalid (because of failure to pay fees) but can be reinstated later in which case if you have prematurely moved into the market you could be in trouble. In principle patents have a maximum finite life, but in some cases the patent term can be extended. Again, if you've moved too soon you could be in trouble.

So far we have discussed FTO in terms of whether and where a patent may be in force or not, in principle this is straightforward to establish, even if in practice it is not. A more complicated situation occurs when the implementation of a given invention depends on another. Let's imagine you have invented and patented a device which automatically compensates for eccentric loads in rotating machinery. Examples could be a washing machine or spin drier with a heavy wet duvet inside, a food mixer with solid and liquid ingredients in its bowl, or a vehicle tyre and wheel which needs to be balanced. Your device is an improvement to existing inventions, yet your device is essentially useless on its own. You cannot unilaterally embed your device in food mixers, washing machines and spin driers made by other companies if protected by corresponding patents. Therefore you do not have FTO. You will have to come to some cross licensing agreement, based on the respective patent ownerships.

4.4. Opposition search

This is a search carried out by or on behalf of third parties, "opponents", in their belief that a patent should not be granted by a granting authority. The admissible timing of the opposition action is dependent on the particular jurisdiction, but may be at any time during the search-examination-grant process and may extend into a grace period from the date of grant. At the EPO the grace period is up to 9 months after the date of grant. The essence of an opposition search is to bring arguments as to why the application should not be granted. The practical aspects are to find prior art that the granting authority may have overlooked or may have not considered accordingly.

4.5. (In)validity search

This may be considered analogous to an opposition search, but brought at some later point during the patent lifetime. The aim of such a search may be to uncover prior art which may render a granted patent invalid which is currently in force, or to check

whether a patent currently in force would withstand an invalidity search [10].

5. Keywords or.....?

If you ask a layman to describe an invention, he will automatically use words which describe what the invention does, (*it increases the rotational speed of an output shaft compared to that of an input shaft*) or how it is constructed (*it has a sun gear and planet gears which are located on a planet carrier*), or even its name, if it can have one (*overdrive*). There is a great temptation to use keywords only when searching. However there are a number of pitfalls to watch out for.

5.1. Context

The trouble with keywords for searching is that first of all they can be imprecise. Take the word "bridge" for example. As a noun it has many context-sensitive meanings. A bridge can be a construction to provide passage across a chasm or river. Even then it can be a road bridge, a rail bridge (viaduct) or a canal bridge (aqueduct). There can be different bridge constructions – suspension, cantilever, cable-stayed, box-girder, for example. A bridge can also be the support, tuning, and tensioning part of stringed instruments, violins, violas, guitars, lutes etc. A bridge can be a dental insert to fill gaps of missing teeth. A bridge can be an element in an electrical circuit. There may also be differences in terminology in different territories. In the field of fossil fuel combustion, the term "boiler" is used in Europe, "furnace" is preferred in the USA.

5.2. Synonyms

Secondly synonyms are often used, especially in chemistry. For instance the chemical formula CH_3COOH is instantly recognisable to the chemist. Acetic acid (trivial name), ethanoic acid (systematic name), ethan-1-carboxylic acid and other synonyms are its textual equivalents. However a layman will surely recognise a solution of ethan-1-carboxylic acid in dihydrogen monoxide (water) as "vinegar". Dedicated online searching for chemical entities is beyond the scope of this article, however ChemSpider [11] from the Royal Society of Chemistry is one good example of such a service.

5.3. The language of patents

Thirdly often for reasons of legal certainty and sometimes perhaps to hide patents from being found, the drafters resort to specialised and deliberately obscure terminology, vocabulary, nomenclature and grammar.

In a patent application, a pen might be termed "writing instrument", a tape measure might be described as a "linear comparison device". A spring might be a "resilient member", and a screw might be "fastening means". When searching keywords, remember the creativity of the patent writers.

In general when searching with keywords, you should be aware that there may be different ways of spelling the same word; "analyse" and "analyze", for example [12]. Don't forget that spelling mistakes will inevitably creep into databases. Despite the prompts from the built-in browser spell-checkers, there will come a time when you do want to search for "flourescent" and not "fluorescent" or for "reciever" and not "receiver".

Patents are also written in a language all of their own. In addition to the seemingly over-complicated or specialised technical terms, patent writers invent words of their own. The terms "more

than one” or “a few” or “several” or “many” are hardly ever used in patents but you will invariably come across the term “a plurality” instead. Similarly new adverbs are generated to describe characteristics of an invention, such as “slideably” (US20050105855). And apparent contradictions appear such as “detachably attached” (eg. EP1211368) when a normal author would have perhaps written “removable”. Translations also have consequences – the “Device for eliminating stray radiation” in its original language, if translated into English as “Useless radiation preventer” doesn’t quite convey the correct sense of the invention.

6. Why shouldn’t I search in patent titles only?

Titles are not always the best place to search using keywords. Very often they are either obscure, or uninformative. Two extremes are “Refrigerator” (one word only) for which the EPO’s database has nearly 19,000 patent publications, and at the other extreme the very specialised but nevertheless, definitive 3-(5-NITRO-2-FURYL)-1H-PYRAZOLO [3,4] PYRIMIDINS-4(5H)-ONES (US3755324).

The author’s personal favourite title is “Generally spherical object with floppy filaments to promote sure capture” (US4756529) How else would you describe a Koosh Ball? [13].

Titles can be misleading, as well; “Electronic apparatus” (US2005045309) is not a patent application for an electronic apparatus invention itself, but for a cooling circuit for an electronic apparatus.

When searching with keywords it’s best to broaden your search to include the abstract at least. Patent applications are required to have succinct, clear and descriptive abstracts. So there are much improved chances of a good search if the abstract is included. (It should be noted that the title and abstract have no legal effect for the applicant and neither careless nor misleading wording are rectified). Of course if there is the opportunity to search the full text of patents the risk of missing relevant documents is reduced, but there is a trade-off in that many more hits will be retrieved, but with lots of irrelevant documents.

7. Cut to the chase – patent classifications

As seen so far, the volume of patent publications is immense and is growing rapidly. This collection of publications would be impenetrable and the information inside inaccessible, if there were not some kind of indexing or classification in place to help finding the most interesting and relevant patents. There are some classification systems in place implemented by the major patent offices and recognised internationally. For the beginner, these classification systems can seem daunting.

As an analogy, imagine entering a public library. There may be different stacks labelled “Science”, “Engineering” [14], “Art”, “Humanities” and so on. Suppose you enter the “Science” stack, and you find it organised into “Physics”, “Chemistry”, “Biology”, “Mathematics” etc. [15].

You’re interested in physics so you follow the “Physics” aisle and you find it contains different bookcases. “Thermodynamics”, “Magnetism and Electricity”, “Atomic and Molecular Physics”, and so-on. The “High Energy Particle Physics” bookcase has shelves labelled “Fermions” “Neutrinos” “Muons” etc. Your eyes land on the “Boson” shelf and find the book on The Higgs Particle which you’ve been looking for. Many library users will be familiar with another classification system, the Dewey Decimal system for classifying books (for which section 608, incidentally, is concerned with inventions and patents!) [16].

Patent classifications are similarly hierarchical. Patent classification is a fast track to finding relevant documents very quickly leveraging the intellectual effort of the examiners who classified

patent documents in the first place. There are a number of classification schemes in place, the International Patent Classification System (IPC), administered by the World Intellectual Property Organization [17], the FI F-term scheme, at the Japan Patent Office [18] and the Cooperative Patent Classification (CPC) scheme implemented by the European Patent Office and the United States Patent and Trademark Office [19]. This is the most modern patent classification system.

An example of using CPC to find patents associated with the synthesis of graphene has been recently described by Härtinger and Clarke [20].

The trick with using any patent classification scheme is to find the most relevant classification term for your search. Use that term in your search, and if there are too many results then refine your search with additional keywords or other search terms.

An illustrative example is as follows. You want to find patents for self-propelled roller skates. A search with “roller skates” in the CPC browser in Espacenet [21] tells you that A63C 17/00 is the classification for “Roller skates; Skate-boards”.

You can expand the classification “tree” and find that A63C 17/12 is the classification for “Roller skates; Skate-boards with driving mechanisms”.

This seems the most appropriate classification to use for self-propelled roller skates.

You can use this term A63C 17/12 to search for patents with that classification. At the time of writing (January 2017), that Espacenet search gave a result list of approximately 1212 hits. This is quite a large number and the search should be refined to reduce the number of hits. You can imagine several different ways in which “driving mechanisms” or “self-propulsion” could be implemented for roller skates: nuclear power, rocket propulsion, photovoltaic, perhaps. However to be conservative, and perhaps realistic, you might think of a small engine or motor attached to the skates. So if you then refine your search with “internal combustion” (to try to catch all those roller skates with a small petrol or diesel engine), the search gives only 6 hits, all concerned with powered skates or skateboards. The results have been reduced from more than 1000 hits to only 6 in two steps!

The important things to remember here are:

- Find the most relevant classification
- Use that classification to find the most relevant patents
- If there are too many hits, the search can be refined using additional keywords and synonyms

These three steps can be used to find the few most relevant documents quickly.

The combination of keywords (and synonyms) and classification terms is particularly powerful. However all types of search term can be combined using Boolean operators (See Fig. 2).

8. What’s in a name?

There are two types of name to be considered when searching patents. The first kind of name is the name of the applicant, usually the organization(s) which filed the patent and will ultimately own it if granted. Applicants are “legal persons” in general but this includes inventors acting on their own behalf.

The second type of name is the inventor or inventors. These are real people, “natural persons” and, depending on national law, have the right to be mentioned on the published patent document if they wish.

8.1. Applicant names

Points to watch out especially for, when searching applicant

names include the different forms of the company name as they file in different countries e.g. XYZ Inc., XYZ Corp., XYZ GmbH., XYZ Electronics, XYZ International etc. Watch out for legitimately different spellings: “Philips” and “Phillips”, and of course misspellings and typos can occur “Nokia” and “Nokai”.

Also be aware of the situation where “XYZ Worldwide” is a holding company but files as “Atozed”, its subdivision, in some countries and not others. This situation may require some detective work. There may also have been some name changes during the company’s history. These can be identified from corporate websites and publications or from government records (such as Companies House in the UK, or similar). Translations can also introduce uncertainty; the “Technische Universität Wien” is the same as the “Vienna University of Technology”, for example.

8.2. Inventor names

With inventor names you need to be aware of many variations in spelling, initialising, and name order. For instance, Marc and Mark, Isabel and Isobel are different given names, Schmitt and Schmidt sound the same as do Brown Browne and Braun but they are different. Names can get transposed, misspelled and typos appear. Sigismund (given name) Arbuthnot (family name) i.e. “Sigismund Arbuthnot” is the same person as “Arbuthnot, Sigismund”, but you may have to search both variations to find all of his patents. “R.T. Bear”, “Rupert Bear”, “Bear, R. T.”, and “Rupert The Bear”, are the same person, again you will have to search all variations to avoid missing any of his patents. Diacritics (accents, umlauts etc.) are often not supported in patent databases and search engines, so you may find Monsieur Barré’s patents by searching with “Barre” or “Barré”, however, to find Frau Müller’s patents you will have to search for both “Muller” and “Mueller”. Sometimes inventors used middle names and sometimes not. Make sure the “Jack Smith” you have found is the same person as the “Jack Ebenezer Smith” you are looking for.

9. The same, but different – patent families

By convention [22], a patent applicant can file multiple patent applications for the same invention at multiple patent offices within twelve months of the first, (priority) filing.

An illustrative example might be:

1. Gizmo PLC files a patent application for a rechargeable widget at the UK Intellectual Property Office on 1st April 2013 The application is filed in English and is published around 18 months later in English
2. Gizmo PLC files a patent application for the same rechargeable widget at the Institut national de la propriété industrielle in Paris on 1st May 2013 – the application is filed in French, referring to the UKIPO filing, and is published in French about 18 months later
3. Gizmo PLC files a patent application, referring to the UKIPO filing, on 1st June 2013 for its rechargeable widget at the Deutsches Patent-und Markenamt. The application is filed in German and published in German sometime in 2014
4. Gizmo PLC files a patent application for its rechargeable widget on 1st July at the United States’ Patent and Trademark Office, referring to the UKIPO filing. The application is filed in English and published later in English.
5. Gizmo PLC files a patent application referring to the UKIPO filing, for its rechargeable widget at the Patentti Rekisteri Hallitus in Helsinki on 1st August 2013. The application is filed in Finnish, and published in Finnish some time later

6. Gizmo PLC files a patent application for its rechargeable widget at the Oficina Española de Patentes y Marcas in Madrid on 3rd January 2014 and references the UKIPO filing. The application is filed in Spanish and published in Spanish some months later.
7. Gizmo PLC files a patent application, referring to the UKIPO filing, for its rechargeable widget at the Korean Intellectual Property Office on 31st March 2014. The application is filed in Korean and is only published in Korean sometime in 2015.

The above scenario although fictitious is entirely plausible. These filings are all concerned with essentially the same invention. They all refer to the first (priority) filing in the UK, they are all filed within 12 months of the priority filing. As such they constitute a simple patent family.

This simple family concept is useful in many ways. First of all Gizmo’s patent strategy is visible, and therefore its likely business strategy for the rechargeable widget. Patent databases can be monitored to see when the respective patents are granted, in which case you will know in which countries Gizmo’s rechargeable widget patents may be in force, and could be enforced by them. From a search point of view all of these published patent applications are equivalent, they are for essentially the same invention. The different filings in different languages provide you with official (human) translations in the different languages. So from our example above we have versions in English, French, German, Finnish, Spanish, and Korean. If, for instance, one of your searches picked up the Korean document and you are a native English speaker, you could select the British or American publication knowing that the text is a genuine representation of the Korean text which you found.

10. As close, as close as can be – citations

Just as regular scientific papers contain references to other articles to support (or even contradict) the arguments presented by the authors, patent publications also feature citations. The subject of citations and the application of citation analysis, is complex but very powerful [23]. The simplest aspects of patent citations will be discussed in the following.

10.1. Cited documents – backward citations

When patent applications are processed by patent examiners, they test whether the invention described in the application satisfies the criteria of novelty, inventiveness and usefulness. The examiners search relevant publications (of all kinds) and come up with a succinct report summarising their findings, and opinion, on the patentability of the invention as filed.

Generally these reports known as search reports, contain only a few citations, typically, a maximum of eight or nine citations, not tens or hundreds. It is *imperative* for searchers to note that these few citations are *the closest prior art*, which the examiners have found. These citations are selected to show whether the examiner believes the invention is novel or not, or inventive or not. If a citation in a search report challenges the novelty of the invention it is given a category “X”. If the examiners find all the features of the invention combined in two closely related prior art documents, they consider the invention as obvious or not inventive. These two documents are included in the report and both are given the category “Y”. If examiners find prior art documents which challenge neither novelty, nor inventiveness, then they still cite the closest prior art and these documents are given the category “A”. Citations are very precise. The exact passages, sentences or images, from the cited document are aligned with the exact relevant claims in the patent which they impact. (Other categories such as P, D, T

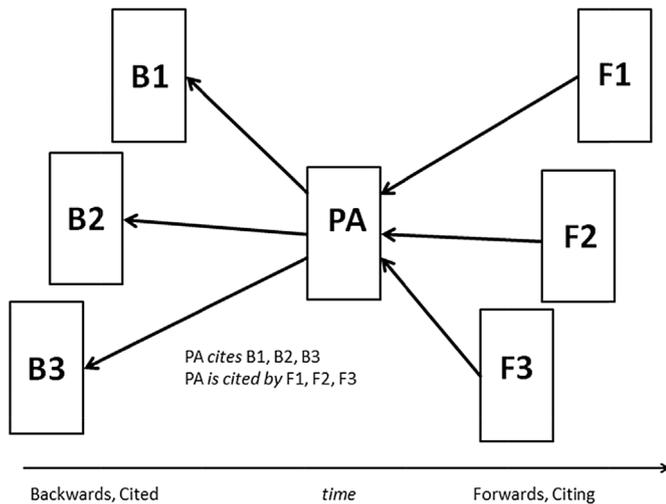


Fig. 1. Forward and backward citations cited and citing documents.

are sometimes used but are not discussed here. See the article “How to interpret EPO search reports.” by K. Loveniers in this Special Edition).

10.2. Citing documents - forward citations

So far cited documents, that is to say documents which were published in the past, relative to the date of filing of the patent application concerned, have been discussed.

Technology and innovation are not static, new patent applications are filed every day, for improvements to existing technologies, and for disruptive technologies which make former technologies obsolete.

Consider a patent application, call it PA, which was published three or four years ago. At that time, it was published with its search report containing its cited documents which we can label B1, B2....Bn and so on. These cited documents must necessarily have been published before PA was published, back in time relative to PA, and they can be called “backward citations”.

We assume that technology has moved on since PA was published, and later published patent applications have cited PA in their search reports. These citing patent applications which cite PA

must necessarily be published after PA and we can label them F1, F2,...Fn and we call them “forward citations”.

10.3. Citing and cited documents - forward and backward citations

This is significant. Here is an elegant focussed overview of the evolution of a particular technology: PA, its backward citations (cited documents) and its forward citations (citing documents) are related by being the set of closest prior art. (See Fig. 1).

This is a very important concept for the beginner – if you want to get an immediate feel for close prior art, find a patent application and read it together with its cited and citing documents. Remember that the citing documents field can always grow; later filed patent applications can always cite earlier filed ones. One striking example is a patent application for “A process for amplifying nucleic acid sequences” (US4683202). This patent is recognised as being associated with the beginning of a technology now known as Polymerase Chain Reaction (PCR). The inventor went on to become a Nobel laureate and the patent has now been cited more than 7000 times, which demonstrates how important the invention is.

11. Alive or dead? Legal status

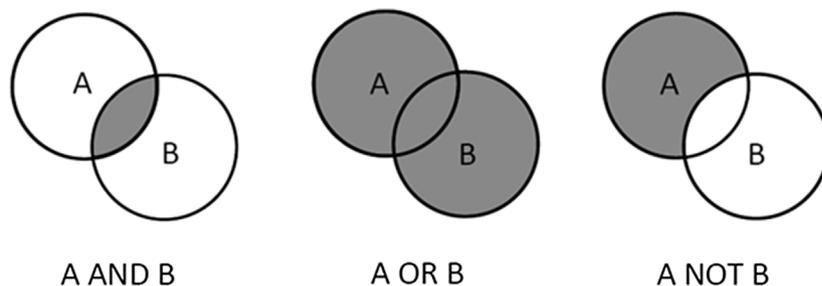
As mentioned earlier, it is important to know whether a patent is in force or not. The definitive way to determine whether a patent is alive or dead in a certain country is to consult the patent register held at that country’s IP office.

This is not as easy as it sounds, not all IP offices have online registers. The register may be buried several layers down, and it may not even be called “register” but something like “patent status”. The EPO has tried to make access to national patent registers easier by developing the “Federated Register” [24] which enables you to find the status of patents filed at the EPO and which have been validated in designated European countries. The EPO has also created links [25] between patent applications stored in its databases and the corresponding records in some national IP registers. These services do not cover all IP offices but it is a work in progress and coverage is being continually increased.

12. Keep your finger on the pulse – alerting and monitoring

Information available from patents is expanding quickly. As shown earlier, the number of patent publications is increasing

The AND operator restricts the number of hits
 The OR operator expands the number of hits
 The NOT operator also restricts the number of hits



<http://www.jonasfransson.com/8-search-technique/>

Fig. 2. Boolean searching. Searchers often combine multiple search terms using Boolean operators (AND OR NOT). All kinds and any number (in principle) of search terms can be combined.

rapidly and even the rate of publication is increasing, the content of patent databases is growing fast. Furthermore, the status of each individual patent is dynamic; each patent has a life cycle. The patent is born (filed) it's then searched, the application is published, then it can be examined, and granted. Following grant it can have a peaceful existence, and remain in force as long as its owner decides, or until it must finally expire after its allotted life span. But a patent life can be turbulent, subject to opposition or revocation actions. It may inadvertently lapse but then be brought back to life with the patent equivalent of cardio-pulmonary resuscitation – i.e. remedial action by the patent owner. Faced with this dynamism it is important to watch out for new publications entering patent databases and also the evolution of the status of a given patent as it progresses through its lifecycle. Strictly speaking, *alerting* is the action of observing the appearance of new patent publications and *monitoring* is the action of observing changes in already published patents [26]. A number of alerting and monitoring services are available on the market, and terminology with terms like “watch”, “tracker”, “alert”, “monitor”, etc., is used interchangeably to describe them. The EPO offers RSS feeds to notify those interested in new publications and also offers a service [27] which notifies changes to the legal status of European patent applications, and their validation in the European member states.

13. Patent search resources

Apart from general publications and the internet at large, patent searchers have access to many different but dedicated patent search resources, ranging from the simple to the complex, from the free-to-use, to subscription services. There is a general correlation between the cost of the service and the sophistication of the search capabilities. In general, the more you pay, the more you get [28]. However, it must be said that even the free to use services provide a very good entry level user experience, whilst the more expensive services undoubtedly provide very powerful search capabilities and sophisticated analytics, but at a price.

The works by Hunt, Nguyen and Rodgers [29], by Adams [30], and by Clarke and Rowles [31] give an overview on the types of resources available to patent searchers and the “infrastructure” of patent information. The Intellogist System Reports [32] are current continuous reviews of patent search resources available on-line.

Author's note

This article is a very personal selection of some of the very basic ideas and concepts in patent searching which I found most useful when I started out as a patent examiner some 25 years ago. Since then I have found these concepts to be readily understandable by complete beginners. At the beginning, patent searching can seem very daunting, overwhelming even, especially when you take into account of what may depend on the outcome of a search. Furthermore, coming into the patent world from the world of scientific R&D, is an intellectual and logical culture shock. I know. I've been there. So I've tried to introduce you to patent searching in a way that I hope eases the transition. Of course there is very much more to learn than is covered by this article, but I hope as a beginner, you've found something helpful to get you started.

Disclaimer

Any opinions expressed in this article are those of the author and not necessarily those of the European Patent Office.

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