Study Note: *The study of this module will take you around 25 hours. You are not expected to study this module in one interval but in several intervals of 2 to 3 hours to allow you time to assimilate the provided information. Please note that you MUST have internet access to perform the prescribed searches. Where there are suggested internet links, please visit the site and read.*

Important Note:
In the exercises and search activities that follow, the number of hits (i.e. the number of results or documents found) may be given. However these numbers should be regarded as indicative only, since online databases are updated frequently and the numbers of hits will therefore continually change.

Also, since functionality and screen layout also change regularly, what you see on your screen may differ from what is shown in the Module. The Academy does not take responsibility for the visual changes that patent databases make and we appreciate your sending a note to your tutor or the course administration where you find functional changes to a patent database during the offering of the course so we may adapt the screens in the course content.

MODULE 2: DIFFERENT TYPES OF PATENT SEARCH; THE STRATEGIC USE OF PATENT INFORMATION

Learning outcomes

On successful completion of this module, students will be able to:

- identify the reasons for conducting the following types of patent information search and carry each of them out in practice:
    - state-of-the art searches ;
    - novelty/patentability searches;
    - validity searches;
    - name searches ;
    - technological activity searches ;
    - freedom to operate and legal status searches
- describe how patent documents are structured and what information can be found in the following parts of a patent document:
    - abstract
    - claims
    - classification
    - description

    - dates
    - names
- discuss how patent information can be analyzed for strategic use in licensing, mergers and acquisitions, research and development and human resource management

Contents of Module

2.11 Self-Assessment Questions (SAQ)

2.1 What information is included in a patent document?

In Module One, we briefly discussed the different functions of the patent document. In this section, we will take a brief but closer look at the organization of a patent document and give brief descriptions of the specific characteristics of patent documents, which make them extremely useful sources of technological information. Your Search Activities in Part 1, would further give you various appreciation for the information contained in the patent documents. Often, for a patent document to succeed in the final objective of becoming a granted patent, it first passes through a detailed examination, by the inventor, and then the examiner who is skilled in the art of the subject matter of the claimed invention and generally pass patent agents, and even legal practitioners associated with the patent. As a result, the patent document has clear viability advantages over other sources of technological information. This is because the patent document has been refined and optimized to meet the strict criteria imposed by the patent system.

So, what are the parts of the patent document?

a. Title

A patent document has a title depicting the essence of the invention that patent is written for. Every document will necessarily have a title to quickly find or narrate the invention in few words. This is particularly helpful in screening through multiple related patent documents by a patent searcher.

b. Abstract

Generally patent documents contain an abstract which give a brief summary of the invention. Abstracts allow the reader to form a general idea of the contents of the document within a few minutes, a much shorter time than would be required to read the full text of the patent document. This is also helpful to a searcher in understanding the patent document and its contents quickly without going into the 20-30 pages of the whole of the patent document.

c. Description, Drawings, Claims

Patent documents generally have a fairly uniform structure that facilitate the extraction of information: the claims define the scope of what is newly invented and patent protected; the description gives the background of the invention (what was known before the invention, i.e., the “prior art”), and defines the difference between the pre-existing technology and what the invention contributes, as a new addition to previous inventions, advancing the technology or finding new ways to solve the existing problem in details. Often patent documents contain drawings that illustrate the invention and various embodiments that are generally claimed.

Technological information is disclosed by describing the inventions in accordance with the requirements of the applicable patent law and by indicating the claimed novelty and inventiveness by reference to the existing state-of-the-art.

d. Patent/ Publication/ Application/ Priority number(s)

Patent documents has various identification numbers, the practice of giving an identification number is prevalent across patent office(s) but the naming conventions and codes might be different resources such as

http://www.wipo.int/export/sites/www/standards/en/pdf/03-03-01.pdf will be helpful in finding the meaning of codes written on the face page of the patent documents. In general an application number is given to every filing of the patent application, a separate or same number can be used, as per individual practices, as a publication number on first publication of the patent document. On grant generally a new number is awarded or code is changed for the publication/ application number, practiced differently in different countries, and known as the patent number. The first filing in the family or the parent filing of a patent application will also be used as a priority number in subsequent filings.

These numbers are the best and quickest source to identify a patent document, hence, searchers will do all the effort to maintain the correct list of any of these numbers and quickly fetch all other details in a short span of time in real time.

e. Dates

Patent documents bear several dates (date of application, priority date, and date of grant) from which conclusions can be drawn as to the age of an invention and to the question of whether the inventions they describe are still under legal protection. If they are no longer legally protected, they can be used without the consent of the patentee. For different searches, dates have a use to ascertain use in a particular case, shortlist or discard a particular document in some searches, or use the one of the multiple dates on higher priority.

f. Classifications

Patent documents bear “classification symbols” which facilitate the finding and extracting of relevant information from them. For the purposes of maintaining search files and performing searches for the state-of-the-art (current) technology, patent offices classify patent documents according to the field or fields of technology. Although several classification systems exist, today the International Patent Classification (IPC) (http://web2.wipo.int/classifications/ipc/ipcpub/#refresh=page), established by the Strasbourg Agreement 1971 is the most widely applied system by

all the major industrial property offices. The IPC is administered by WIPO and is revised every January 1.

The Cooperative Patent Classification (CPC) system, in force from 1 January 2013, is a bilateral system which has been jointly developed by the EPO and the USPTO. It combines the best classification practices of the two offices and is the most extensive patent classification system in use today.
Refer https://worldwide.espacenet.com/classification?locale=en_EP

The cost of processing and classifying patent documents for building up search files, and of keeping the classification system up to date according to the IPC/ CPC, is borne for the most part directly by the patent offices which publish large numbers of patent documents. As a result, users other than the patent offices, benefit from having access to patent documentation without incurring, the cost of maintaining, developing and classifying their own patent documentation collections. Patent documents belonging to a specified classification subdivision contain a highly concentrated supply of, usually, technically advanced information in a given technological field.

A searcher can find similar technology patent filings in a class/ classification of interest or to that of the already known documents. This will leverage the use of patent examiner's knowledge and classification of the patent documents by a patent searcher. The search under classes will help the searcher in locating documents which are otherwise not linked or found by other search strategies.

g. Inventor, Applicant, Owner

Most patent documents indicate the name and address of the inventor, the applicant, the patentee (the owner). Sometimes the inventor is the applicant. Usually the applicant will appoint an agent to prosecute the patent application, which agent will also usually be on the paper document. The information contains the legal address of at least the owner and/or the applicant. These indications allow any potential licensee to contact the person(s) concerned in order to find out under what conditions the technology may be transferred. The searcher will find it interesting to search the patent documents by using names of the parties involved in patenting.

h. Citations;

Most of the patent documents are published together with a search report showing a series of citation references that were found during a documentary search, by examiner, made to establish, in a first instance, the level of novelty of the claimed invention. The citations can be patent or non-patent literature documents from across the globe. These documents are helpful in understanding the state of the art and problems in existence before the said invention took place.

i. Examiner/ Attorney Firms

Name(s) of the patent examiner/ attorney firms (representing the inventor/ applicant) are also mentioned in few patent documents.

j. Country Information

The patent/ publication/ application numbers contain reference to the country of filing and are helpful in identifying the jurisdiction where the patent document belongs to.

k. Patent Family;

Many patent documents are generally filed in more than one country to increase the span of protection coverage. INPADOC maintains the family information and can be found at https://www.epo.org/searching-for-patents/legal/inpadoc.html and also in EPO Espacenet search. This is very helpful to searches in locating priority documents, findings prior arts, connecting value of patents and much more.

The above are only a few examples of the various parts and usage of the parts of a patent document, especially for a patents searcher. The parts have many other uses for patent searchers as well as or inventors, industry, academia and patent offices.

Pre-Search Activity:

Action A: Think of some topic you would like to search such as “catamaran” or “tree and shelter” or “board games”. Choose three of any of the above mentioned databases.

Action B: Type in, or copy and paste, one of the Internet addresses from the list given above on your Internet browser.

Action C: Input the keywords in a specific field. In this activity, please discover where you can input the keywords that are suggested. After inputting the keywords, see how many results you get.

Action D: Look at how the results are arranged. Look at how you can find more detailed information about each of the results. Are these similar to the way information was displayed in the other databases?

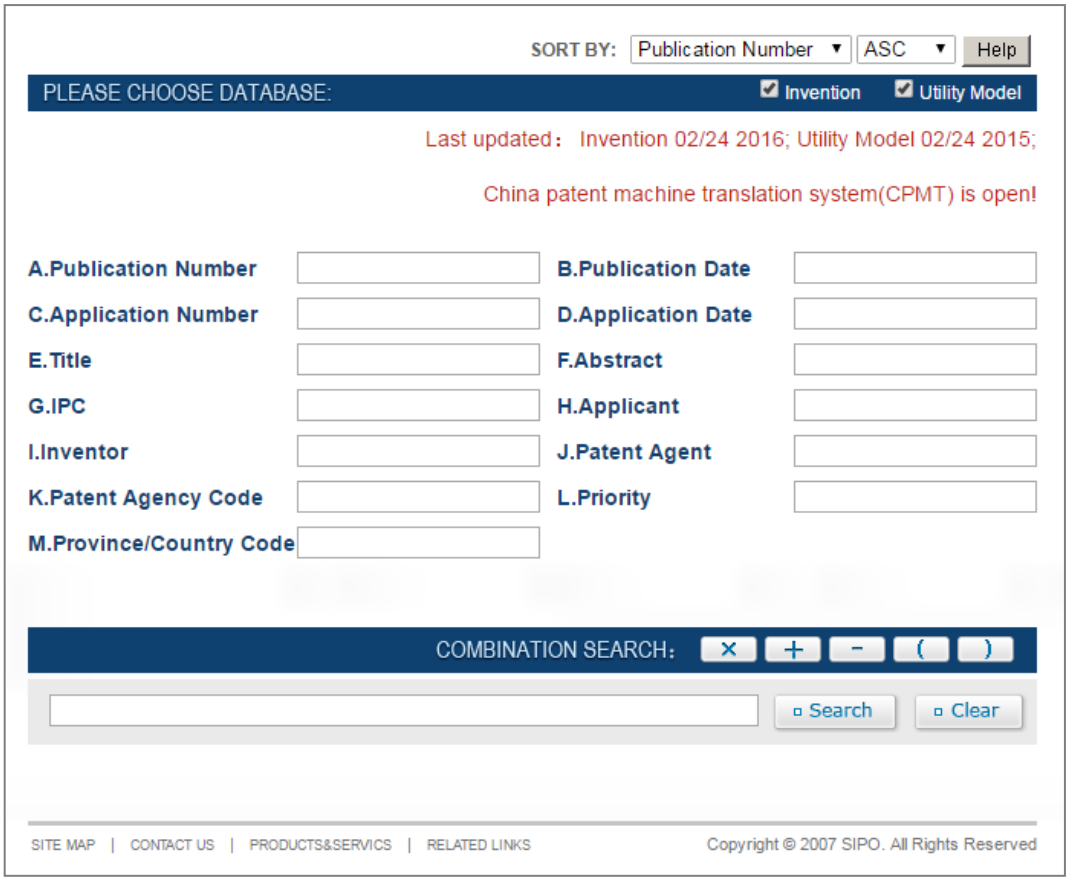
Action E: Now go to the second database you have chosen and put in the same keywords. Do you see differences in the way you need to put in the keywords? Do you see differences in how many results are given and how the information is presented?

Action F: Perform the same search for the third database you have chosen. For convenience write your results down on the simple grid given below. The first one has been filled in for you. As you can see, it has been done on the Chinese IP Office patent database.

Action G: Please send the result of your search in three databases to your Tutor who will provide you with comments.

Database name:	**SIPO English patent search (Chinese Patent Database)**
Internet address?	**http://www.pss-system.gov.cn/sipopublicsearch/ensearch/searchEnHomeIndexAC.do**
What is searched for?	Catamaran or hovercraft machines
Note where the keywords have been filled in.	the *F: Abstract* field (see image below)
Keywords searched?	*hovercraft* + *catamaran* (note + in this database means *or*)
Number of results found?	105
Notes on how results are presented:	Results are clearly presented in plain English.

Database name:	**SIPO Chinese patent search**
Notes on how you can see more information ?	Only abstracts are available and seem to be based on machine translated text. Click on the Machine Translation link and it will take you to the full text translated copy of the patent document contents including claims. Look for *200710090587.*
Other observations:	The databases has upgraded from a Chinese language platform to a more of international usage platform. Lot of features added in recent times, many more to come, I am sure.


SORT BY: Publication Number ASC Help
PLEASE CHOOSE DATABASE: Invention Utility Model
Last updated: Invention 02/24 2016; Utility Model 02/24 2015;
China patent machine translation system(CPMT) is open!
A.Publication Number
B.Publication Date
C.Application Number
D.Application Date
E.Title
F.Abstract
G.IPC
H.Applicant
I.Inventor
J.Patent Agent
K.Patent Agency Code
L.Priority
M.Province/Country Code
COMBINATION SEARCH: × + - ( )
Search
Clear
SITE MAP | CONTACT US | PRODUCTS&SERVICS | RELATED LINKS
Copyright © 2007 SIPO. All Rights Reserved

2.2 Different types of patent search

Introduction

At first an invention starts with an idea; its details or legal implications have yet to be worked out. It is possible that other inventors have had similar ideas, if not the same idea. Before putting a lot of time and money into your idea, it is sound practice to see what other inventors have done in that area. You might work in an R&D company wishing to improve an invention or adapt it, or you might be required by your employer to do a search for products that solve a certain problem technically. In almost all cases you would benefit from knowing what others have done in the specific area in which you are working before investing your resources and time.

Or your company might need to license in technology that it requires for its products. Here again, you will need to do a patent search to find out if there are any patents for that technology and who are the legal owners of the patents.

Or you might be a patent examiner in a Patent Office required by law to do a search in order to judge whether an invention is new and not obvious (necessary requirements for a patent to be granted).

The above are examples of different reasons for doing a patent search; and in practice each different type of search requires a slightly different approach. In general, searches performed by people who are not familiar with the patent system are unlikely to be as exhaustive as the searches done by patent search professionals or patent examiners, who will have specialist expertise as well as access to fee-based services. That said, different aspects of patent information can be very useful to different users and different sectors, including inventors, researchers, scientists, engineers, attorneys, universities, industry, business and government.

The following types of search are described below:

2.3 State-of-the-art searches – *what solutions are there to my technical problem?*
2.4 Novelty/patentability searches – *can I obtain a patent for my invention?*
2.5 Validity searches –*is this patent valid; can it be legally challenged?*
2.6 Name searches – *what inventions has this individual or this company been involved in?*
2.7 Technology activity searches – *how has this technology developed over time and who has been involved in its development?*
2.8 Freedom to operate searches; legal status searches – *can I produce and/or commercialize this product in that country; has this patent been granted; is it in force?*

Each type of search is accompanied by one or more **search activities** to help you to get familiar with the techniques involved.

Note: Some of these types of searches are further discussed in Module 6, sections 6.7 and 6.8.

Attention student searchers!

There is no substitute for hands-on practice!

To help you carry out the search activities in the following paragraphs, it is suggested that you print out the module so that you can follow the activities at the same time as you are using the internet. And for those new to patent searching, it is recommended that each search activity is carried out least three times, so as to gain familiarity with the characteristics of the databases searched.

Please be aware of the tips given in the search databases themselves.

2.3 State of the art searches

A state-of-the art search is carried out to review the level of development in a particular technical area; it aims to establish what solutions to a particular technical problem are to be found in patent documents.

Research and development
It is sensible to carry out or commission a state-of-the art search before embarking on any research and development programme, or at an appropriate stage during the programme. The object is to avoid wastage of time, effort and money in addressing problems that have already been solved. ***Millions of dollars are wasted every year on research that has already been published in the patent literature****.*

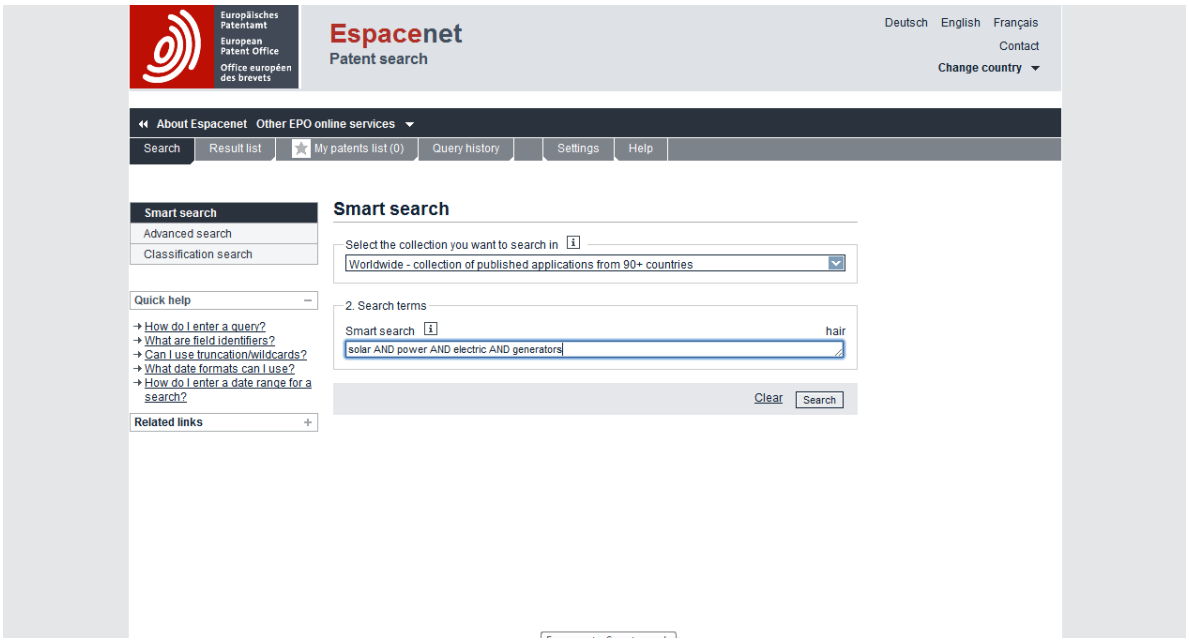
Licensing and acquisition
It is also advisable to carry out a state-of-the-art search when considering licensing in or buying into a specific technology. A search to see what other solutions exist in that technical area – how they have developed over time and whether or not they are still under patent protection – can provide useful information and ammunition when discussing terms and tying up deals.

2.3.1 Search Activity – Electricity generation

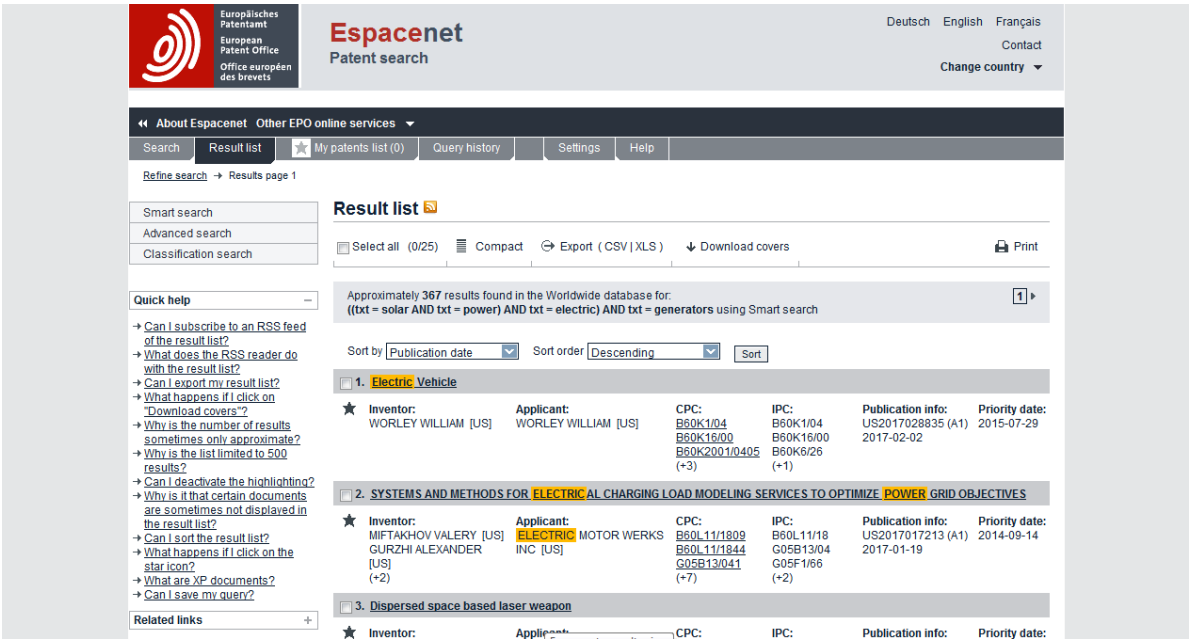
The aim of this activity is to learn how to find a particular invention and similar inventions that could solve a given technical problem using Espacenet, which is one of many free databases. Espacenet is hosted by the European Patent Office and contains over 80 million patent documents.

Assume you are a manager of a branch of a company whose business involves solar and wind powered electric generators. Here you might want to do a State-of-the-Art patent search using the words solar, power, electric and generators and then another search replacing the word 'solar' with 'wind'. If you want to locate the most suitable technology and its availability through licensing or technology transfer, you would benefit from doing this type of search to find relevant patent documents, and then checking whether or not there are patents in force in the territory in which you intend to operate.

Insert the phrase '*solar* AND *power* AND *electric* AND *generators'* into the second box down in Espacenet at *http://worldwide.espacenet.com/quickSearch?locale=en_EP.*



How many patent documents did you find?



You found more than 360 documents.

You may click on any of the patent documents while you are on the site and find out more information. The first page you see when you click on the document shows bibliographic data, which includes an abstract of the invention and details of the inventor(s), classification data etc.

Summary of Search Activity

Having identified these documents using a narrow word search, you may now begin to start looking at the history of inventions in the field of solar energy. Your summary of background history on this project will impress your employer, but more importantly, it will guide you in the right direction of finding the state-of-the-art technology. Are the inventions still under patent protection? If they are not, you can use the idea without infringing the patent. If what you seek is under patent protection, can you find the name of the company to see if you can license the product? During your negotiations for licensing, is there information that would give you leverage?

State of the art searches followed by analysis can provide very detailed overviews of the prior art called Patent Landscape Reports e.g. see
http://www.wipo.int/patentscope/en/programs/patent_landscapes/

2.4 Novelty/patentability searches

When an inventor has developed an invention and is thinking of applying for a patent, it is sensible first of all to carry out a *patentability search.* If the search reveals documents that show that the invention is *not novel* or is so close to what is

known that it may be *obvious (*i.e. *lacks an inventive step*), then proceeding with a patent application is likely to be a waste of time money.

It is essential to prepare carefully for the search to decide exactly what to search for. You will need to think about where the novelty and inventiveness lie in your invention. The idea might be straightforward, so that it is immediately clear where the search should be directed.

Alternatively however, you may be have developed a whole machine – for instance a printer, where inventions may lie in the paper feed mechanism, the toner cartridge, how the toner cartridge is loaded into the printer, the scanner etc. Or the invention may involve combinations of some of these devices. Or the invention may lie in how the printer carries out other functions such as photocopying or faxing; or how it talks to the computer.

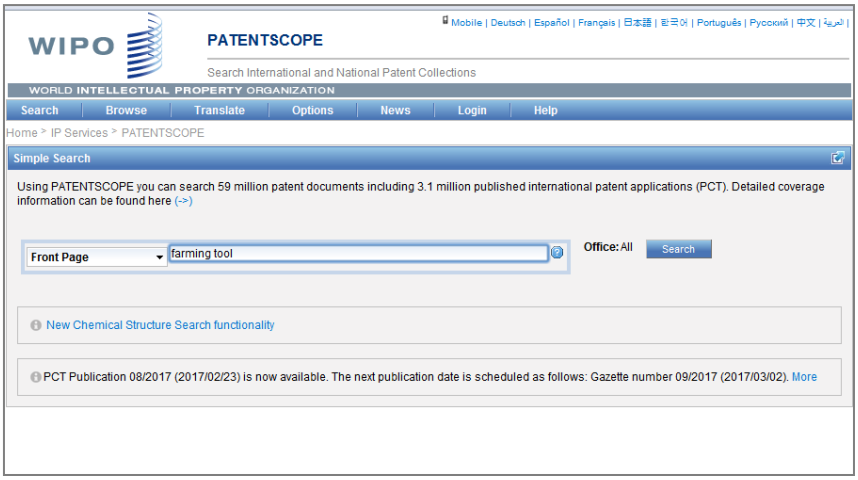
It is quite possible with a complex machine like this, that there will be more than one invention, so you may need to consider carrying out more than one search. On the other hand, if the only improvement made is to the paper feed mechanism for instance, what to look for is clear.

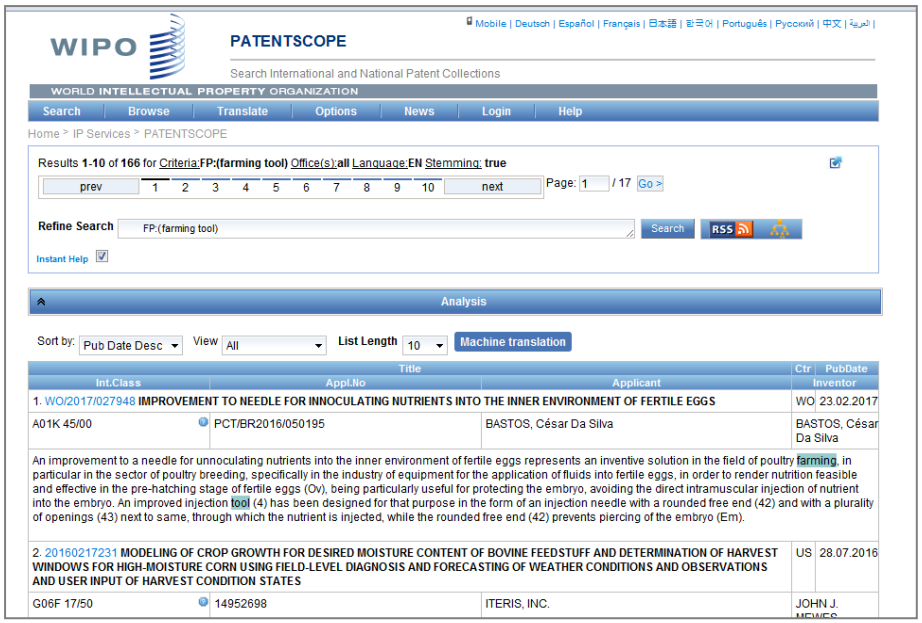
You will need to think about what the essential features of the invention are, and which features are optional, and if you are doing the search on behalf of someone else, you will need to discuss these questions with them. It is also necessary to think about whether the invention is in fact limited to the field of printers or whether it could be used in other fields. For instance the paper feed mechanism might be used in other applications. All this will affect the search to be made.

2.4.1 Search Activity - Plough

Let us assume that you have created a farming tool that helps you cultivate both hard and soft soil. You engineered this tool through many years of knowledge that was passed down from your forefathers. With your engineering background, you would like to produce the tool on a uniform basis and perhaps even on a commercial scale because you know that there is a demand for improved methods of farming in your country. You can at this stage go to any patent database and put in the words ‘farming tool’. However, you might realize that ‘farming tool’ applies to everything used during farming and not just ploughs. So the word farming might be too general. But since it is your first time searching patent information, let us still search under ‘farming tools’.

Please search for *farming tool* in the WIPO site Patentscope® at:
http://www.wipo.int/patentscope/search/en/search.jsf

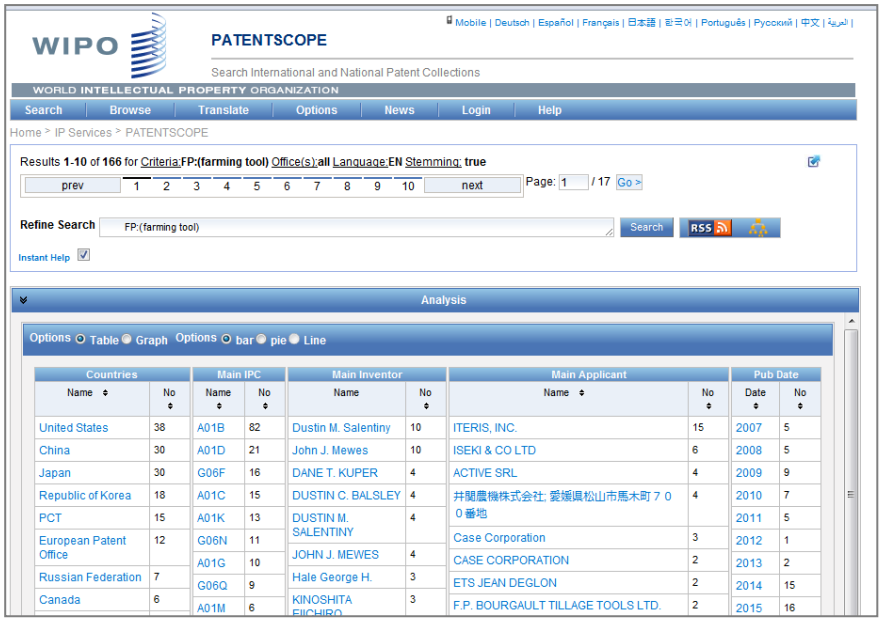




Note: The expression *farming tool* could be interpreted by the search engine as *farming* OR *tool* or as *farming* AND *tool*. Patentscope interprets the expression as *farming* AND *tool* and gives 166 results. This is quite a low number of documents to consider when trying to find out if your invention is new.

Try searching for *farming* OR *tool*. How many hits did you get this time?

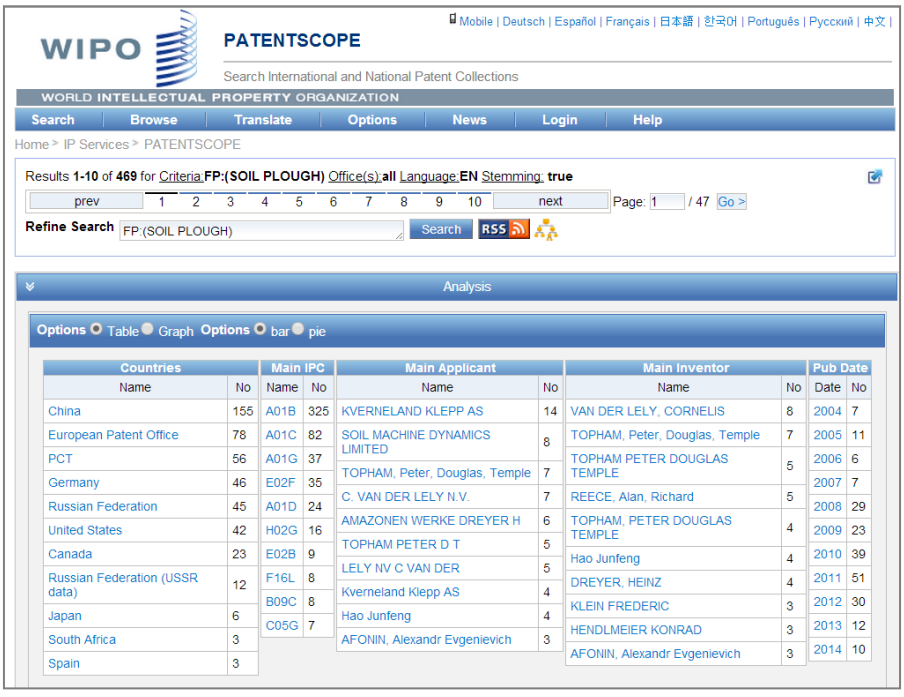
Also try clicking on the blue bar labeled '*Analysis*' about half way down the screen. This gives a breakdown of the documents you found.



Once you have the results, you can click on the number of any of the patent documents found and then select ‘Bibliographic data, description, claims, drawings etc. to examine the documents in more detail.

Looking at the documents you will see that many of them are not relevant to what you are looking for; the word *farming* is far to general. What is another term that would describe better your invention? Is it best to use the word *plough* itself?

Well this gives over 11000 hits. Since the word *plough* covers *snow ploughs* and other ploughs that are not used for soil, let us try *soil plough*.



This gives a more manageable number of about 1000 hits.

However we do need to consider whether there are any alternative spellings of *plough* that we haven't searched for e.g. *plow*. Try searching for *soil plow* and see how many results you get.

What we would then need to do is to narrow the search by putting in words that describe the particular plough we have developed.

Summary of Search Activity

Most of the documents include drawings of the invention. Looking at these is a good way for you to see if a document is relevant to your invention. Bibliographic information summarizes much information about the patent application

Word searches are, by definition broad, since similar words and terminology are used to identify different kinds of objects in everyday life. As you become familiar with patent databases you will note that the patent system uses an International Patent Classification System (IPC) that is used worldwide and is a very effective search tool (as we will examine in Module 3). The search in Search Activity 2.4.1 is a good start for soil ploughs. It has given you a selection of patent numbers and more importantly an idea of other kinds of searches you need to do. It also allows you to compare your invention with the soil ploughs in the documents you found.

This is not an exhaustive patent search however. It is intended to guide you on how to begin to think when you are looking to see whether your invention might be new. It should be noted that the Patentscope database that we looked at is not the only one available. In fact, patent searchers are encouraged to use various databases during any patent search. It is worthwhile testing the behavior of the system with simple word searches before going ahead with proper search. This helps to get a flavour of what you are likely to find, and give a better understanding of how to prepare your patent search strategy. Different databases are used in the search activities that follow.

2.4.2 Search Activity – Power tools

Your company is in the business of manufacturing power tools e.g. drills. One of the engineers has come up with the idea of incorporating a level into the tool (sometimes called a spirit level or bubble level) to make it easier for the user to align the tool accurately. She wishes to know if her idea is patentable.

If this were a state-of-the-art search, then we would carry out a wide-sweeping search for all sorts of power tools incorporating levels, and use all the different terms for levels. But in a novelty/patentability search we can start with a narrow search for the particular product. If we find that then we have done enough to show that the idea is not patentable.

Search in Patentscope for *drill spirit level*. The search engine looks for these words in combination and comes up with some good results, for instance a German document DE202004012187, the abstract of which reads:

> *'A hand-held electric drill has an outer case in which a spirit level is incorporated. The spirit level is incorporated at a T-shaped location on the side of and within the housing.'*

We have shown that this idea is not new, and so do not have to think about whether or not it is obvious. However, the engineer may have developed a particular way of integrating the level into the drill. That idea might be new and patentable, so we should go on and search for that.

How might the question of obviousness arise?

Well, say our search revealed no patent documents describing a power drill incorporating a level, but we did find a document describing a manual drill incorporating a level. The invention would be new, but the Patent Office is likely to argue that the idea is obvious – since given a manual drill incorporating a level, it would not require inventive ingenuity to apply the idea to a power drill.

You might like to carry out the above search in Espacenet and see what results you get.

2.5 Validity searches – *is this patent valid; can it be legally challenged?*

Patent owners have the right to prevent anyone making, using, offering to sell, selling or importing their inventions without consent by suing – or threatening to sue - for *infringement* in court. The response may be to give up and stop doing the infringing act, or to try and negotiate a licence agreement with the patent owner, or – and this is what we are concerned with here – *to challenge the validity of the patent*.

A first step in the process is to check the *legal status* of the patent. For instance is the patent in force in the country in question, or has it ceased, or has it been revoked? If there is no relevant patent in force, then we need go no further. This approach is covered in 2.8 below.

If there is a relevant patent in force, then we need to check whether the invention is new and not obvious. In a validity search we are not dealing with a *proposed* invention, we are dealing with an actual patent which we would like to show is not valid. A validity search is similar to a novelty/patentability search, but instead of having to think about what to search for, we can find out exactly what to search for by referring to the *claims* of the patent that is threatening us. If we can find documents that show that the claimed invention does not appear to be new or at least appears to be obvious, then we may get the threatened court action withdrawn or get much better terms for a licence.

There are other reasons to test validity – for instance when negotiating a patent licensing agreement or when taking over a company which holds patents as part of its asset base. In both cases, the validity or enforceability - and hence the strength and value of the patents – can be assessed.

2.5.1 Search Activity - Bicycle

Suppose you are working for a bicycle manufacturer and you are intending to export bicycles for the first time to a particular country. You have carried out a freedom to operate search (see 2.8 below) and found a patent in force in that country that you think you are at risk of infringing.

Claim 1 of the patent reads:
A bicycle frame made of a magnesium alloy.

Details of the composition of various magnesium alloys that could be used are to be found in the description of the patent.

The first step is to carry out a search to see whether the invention set out in claim1 is new and not obvious. Any published document will do wherever it was published,

since although the patent is only effective in one country, it has to be new and not obvious having regard to anything published anywhere in the world.

Searching '*magnesium bicycle frame'* in Patentscope comes up with some good results, for instance a Chinese document CN103643095, the abstract of which reads:

The invention relates to magnesium alloy for a bicycle frame and a preparation method thereof. The magnesium alloy comprises the following elements in percentage by weight: 3 to 4 percent of Cu, 0.3 to 0.8 percent of Mn, 0.3 to 0.7 percent of Nd, less than 0.01 percent of Si, less than 0.01 percent of Fe, less than 0.001 percent of Ni, and the balance of Mg. The preparation method comprises the following steps of heating raw materials to 730 to 750 DEG C till the raw materials are molten, stirring by utilizing a stirrer, sampling and analyzing the samples; standing after the samples are qualified; casting; extruding; and thermally treating. The magnesium alloy maintains a majority of advantages of Mg-Mn alloy, the tensile strength and the yield strength are improved, the tensile strength is at least increased by one third compared with the tensile strength of the ordinary magnesium alloy, and the yield strength is at least increased by 50 percent; the fatigue resisting strength exceeds 150Mpa, the creep resistance is obviously enhanced; the magnesium alloy provided by the invention is easy to weld and is free of the weld seam crack tendency, has a compact metallic organization structure and is free from the segregation caused by the gathering of the manganese ions.

So we have shown that the invention as set out in claim 1 is not new, and do not have to think about whether or not it is obvious. However, the owner of the patent could amend claim1 to specify the particular alloy used, so we could go on and search for the alloys described in the patent.

You might like to carry out the above search in Espacenet and see what results you get. Also try using the element symbol Mg instead of just Magnesium (Hint: search: (*magnesium* OR *Mg*) AND *bicycle* AND *frame* - and be sure to include the brackets around *magnesium* OR *Mg*

2.6 Name searches – *what inventions has this individual or this company been involved in?*

Name searches are used to find information about patent documents involving specific companies or individuals, as applicants, assignees, patentees or inventors.

This may be to find out how a particular invention works when all you know is the name of the inventor. However, there are other reasons to carry out name searches– for instance to find out which fields of technology your competitors are working in. You can also find out in which countries they are applying for patents and are therefore likely to be marketing their new products. Equally you can find out in which countries they are not applying for patents and where the invention is free to use.

2.6.1 Search Activity - Wind-up radio

In 1991, British inventor Trevor Baylis saw the benefits of developing a wind-up radio for third world countries. His main purpose was to help combat the spread of AIDS by providing information through radio to areas where no electricity was available. The wind-up electric power idea was first commercialized in 1996 when Freeplay released its wind-up radio.

Baylis created a prototype of his invention. His wind-up radio worked with a coiled spring which in return powered a generator through a series of gears that played 14 minutes after being wound for 30 seconds. This technology has been adapted by others and the latest models incorporate rechargeable batteries which allow the radio to be charged at any time - not only when it is in use. The Freeplay Energy range also includes combination torch/radios, a short wave radio version and systems that incorporate solar power, batteries, or AC/DC adaptors as well as wind-up energy. The latest radios deliver around 50 minutes of operating time when fully wound, which takes 60 turns.

Freeplay Energy has sold over three million units since its beginnings, and over 150,000 of these have gone to countries in the developing world - most of these through the assistance of government and aid agencies - and although the units are still relatively expensive there is a continuing push to make this technology count where it's needed most.

Sony and Philips have entered the wind-up radio market and Motorola have teamed up with Freeplay to develop a wind-up mobile phone charger that offers 5 minutes of talk time for 45 seconds of winding. The product is designed to work with all Motorola phones.

All of this is just the tip of the iceberg for wind-up energy - mobile phones, laptops and scores of other devices become far more energy efficient as well as critical to our daily lives. Products based on the Motorola Freecharge concept are already beginning to emerge from elsewhere and British company Atkin Design and Development has produced a next generation 'wind-up battery' that uses a super capacitor instead of a rechargeable lithium battery. When this innovation was adapted to the wind-up radio, Atkin Design in conjunction with Sony produced a unit that plays for 90 minutes after one minute of winding.

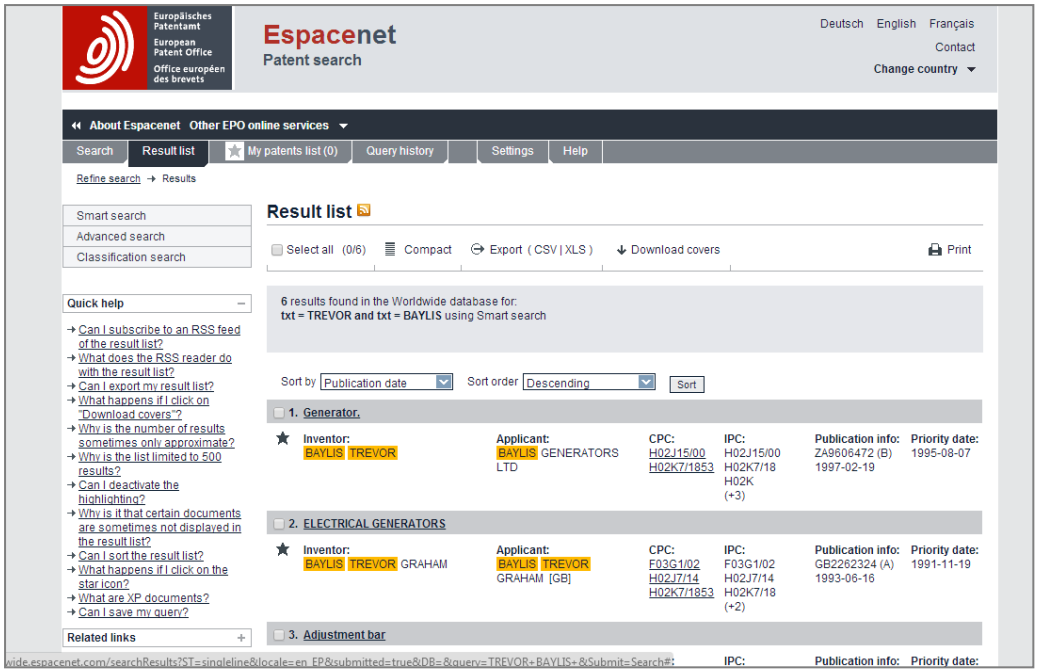
The above news is taken from *http://www.gizmag.co.uk/go/1263/*

You read the above article on wind-up technology which you had already heard about vaguely. You have been seeking a technology that is suitable for your country which does not have the appropriate infrastructure to make electricity available to the majority of its population. You want to know more about this technology in order to use it in your country for health information and education dissemination by radio.

You know that one inventor in the field is Trevor Baylis. How can you get more information using this as a starting point?

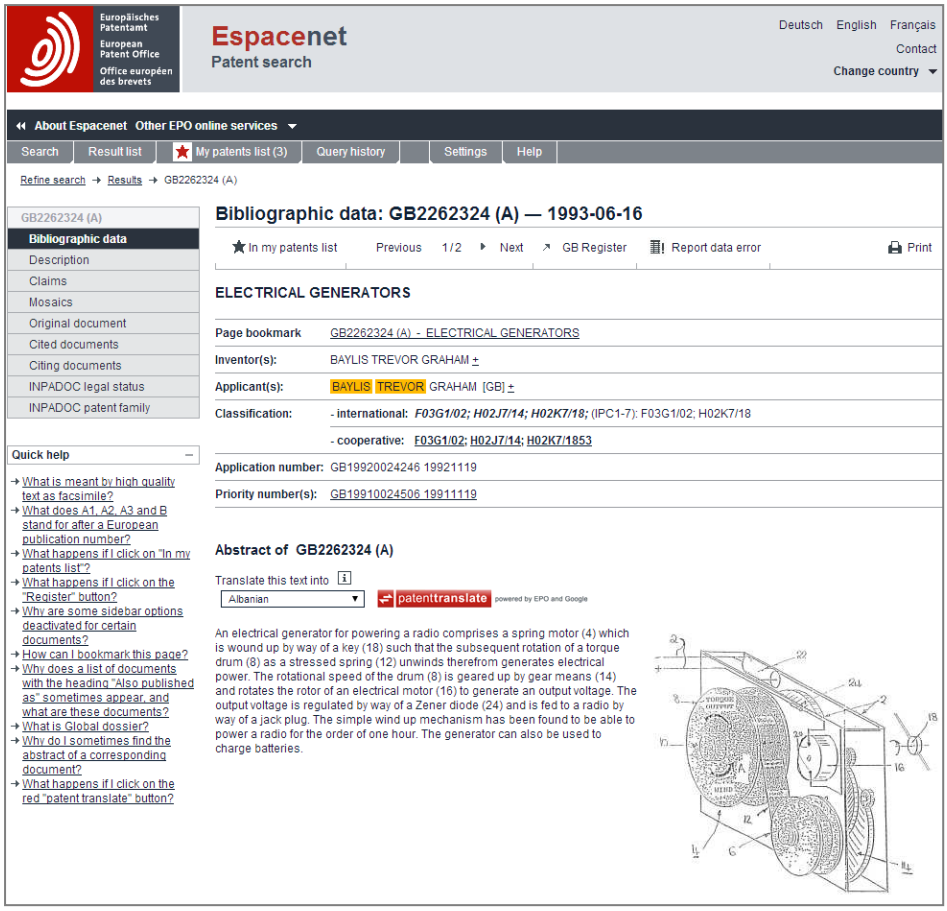
Using Espacenet, locate inventions by Trevor Baylis. According to the article you read you may also want to locate the patents of Freeplay Energy since this was the company which commercialized the product first for wind-up clocks or radios and wind-up torches.

Firstly, input *TREVOR BAYLIS* (You could have typed *Trevor BAYLIS* or *Trevor baylis* or *trevor baylis* because the search engine is not case sensitive).



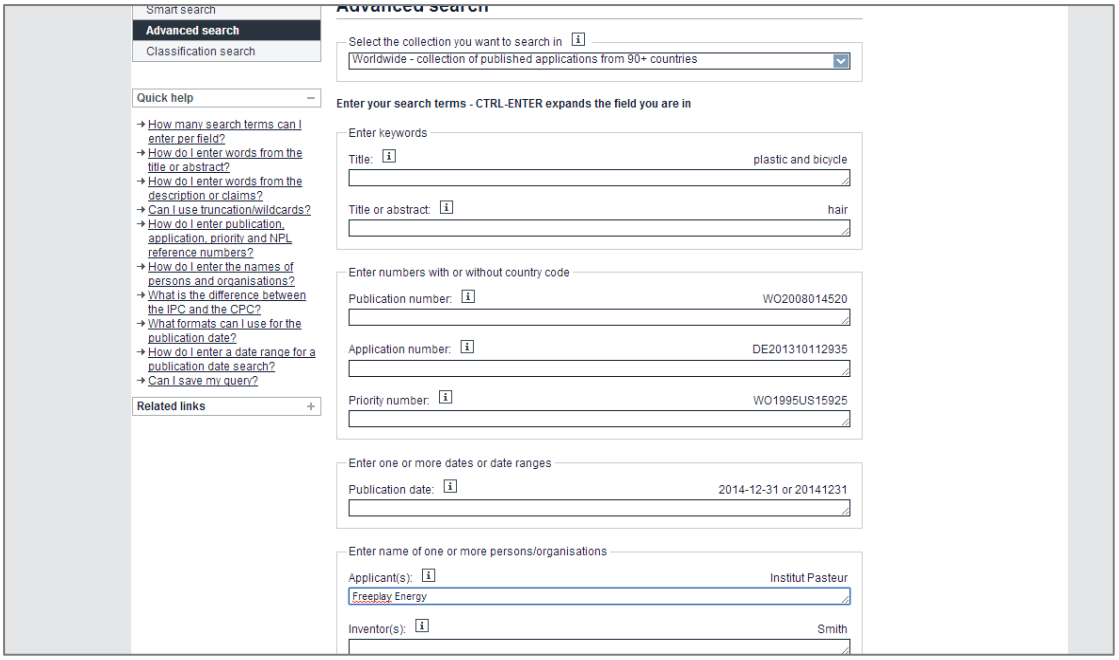
Six patent documents were found and the one under ‘Electrical Generators’ is close to the product that is being searched

To find out more about the invention such as how it works, what problems it solves etc., click the title ‘ELECTRICAL GENERATORS’.

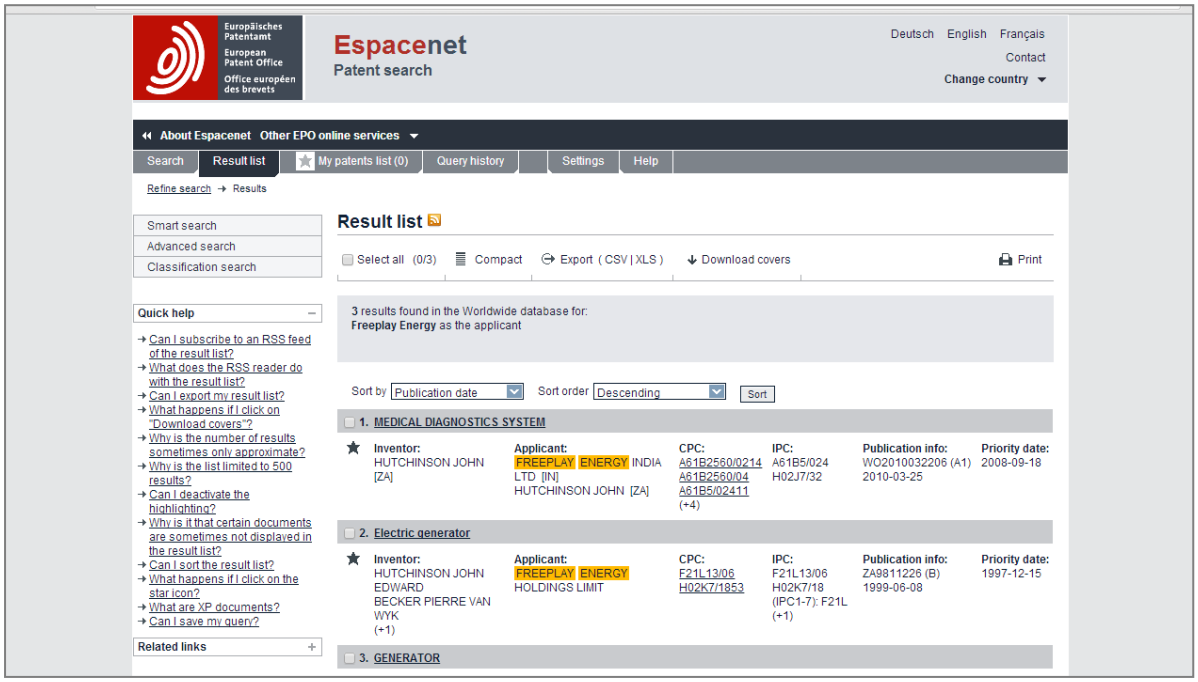


Note This search worked ok, but if we had needed to be more precise, we could have selected the *'Advanced search'* screen, which would have given us the option of searching the name 'Trevor Baylis' specifically as inventor.

Let us next locate the patent applications filed by *Freeplay Energy* by inserting that name in the *applicant field* under the '*Advanced search*' screen. This was the name of the company, according to the article you read, that first adapted the wind-up technology which incorporates rechargeable batteries.

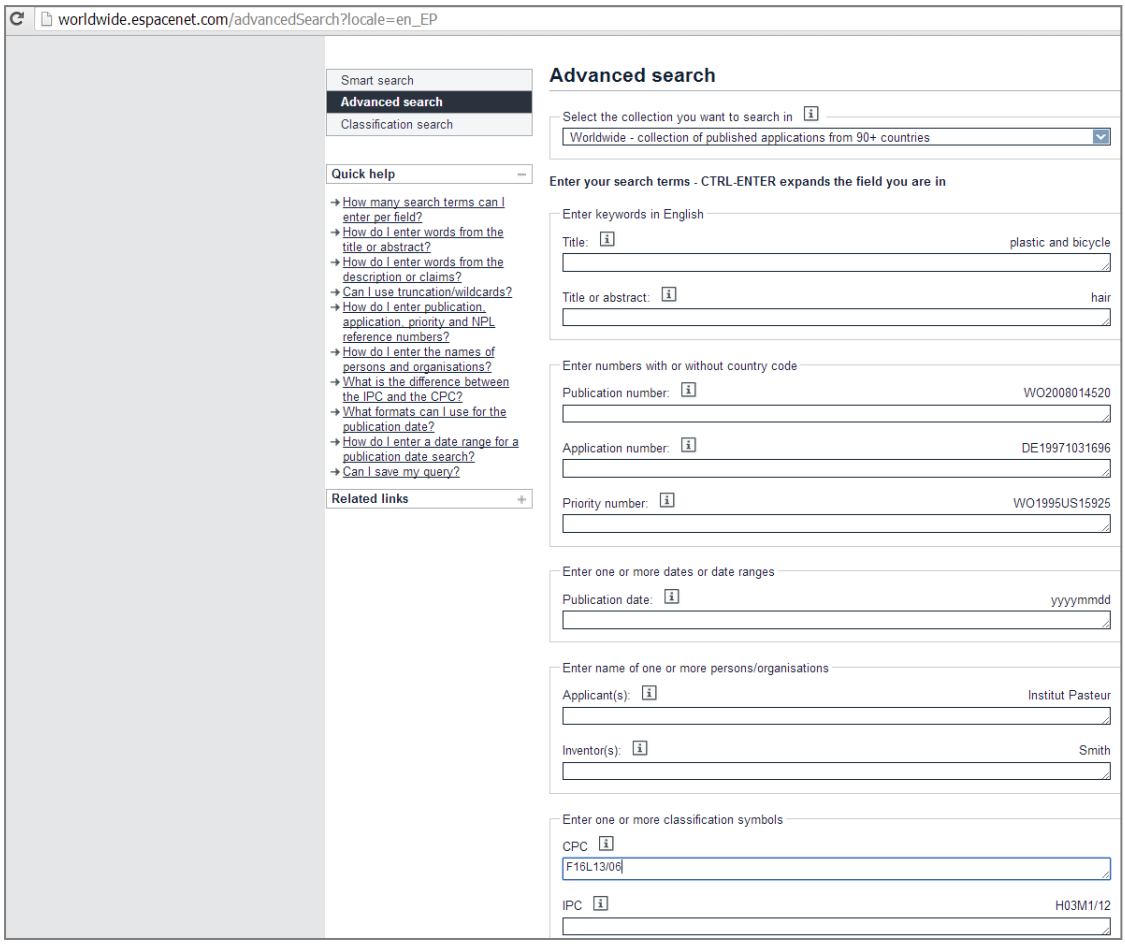


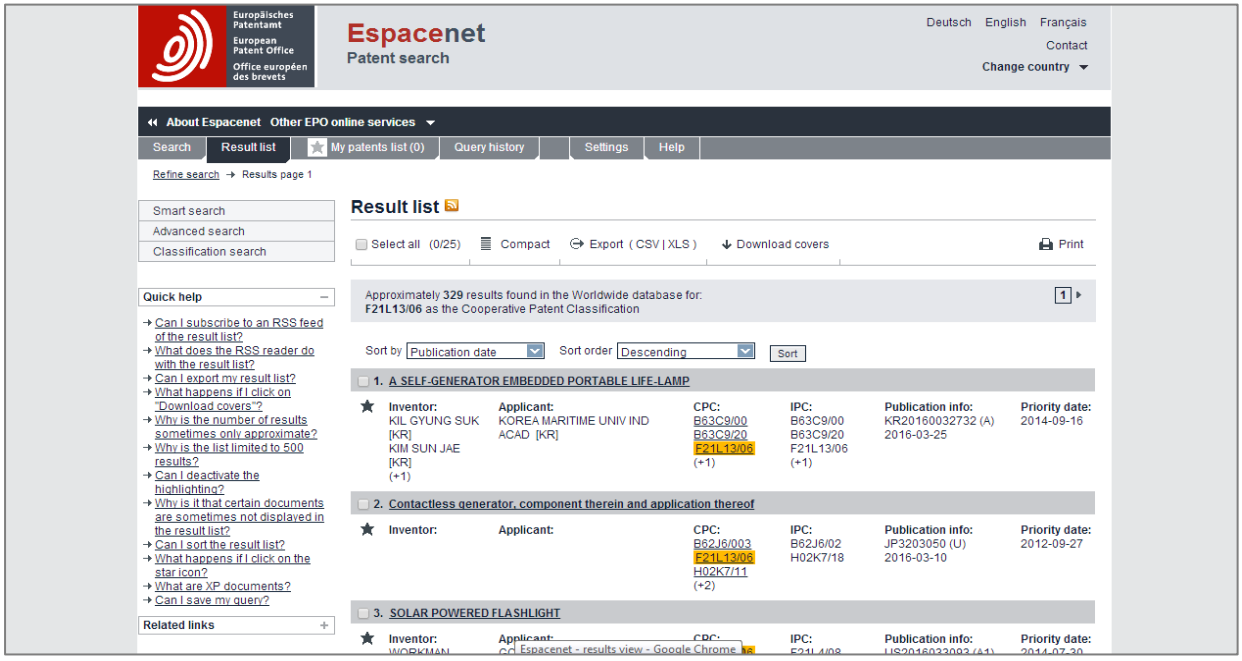
Three patent documents appear on the result list. If you read the abstracts, you will find that the second one relates to a wind-up torch. Once again, you have struck! You found the invention that was mentioned in the article.



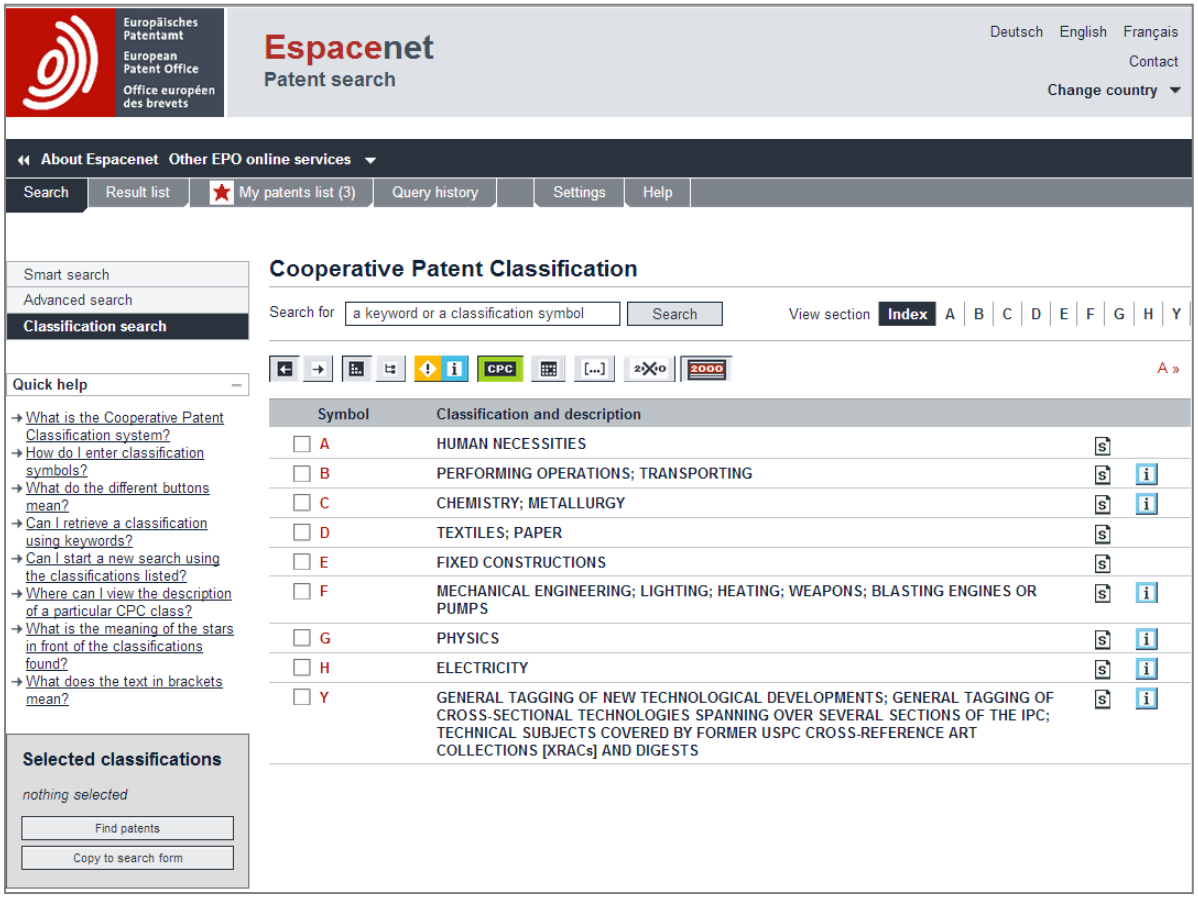
For now you have achieved the goal of this Search Activity. However, if your appetite for more information on wind-up technology has been raised, carry out a new search using any of the IPC (International Patent Classification) or CPC (Cooperative Patent Classification) symbols shown. For those interested in seeing how the IPC or CPC symbols are used, proceed with the rest of the exercise.

You can copy and paste these symbols into your Advanced Search screen. For instance using CPC symbol F21L13/06 as shown below:





And here is the contents page of the CPC:



Summary of Search Activity 2.6.1

Searching using names in the applicant and inventor fields on Espacenet is very straightforward. It enables you to find a named person's inventions in all technical fields; and gives you the possibility of extending the search by using classification symbols. However, because of name variations, typographical errors etc., it is possible that you might miss some relevant documents. Techniques which allow you to overcome these problems will be covered in Module 3.

2.6.2 Search Activity - Earphones

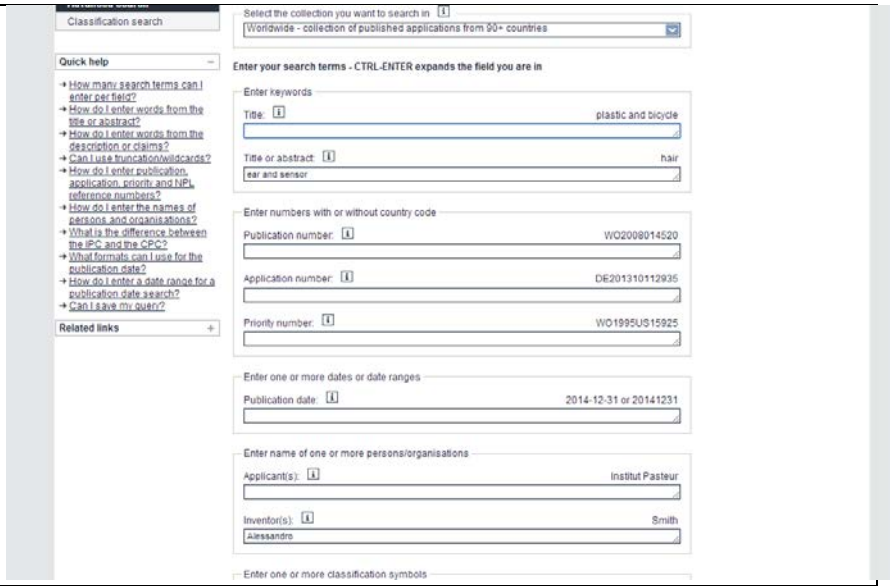
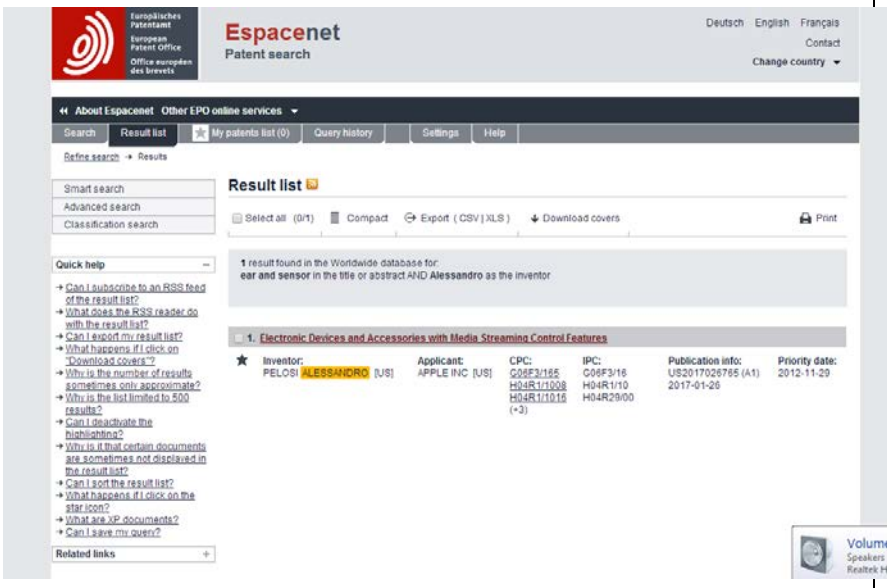
A listener who is using earphones to listen to streamed music provided by an online service may occasionally need to remove them. Unless the user manually stops playing the music, he or she will miss some; and there will also be wastage of the electronic device's battery life and of cellular data usage, of which the user may only be allotted a certain amount per month.

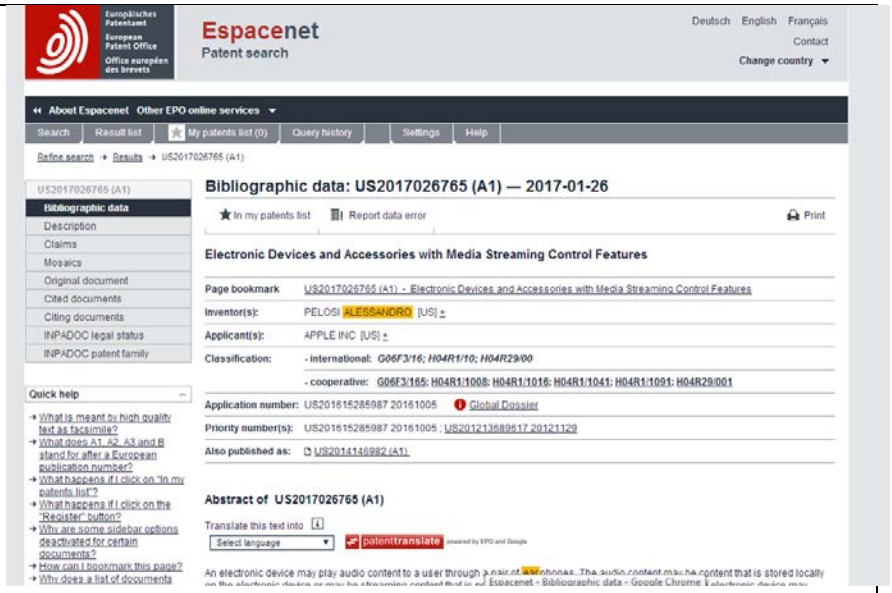
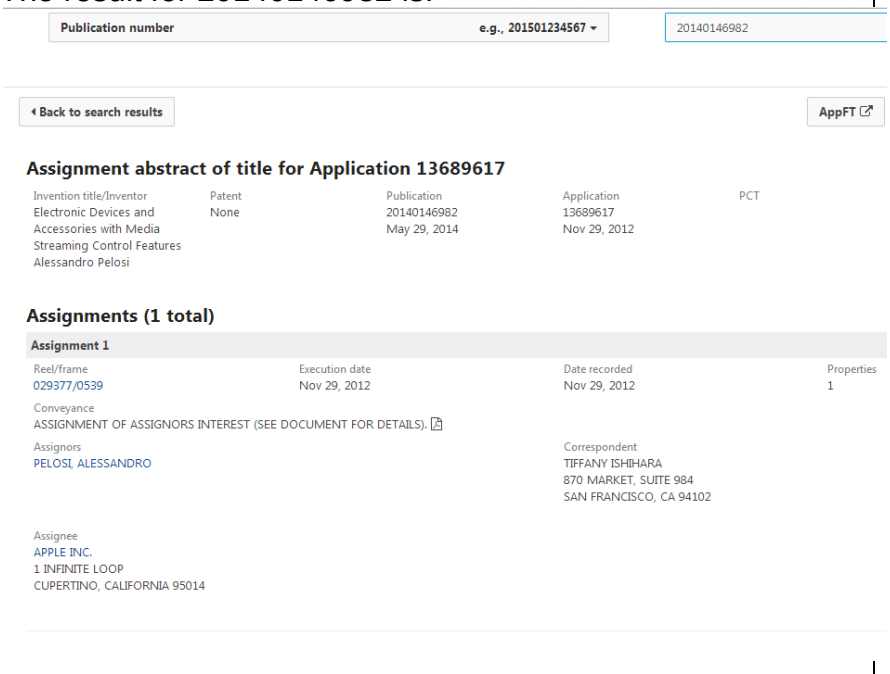
In order to solve this problem, an inventor called Alessandro produced a pair of earphones having ear presence sensors. In response to determining that the earphones have been removed from the ears, a control circuit pauses the music.

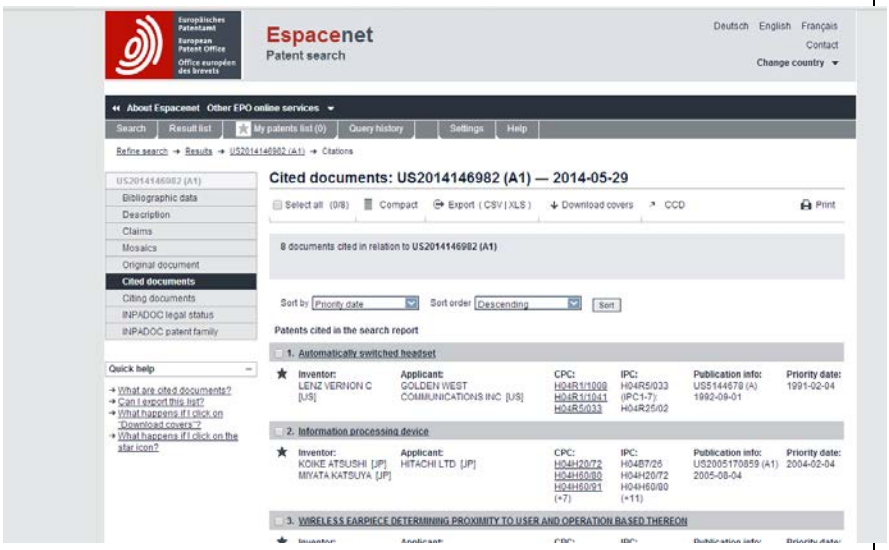
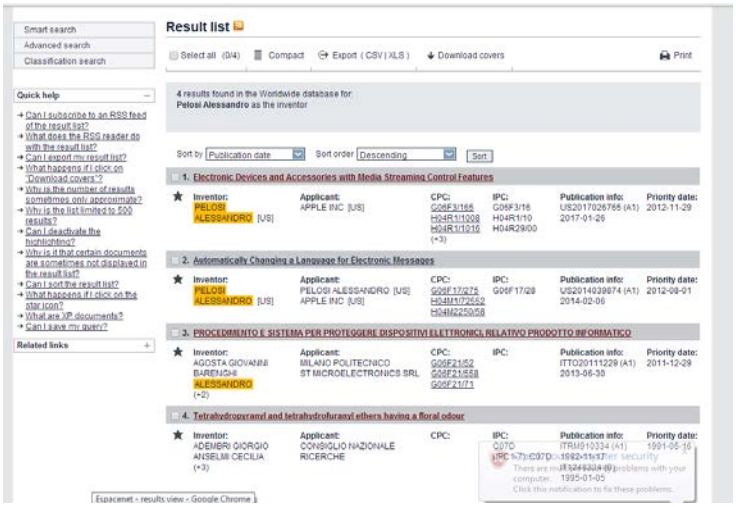
The inventor filed a patent application for this idea:

a) Can you find the patent application that he filed? What is the full name of the inventor?
b) Who is the owner of the patent application?
c) How were the rights transferred to the owner? Find details of the transfer agreement by accessing the assignments site of the USPTO at
d) https://assignment.uspto.gov/patent/index.html#/patent/search
e) List the documents cited against the patent application in the Patent Office search report
f) Can you find any other patent application(s) from Alessandro?
g) Find the abstract(s) of any other such application(s)?

Step	Description of step	Model answer
1	Choose a search database	Advanced search page of Espacenet
2	Select keywords	**Enter your search terms - CTRL-ENTER expands the field you are in** Enter keywords in English Title: plastic and bicycle Title or abstract: Earphone hair Enter numbers with or without country code Publication number: WO2008014520 Application number: DE19971031696 Priority number: WO1995US15925 Enter one or more dates or date ranges Publication date: yyyymmdd Enter name of one or more persons/organisations Applicant(s): Institut Pasteur Inventor(s): Alessandro Smith Enter one or more classification symbols CPC IPC H03M1/12
3	Review the results	0 results found for *Earphone* in the title or abstract AND *Alessandro* as the inventor

4	Modify the keywords by searching '*ear and sensor*' as well as *'Alessandro'*	
5	Review the results	One result found: 

		 Published as US2017026765 and US20140146982
6	Find the full name of the inventor and owner of the patent	
7	Find the transfer agreement on the USPTO site: *https://assignment.uspto.gov/patent/index.html#/patent/search*	Enter the publication number and find an agreement assigning rights from Alessandro to Apple Inc. The result for 20140146982 is: 

8	List the documents cited against Alessandro's application	Find US20140146982 on Espacenet and click on the "*Cited documents*" tab.  There are eight documents listed
9	Perform an inventor name search for *Pelosi Alessandro* in the Advanced Search page of Espacenet	There are four results, but clicking on the titles shows that only the first two are by *Pelosi Alessandro.* The other two have the names *Pelosi* and *Alessandro* shared between different inventors. 
11	Find the abstract of the second document	*Automatic language switching may use information obtained from a received message to select a proper language for creating an electronic message automatically, based on at least one of language information associated with the user, language information associated with the recipients, and language information extracted from a previously received message. A user may override the automatically selected language if desired. Information about what languages are*

		known by the user may be inferred based on the language information extracted from a received message. Adaptive techniques may be used to limit or control which languages may be selected or offered for selection, based on previous user interactions.

2.6.3 Search Activity - Sweetener

“LONDON (AFX) - Renewed concerns over the security of the patents protecting Tate & Lyle PLC’s lucrative artificial sweetener Sucralose saw the British food producer’s shares reversing earlier gains today.

The slide came after the FoodNavigator website reported Bangalore, India-based drug-maker Pharmed Medicare had expressed confidence it had developed an alternative means of producing the sweetener using a process that would not infringe Tate’s patents. ‘This is the most serious threat to Sucralose yet seen. I don’t think it’s a death knell, but there’s no doubt this is a serious threat,’ said Investec analyst David Laing.

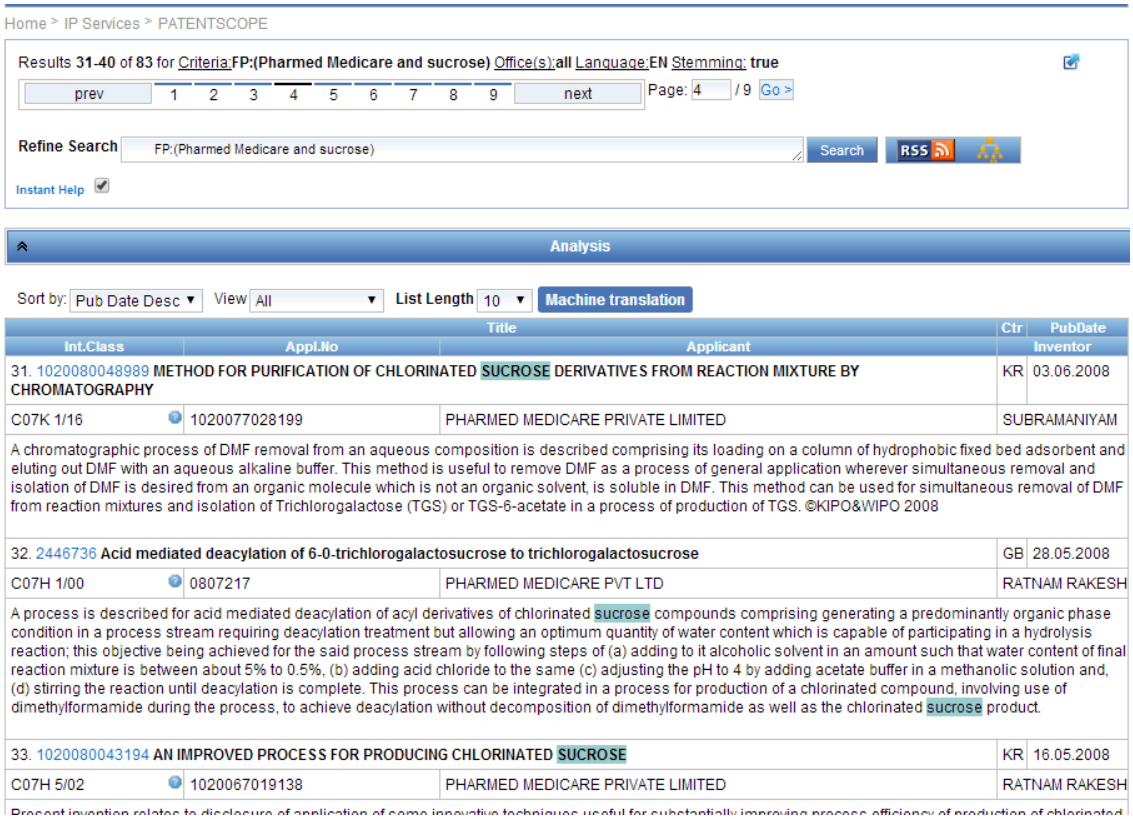
A spokeswoman for the British company insisted the 32 patents protecting the product offered adequate protection.

Pharmed Medicare president Sundeep Aurora, who said the company had taken legal advice in the United States, Asia and Europe, appeared to admit as much.
He reportedly said the company had yet to develop a means of producing the sweetener on an economically viable scale. “

Find whether Pharmed Medicare has applied for a patent for their new process by searching for the company name on Patentscope.

This search gives over 120 hits. We can further refine it by including the word *sucrose*.

This brings the number down to 83. And a chemist from Tate & Lyle identifies the patent document we're looking for as number 31 on the list below.



Home > IP Services > PATENTSCOPE

Results **31-40** of **83** for Criteria:**FP:(Pharmed Medicare and sucrose)** Office(s):**all** Language:**EN** Stemming: **true**

prev 1 2 3 4 5 6 7 8 9 next Page: 4 / 9 Go >

Refine Search FP:(Pharmed Medicare and sucrose) Search RSS

Instant Help

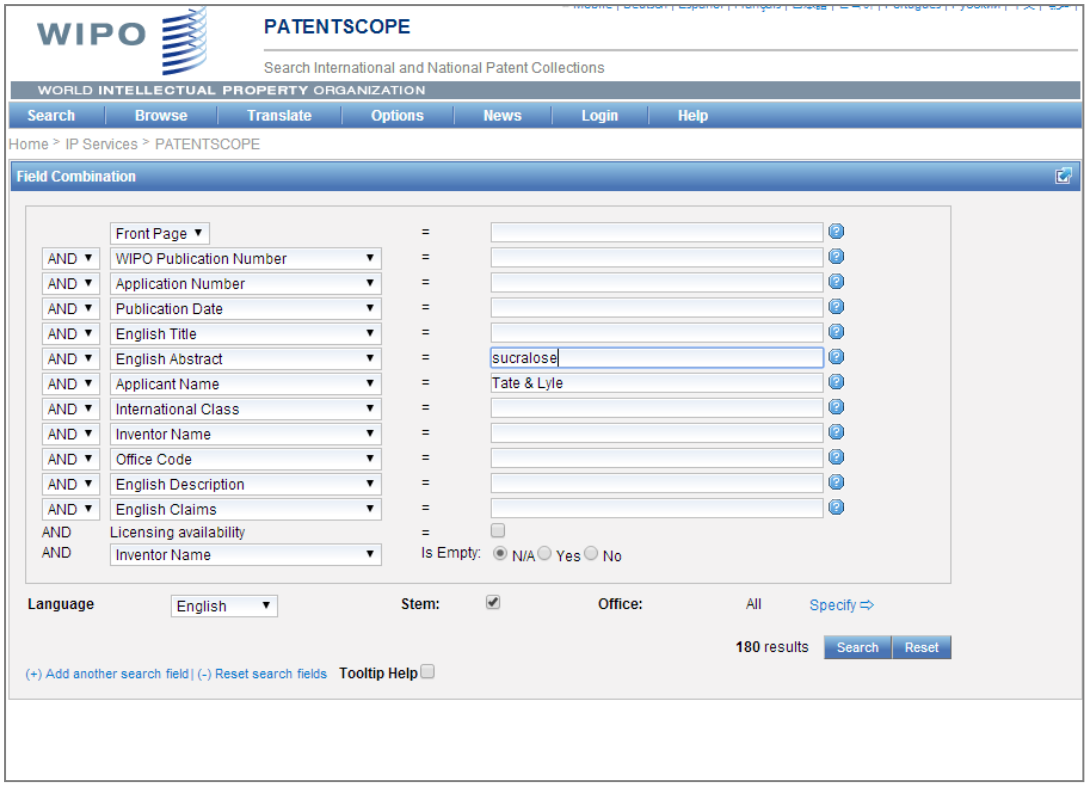
Analysis

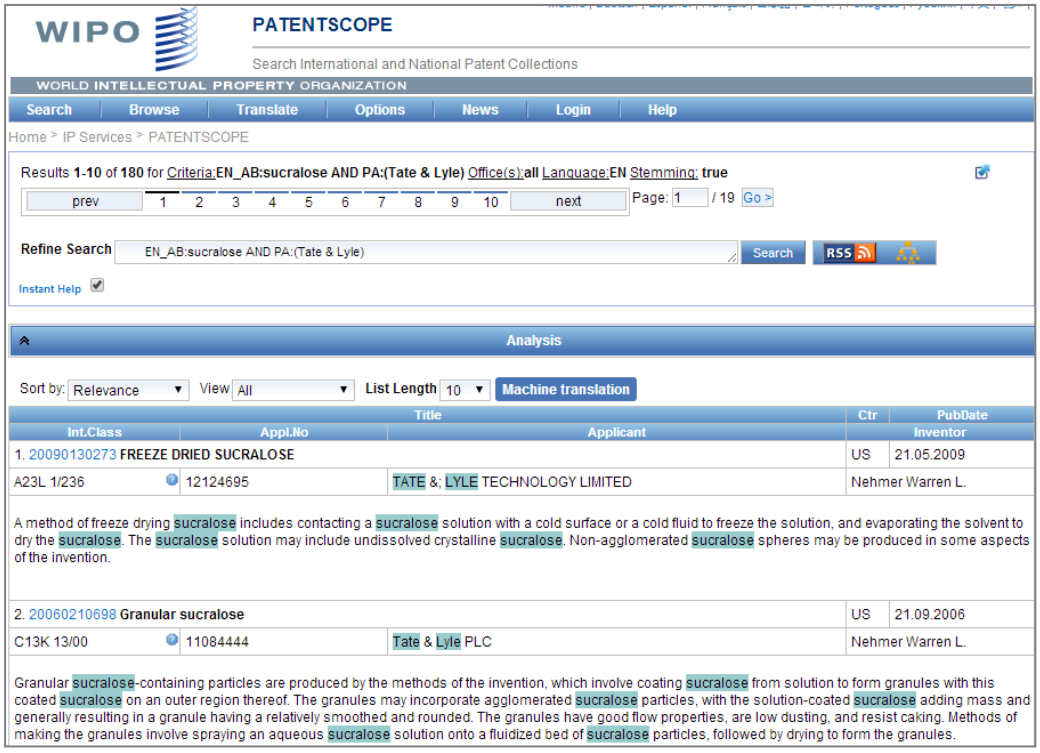
Sort by: Pub Date Desc View All List Length 10 Machine translation

Int.Class	Appl.No	Applicant	Title / Inventor	Ctr	PubDate
31. 1020080048989 **METHOD FOR PURIFICATION OF CHLORINATED SUCROSE DERIVATIVES FROM REACTION MIXTURE BY CHROMATOGRAPHY**				KR	03.06.2008
C07K 1/16	1020077028199	PHARMED MEDICARE PRIVATE LIMITED	SUBRAMANIYAM		
A chromatographic process of DMF removal from an aqueous composition is described comprising its loading on a column of hydrophobic fixed bed adsorbent and eluting out DMF with an aqueous alkaline buffer. This method is useful to remove DMF as a process of general application wherever simultaneous removal and isolation of DMF is desired from an organic molecule which is not an organic solvent, is soluble in DMF. This method can be used for simultaneous removal of DMF from reaction mixtures and isolation of Trichlorogalactose (TGS) or TGS-6-acetate in a process of production of TGS. ©KIPO&WIPO 2008					
32. 2446736 **Acid mediated deacylation of 6-0-trichlorogalactosucrose to trichlorogalactosucrose**				GB	28.05.2008
C07H 1/00	0807217	PHARMED MEDICARE PVT LTD	RATNAM RAKESH		
A process is described for acid mediated deacylation of acyl derivatives of chlorinated sucrose compounds comprising generating a predominantly organic phase condition in a process stream requiring deacylation treatment but allowing an optimum quantity of water content which is capable of participating in a hydrolysis reaction; this objective being achieved for the said process stream by following steps of (a) adding to it alcoholic solvent in an amount such that water content of final reaction mixture is between about 5% to 0.5%, (b) adding acid chloride to the same (c) adjusting the pH to 4 by adding acetate buffer in a methanolic solution and, (d) stirring the reaction until deacylation is complete. This process can be integrated in a process for production of a chlorinated compound, involving use of dimethylformamide during the process, to achieve deacylation without decomposition of dimethylformamide as well as the chlorinated sucrose product.					
33. 1020080043194 **AN IMPROVED PROCESS FOR PRODUCING CHLORINATED SUCROSE**				KR	16.05.2008
C07H 5/02	1020067019138	PHARMED MEDICARE PRIVATE LIMITED	RATNAM RAKESH		
Present invention relates to disclosure of application of some innovative techniques useful for substantially improving process efficiency of production of chlorinated					

Find Tate & Lyle's patents using the same search engine.

If you search for *sucralose* AND *'Tate & Lyle'* as shown below, you will find that the two companies are involved in similar research.


WIPO
PATENTSCOPE
Search International and National Patent Collections
WORLD INTELLECTUAL PROPERTY ORGANIZATION
Search
Browse
Translate
Options
News
Login
Help
Home > IP Services > PATENTSCOPE
Field Combination
Front Page
WIPO Publication Number
Application Number
Publication Date
English Title
English Abstract
sucralose
Applicant Name
Tate & Lyle
International Class
Inventor Name
Office Code
English Description
English Claims
Licensing availability
Inventor Name
Is Empty: N/A Yes No
Language
English
Stem:
Office:
All
Specify
180 results
Search
Reset
(+) Add another search field | (-) Reset search fields
Tooltip Help


WIPO
PATENTSCOPE
Search International and National Patent Collections
WORLD INTELLECTUAL PROPERTY ORGANIZATION
Search
Browse
Translate
Options
News
Login
Help
Home > IP Services > PATENTSCOPE
Results 1-10 of 180 for Criteria:EN_AB:sucralose AND PA:(Tate & Lyle) Office(s):all Language:EN Stemming: true
prev 1 2 3 4 5 6 7 8 9 10 next
Page: 1 / 19 Go >
Refine Search
EN_AB:sucralose AND PA:(Tate & Lyle)
Search
RSS
Instant Help
Analysis
Sort by: Relevance
View All
List Length 10
Machine translation
Title
Ctr
PubDate
Int.Class
Appl.No
Applicant
Inventor
1. 20090130273 FREEZE DRIED SUCRALOSE
US
21.05.2009
A23L 1/236
12124695
TATE &; LYLE TECHNOLOGY LIMITED
Nehmer Warren L.
A method of freeze drying sucralose includes contacting a sucralose solution with a cold surface or a cold fluid to freeze the solution, and evaporating the solvent to dry the sucralose. The sucralose solution may include undissolved crystalline sucralose. Non-agglomerated sucralose spheres may be produced in some aspects of the invention.
2. 20060210698 Granular sucralose
US
21.09.2006
C13K 13/00
11084444
Tate & Lyle PLC
Nehmer Warren L.
Granular sucralose-containing particles are produced by the methods of the invention, which involve coating sucralose from solution to form granules with this coated sucralose on an outer region thereof. The granules may incorporate agglomerated sucralose particles, with the solution-coated sucralose adding mass and generally resulting in a granule having a relatively smoothed and rounded. The granules have good flow properties, are low dusting, and resist caking. Methods of making the granules involve spraying an aqueous sucralose solution onto a fluidized bed of sucralose particles, followed by drying to form the granules.

2.7 Technology activity searches – *how has this technology developed over time and who has been involved in its development?*

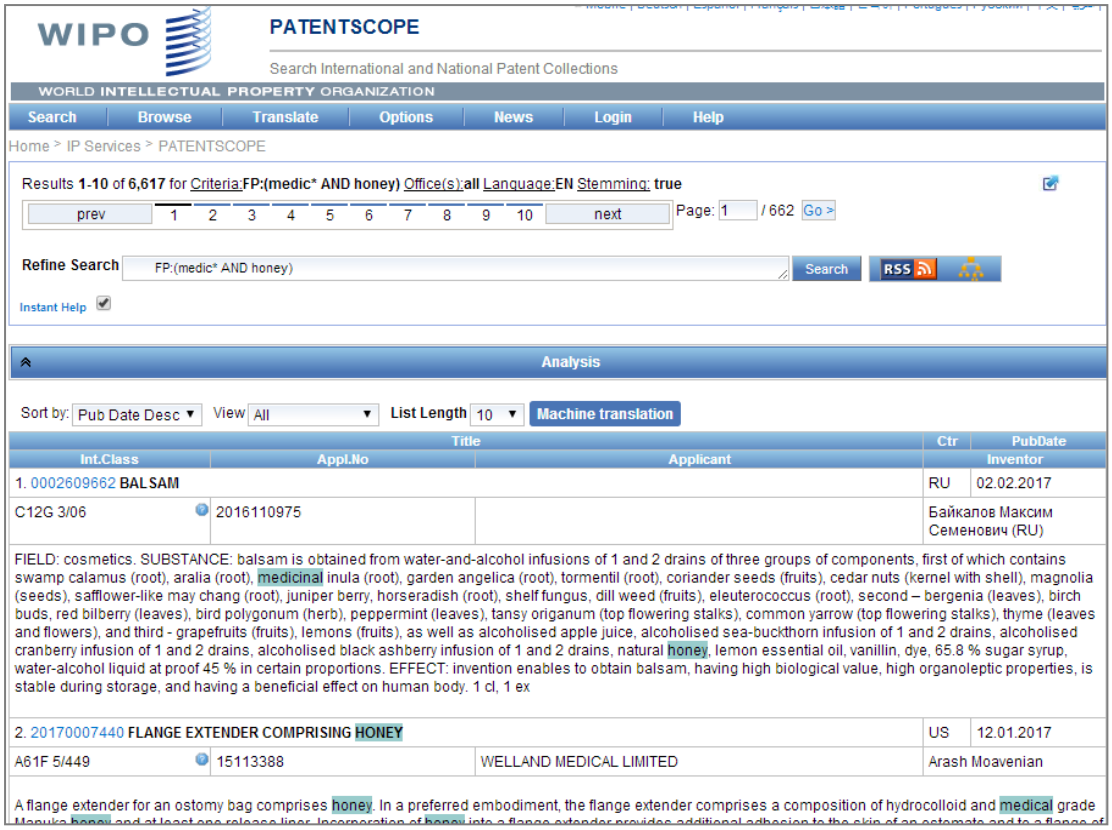
Technological activity searches are used to look at a particular technology in detail eg to see if there is a dominant company, inventor or country in the field or to examine how the technology has evolved over time.

2.7.1 Search Activity – Honey medicament

You are active in the field of beekeeping. And perhaps your ancestors have taught you that honey can be helpful for healing wounds when applied to the skin. You decide to do some research, but suspect there is a lot of activity in this area. Rather than spend a lot of time looking at all pharmaceutical literature in this area, you decide to perform a technology activity search, so using Patentscope, try to find if there is a specific company, inventor, or perhaps a country that is particularly active in the field of medicines containing honey.

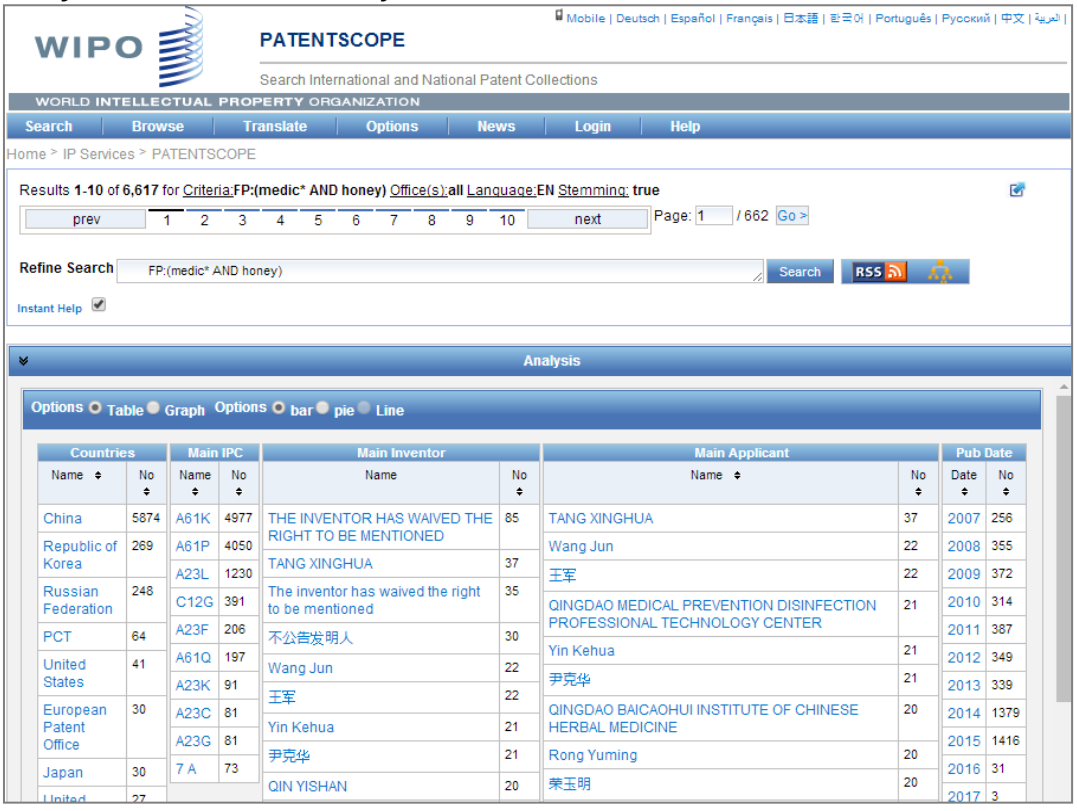
You will first need to search for *medic** AND *honey*. For now, you should know that, *medic**, represents all words that begin with *medic* (this is a search technique called *truncation* which you will learn more about in Module 3). By searching the combination of *medic** AND *honey*, you can find documents that use any of the words *medicine, medicinal, or medical* and also use the word *honey*.

You will find over 6000 hits.



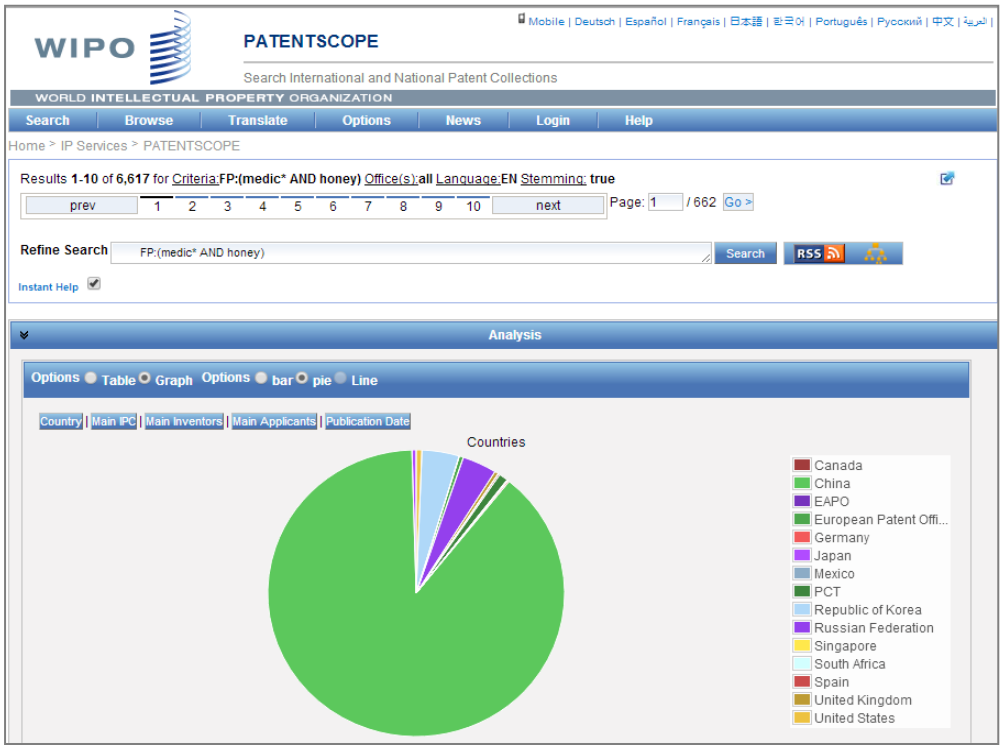
You can scroll through the documents to get a general view of what's been done in this field.

To find out which countries and which inventors are most active, click on the blue '*Analysis*' bar about half way down the screen.



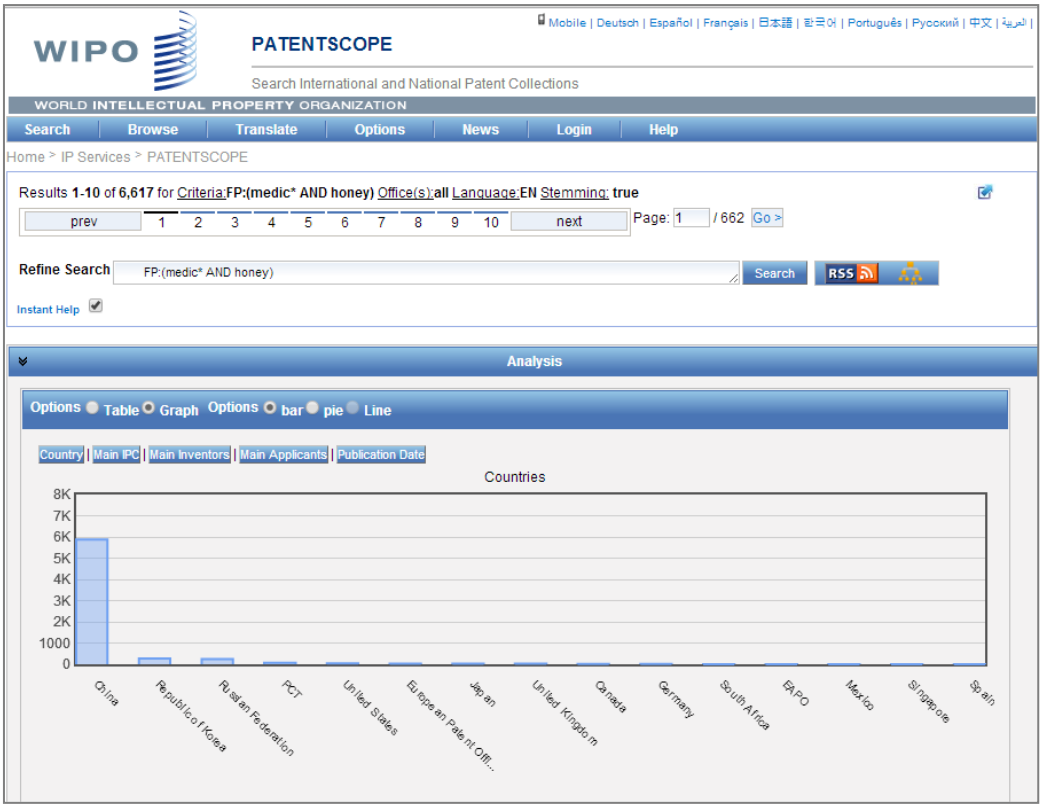
This shows that China is by far the most active country.

Another useful feature of Patentscope is that the results can be displayed graphically. To do this, find the ‘Options’ tab just below the ‘Analysis’ tab and click on ‘Graph’ and ‘pie’. This gives us

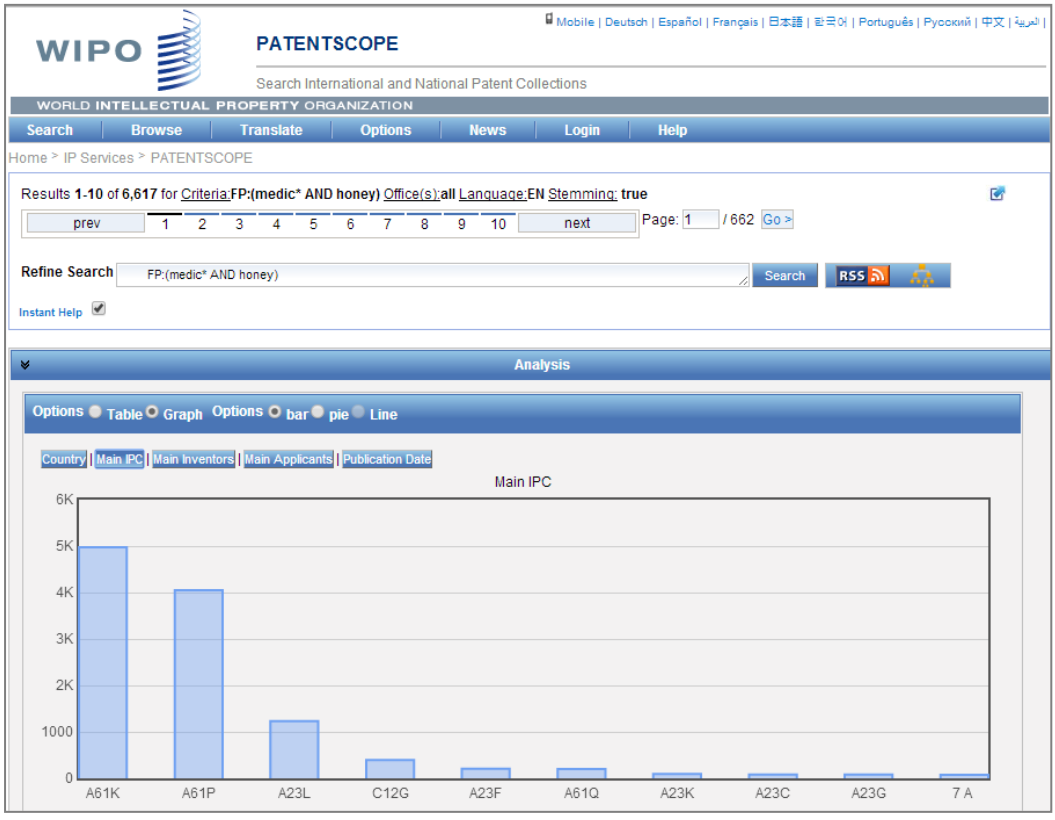


And we can choose other displays by clicking on the appropriate tab – ‘Main IPC’, Main applicant’, ‘Main inventor’ etc.

Clicking on ‘Graph’ and ’bar’ gives:



And again we can make further selections e.g. ‘Main IPC’.



This chart shows that many of the applications were classified in the IPC subclass A61K followed by A61P and then A23L.

Summary of Search Activity 2.7.1

As you become more familiar with patent searching, and have covered Modules 3 and 4, you will find IPC and CPC classification symbols very useful to your search as they represent predefined technology fields. You could take this search further if you wish. For instance by investigating the sub-divisions of IPC sub-class A61K on the WIPO website at *http://www.wipo.int/classifications/ipc/en/* to see if any fit what you are looking for.

2.8 Freedom to operate searches; legal status searches – c*an I produce and/or commercialize this product in that country; has this patent been granted; is it in force?*

Freedom to operate or infringement searches are aimed at finding any patents which might be infringed by putting a particular invention on the market in a particular country. Frequently, searchers also identify and monitor progress of pending patent applications that might get granted with potentially blocking patent scope. In this type of search, the aim is to find out whether there exist – or are likely to exist – any patents covering that invention or any part of it, in the particular country or region in which the invention is going to be used or marketed.

An essential part of a freedom to operate search is to find out the *legal status* of any relevant patents i.e. information on the legal status of a patent or a patent application in particular countries or regions.

The legal status of a patent application or a granted patent can change at any stage in its life. Some countries and regional authorities require annual renewal fees to be paid at the application stage, so failure to pay will result in the application lapsing. At the international and regional level, applicants have to make decisions about which states to designate or select; so some can disappear from the scene at this early stage. The most important event is when and if a patent is granted. Then for each subsequent year up to the maximum of 20 years*, the legal status of the patent will be *in force* if that year's renewal fee has paid; or *lapsed* if it has not.

(Some countries like the US may grant additional period. See the concept of Patent Term Adjustment that is aimed at accommodating for any delays that is caused by the US patent office itself during the prosecution of a US patent application. This term is added to the 20-year term of a US patent. Such term adjustment, if granted, is visible on the front page under bibliographic data of a granted US patent)

And in the case of regional offices that grant a bundle of national patents rather than a single unitary patent covering all member states, the patent owner may choose to pay the renewal fee in respect of one country but not in another – depending on business strategy.

Finally, a patent may be amended after grant by the owner (for instance the claims may be narrowed if new prior art comes to light); or the patent may be revoked by the court – i.e. annulled - if it is found to be invalid.

These life events – including selling and licensing – are all elements of legal status. In some countries, legal status can be checked online with the relevant authority. However, online information may not necessarily be complete or up to date. *If in any doubt, legal status information should be confirmed directly with the relevant authority in the country in question.*

As well as assisting in making decisions on whether to enter the market in a particular country, legal status information can assist in assessing the validity of a patent (see 2.5 above); in the negotiation of license agreements; and in assessing the value attached to a particular patent by the owner.

2.8.1 Search Activity –Emergency housing

This activity demonstrates a simple search with the support of Google and Espacenet to determine the legal status of a patent.

Tsunami Reconstruction

Pod Housing developed, refined, tested and deployed more than 100 times over four years, Icosa Village Pods which provide affordable, dignified 4-season, multi-year, semi-permanent housing.

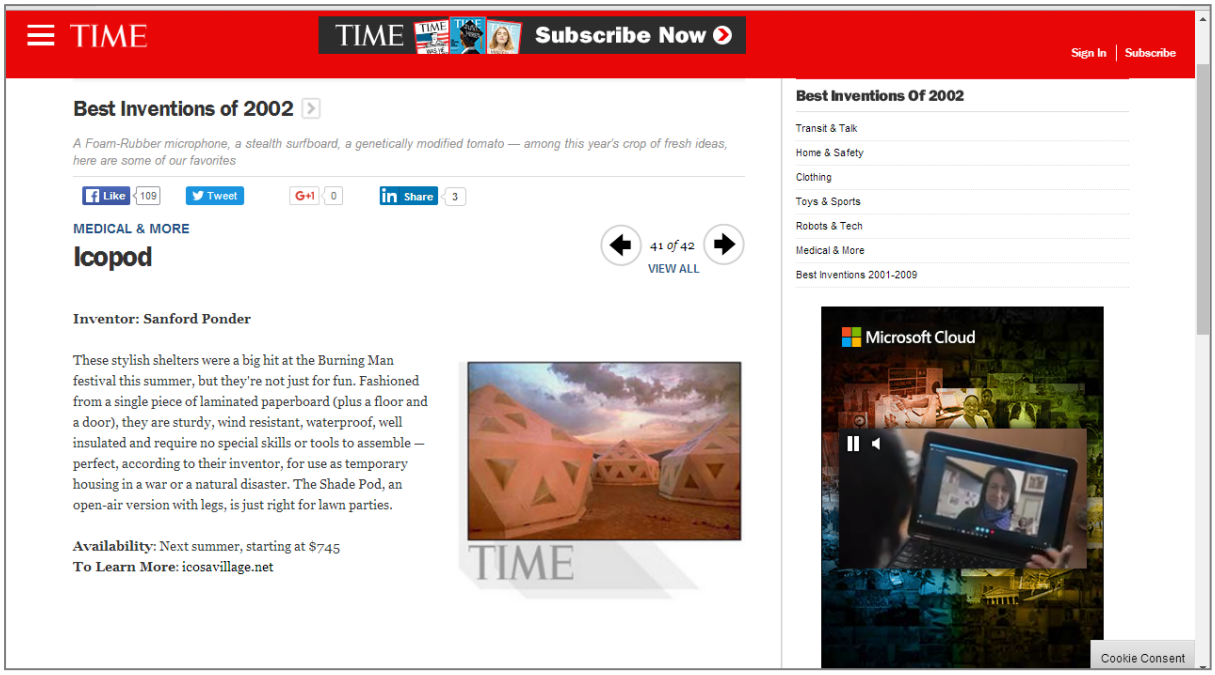
In support of Tsunami reconstruction efforts, volume orders bring prices as low as US$1,175 for a standard 108 sq. ft. (33 m2) IcoPod (adequate for 2 adults & 1-2 children), and $2,698 for 472 square foot (144 m2) DecaPods (large enough to comfortably sleep 12).

Step (1) As this is a product which must have been in the news during the Tsunami, do a search for ICOPOD in Google to find out the inventor's name.

Step (2) Then use Espacenet to find the relevant patent number check its legal status in your country.

Step (3) Decide whether you would be entitled to reproduce this product? Can you export it to France?

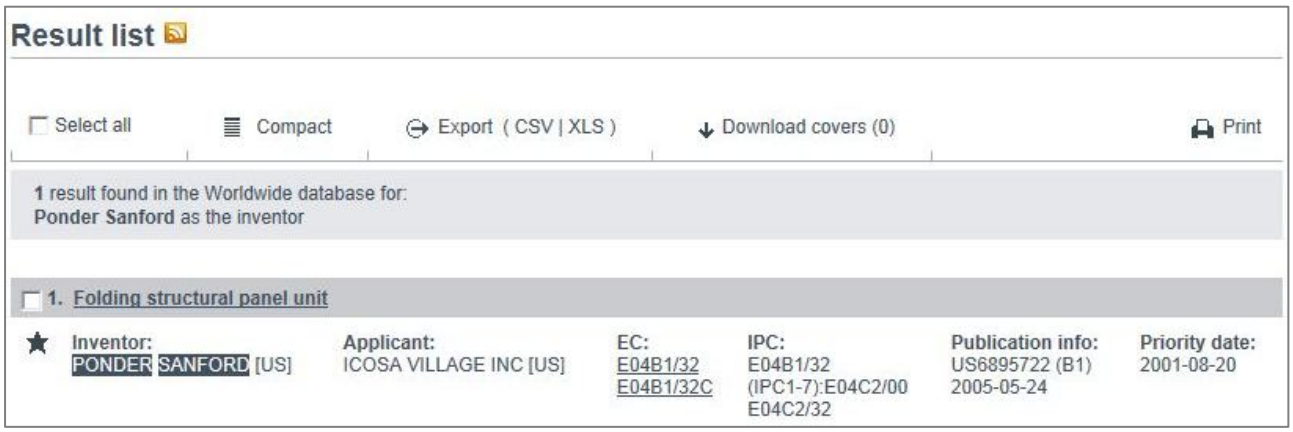
Step (1) From a Google search, it quickly becomes clear that the inventor's name is *Ponder Sanford.*



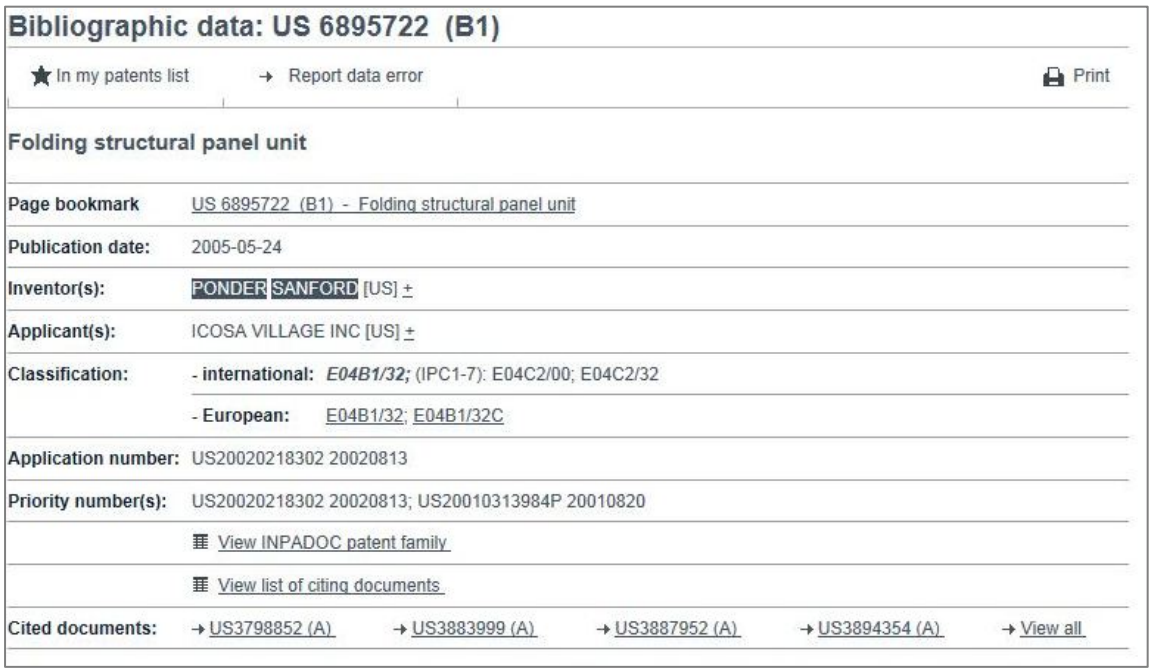
Step (2) Input this name into Espacenet in the 'Inventor' field

There is only one document.

.



Click the title of the document “Folding structural panel unit” to see more detail about the US patent. (Note that the title is descriptive; it does not include the word ICOPOD. In fact the titles of most patent documents are descriptive, which makes it easier to classify and in turn helps inventors, examiners and patent professionals in their searches).



Click the ‘INPADOC legal status’ tab on the left. It shows a granted US patent which has now lapsed.

INPADOC legal status: US 6895722 (B1)

In my patents list → Report data error Print

Folding structural panel unit

The EPO does not accept any responsibility for the accuracy of data and information originating from other authorities than the EPO; in particular, the EPO does not guarantee that they are complete, up-to-date or fit for specific purposes.

Legal status of US6895722 (B1) 2005-05-24:

US	**F**	**21830202 A**	(Patent of invention)
	PRS Date :	2004/12/07	
	PRS Code :	AS	
	Code Expl.:	ASSIGNMENT	
	NEW OWNER :	ICOSA VILLAGE, INC., WASHINGTON	
	EFFECTIVE DATE :	20041119	
	FURTHER INFORMATION :	ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNOR:PONDER, SANFORD;REEL/FRAME:015421/0489	
	PRS Date :	2008/11/20	

Step (3) The product has no patent protection now so you would be entitled to reproduce it; although when the patent was first granted you would not have been entitled to make, sell or import it into the US. Clicking on 'INPADOC patent family' shows that there are no foreign equivalents. There was never any protection in France, so you would be entitled to export it there.

Summary of Search Activity 2.8.1

A search for legal status of a patent or patent application and the status of any equivalent documents (called Patent Family Equivalents) can help determine whether an invention has any legal standing in a particular country or region. For example, it may be that an invention granted and in force in the United States could be used in other areas if there are no equivalent patent grants in place or patent applications pending there. In this case, it would be critical to contact the inventor on how the product could be commercialized in a country which needs the product.

As the disclaimer on the legal status tab indicates, it is important to go to the original source to find more up-to-date legal status information. While in a real life situation, patent examiners and patent professionals may go to the USPTO and do a thorough search to find the most up-to-date information, we will not do that in this simple exercise.

2.8.2 Search Activity - Better Shelter

A more recent example in this field is the '*Better Shelter'*. Using Google and the patent databases, find out who developed this product, and who the inventors were.

Has the invention been patented? If yes, in which countries? If no, then why do you think that is?

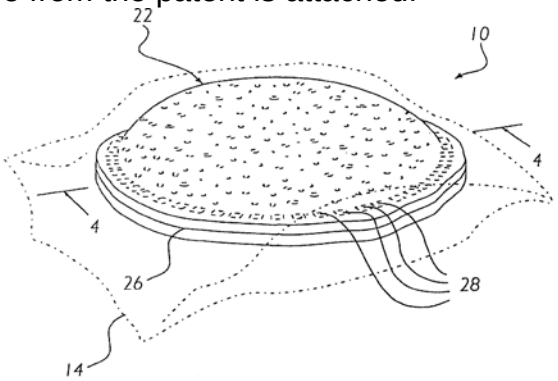
2.8.3 Search Activity - Sandwich

Find the legal status (and explore what other information is available) for a 1999 patent whose main claim reads:

A sealed crustless sandwich, comprising:

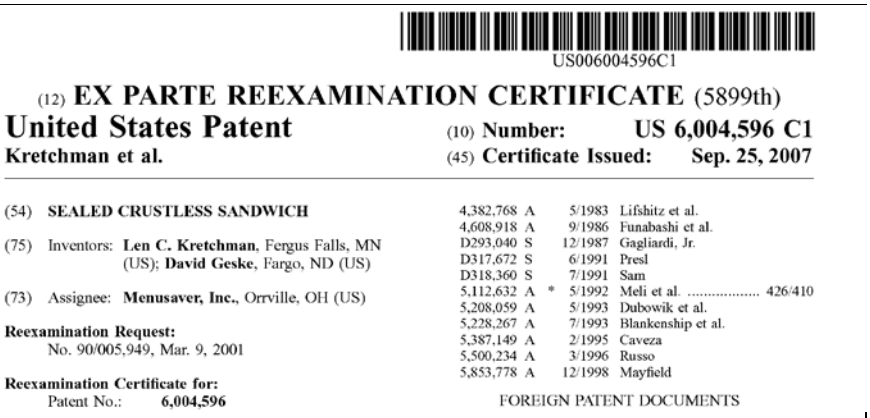
- a first bread layer having a first perimeter surface coplanar to a contact surface;
- at least one filling of an edible food juxtaposed to said contact surface;
- a second bread layer juxtaposed to said at least one filling opposite of said first bread layer, wherein said second bread layer includes a second perimeter surface similar to said first perimeter surface;
- a crimped edge directly between said first perimeter surface and said second perimeter surface for sealing said at least one filling between said first bread layer and said second bread layer; wherein a crust portion of said first bread layer and said second bread layer has been removed.

A figure from the patent is attached.



Step	Description of step	Model answer:
1	Do a keyword search in Patentscope and in Espacenet to find the relevant patent	Search using *crustless sandwich* US6004596A seems the most relevant result
2	Do a keyword search in the USPTO Site to confirm the date	Search: ttl/*sandwich* and ttl/ *sealed* US6004596 for *crustless sealed sandwich* was published in Dec 1999 – and therefore this is the right document

	of 1999	
3	The search in step 1 also produced a Canadian document, so investigate the Canadian patent database. Is there a granted patent?	CA2254445 A1 has the same priority document as US6004596 and is the correct document. There is no granted patent in Canada.
4	The ownership of the US patent changed many times. Find the number of times this patent changed ownership. What are the recordal dates and to whom was the patent assigned?.	Enter patent number: 6004596 on the US Patent assignments site *https://assignment.uspto.gov/patent/index.html#/patent/search* Four assignments took place: 1. Assignment 1 Recordal Date: 12/14/1998 Assignors: Menusaver, Inc, Kretchman, Len and Geske, David Assignee: Smucker Acquisition, Inc. 2. Assignment 2 Recordal Date: 03/26/1999 Assignor: Smucker Acquisition, Inc. Assignee: Menusaver Inc 3. Assignment 3 Recordal Date: 01/05/2001 3Assignors: Menusaver inc Assignee: The JM Smucker Company 4. Assignment 4 Recordal Date: 21 july 2003 Assignors: The JM Smucker Comapny Assignee: Smucker Fruit Processing Company
5	Name(s) of inventor(s)?	Inventors: Kretchman Len C. and Geske David

6	What is the legal status of this patent? In 2007 the USPTO issued a certificate. Find the number of the certificate. What is the outcome?	 US006004596C1 (12) **EX PARTE REEXAMINATION CERTIFICATE** (5899th) **United States Patent** **Kretchman et al.** (10) **Number: US 6,004,596 C1** (45) **Certificate Issued: Sep. 25, 2007** (54) **SEALED CRUSTLESS SANDWICH** (75) Inventors: **Len C. Kretchman**, Fergus Falls, MN (US); **David Geske**, Fargo, ND (US) (73) Assignee: **Menusaver, Inc.**, Orrville, OH (US) **Reexamination Request:** No. 90/005,949, Mar. 9, 2001 **Reexamination Certificate for:** Patent No.: **6,004,596** 4,382,768 A 5/1983 Lifshitz et al. 4,608,918 A 9/1986 Funabashi et al. D293,040 S 12/1987 Gagliardi, Jr. D317,672 S 6/1991 Presl D318,360 S 7/1991 Sam 5,112,632 A * 5/1992 Meli et al. ..... 426/410 5,208,059 A 5/1993 Dubowik et al. 5,228,267 A 7/1993 Blankenship et al. 5,387,149 A 2/1995 Caveza 5,500,234 A 3/1996 Russo 5,853,778 A 12/1998 Mayfield FOREIGN PATENT DOCUMENTS 4 US 6,004,596 C1 **1** **EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307** THE PATENT IS HEREBY AMENDED AS INDICATED BELOW. **2** AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT: 5 Claims **1**–**10** are cancelled. * * * * * The US examiner issued a reexamination certificate. This can be obtained by clicking on the “images” tab after obtaining the patent document in the USPTO search using the 6004596. The number of the Reexamination certificate is US6004596C1 All claims were cancelled. In legal terms this means that the claims were not allowed and therefore the current legal status of the patent is that it has been revoked.

7	What is the main difference between the citations in the document published in 1999 and later published in September 2007. List the citations of the 1999 publication and 2007 citations	1999 citations: U.S. PATENT DOCUMENTS 3,083,651 4/1963 Cooper ..... 426/275 3,690,898 9/1972 Partyka ..... 426/275 3,767,823 10/1973 Wheeler et al. ..... 426/275 3,769,035 10/1973 Kleiner et al. ..... 426/275 3,862,344 1/1975 Zobel ..... 426/244 4,382,768 5/1983 Lifshitz et al. ..... 426/275 5,853,778 12/1998 Mayfield ..... 426/89 OTHER PUBLICATIONS "50 Great Sandwiches", Carole Handslip, pp. 81–84,86,95, 1994. 2007 Citations: U.S. PATENT DOCUMENTS 2,765,755 A 10/1956 Napolillo 2,780,163 A 2/1957 Lee 3,083,651 A 4/1963 Cooper 3,095,832 A 7/1963 Evans 3,111,914 A 11/1963 Viviano 3,182,611 A 5/1965 Rubenstein 3,690,898 A 9/1972 Partyka 3,767,823 A 10/1973 Wheeler et al. 3,769,035 A 10/1973 Kleiner et al. 3,782,270 A 1/1974 Sollerud 3,862,344 A 1/1975 Zobel D252,536 S 8/1979 Goglanian et al. 4,163,418 A 8/1979 Thelander

		4,382,768 A 5/1983 Lifshitz et al. 4,608,918 A 9/1986 Funabashi et al. D293,040 S 12/1987 Gagliardi, Jr. D317,672 S 6/1991 Presl D318,360 S 7/1991 Sam 5,112,632 A * 5/1992 Meli et al. ..... 426/41(5,208,059 A 5/1993 Dubowik et al. 5,228,267 A 7/1993 Blankenship et al. 5,387,149 A 2/1995 Caveza 5,500,234 A 3/1996 Russo 5,853,778 A 12/1998 Mayfield FOREIGN PATENT DOCUMENTS AU A-40334/95 8/1996 OTHER PUBLICATIONS Selected Excerpts From a Book *Pasta, Pies and Pastries–Tart Recipes From Around the World,* Authored by Ursula Kaiser. Selected Excerpts From *The Pampered Chef.* A Recipe and Instruction Book Entitled *The Pampered Chef* Attachment D–Cooke Declaration Dated Mar. 15, 2001. Further documents were cited in 2007 resulting in the cancellation of claims 1 to 12.

2.9 The analysis of patent information for strategic use

2.9.1 Introduction

A patent information search can be very useful at various appropriate times during the life cycle of an invention: for example before even starting a research project, then as part of the patent drafting process before filing, or while planning and preparing for patent litigation. However, this traditional micro-level use of patent information has evolved into a much more strategic use of patent information, thanks to the development of customized computerized databases containing patent information.

Intellectual Property (IP) valuation is an area which is gaining more and more attention as we move into an information age where market competition is swift and closely aligned with to intellectual property assets. Banks which lend money to big companies, managers considering mergers and acquisitions (M&A), government policy makers who ensure that the financial rules are properly followed, and accountants who are often at the forefront of valuation practices are all increasingly using patent information in their daily work.

Read the following quote from an article published some years ago discussing an offer some years ago made by Microsoft to acquire Yahoo!, both prolific users of the patent system for their businesses.

"*Aside from the business benefits, Microsoft has a lot to gain from Yahoo!'s intellectual property (IP) assets. The synergy obtainable from the patent portfolios of these companies is rather high. Microsoft and Yahoo! have recorded consistent research and development (R&D) expenditures over the years, a key area that the combined entity will want and hope to leverage and optimize. While Microsoft is undeniably the leader in terms of sheer number of patents/applications spread across over 100 IPCs (intellectual property codes), it has lagged when compared to Yahoo! and Google in terms of innovation (as reflected by a citation analysis). Yahoo emerges as a significant innovative player in this regard, probably more so than even Google. Given this scenario, a Yahoo! acquisition will definitely prop up Microsoft's IP arsenal against its battle for technology supremacy against Google."*

As a result economists, social science researchers, policymakers, businessmen and professionals have begun to make increasing use of patent information. As you saw in Search Activity 2.7.1, this is being done to analyze what's happening internationally in a particular sector; in which countries a particular technology is being most actively patented or a particular company is most active etc. etc.

There are two primary ways of analyzing patent information: qualitative and quantitative. In qualitative analysis, the content of individual patent documents is

reviewed. By contrast, the quantitative method involves the statistical analysis of a number of patents in a given field of technology on a larger scale. These two methods have different objectives and different applications or usage for a patent searcher. The results of patent analysis can be displayed using bar graphs, polygonal line graphs, pie charts, radar charts and other charts/graphs, which are called 'Patent Charts/ Graphs/ Maps'. This is an effective way of representing the results of patent information analysis. We saw one form of visualization in the Search Activity for Technological Activity Search above.

Today, electronic databases, analytical software products and private service providers add value to patent and technology databases and assist in the analysis of patent information in making it more reliable, consistent and faster.
There are multiple other uses of the analysis of the patent information, such as:

2.9.2 Licensing Strategy

When considering "licensing in" a technology owned by others, or "licensing out" your technology or "cross-licensing" between two patent portfolio owners, you must collect reliable information on the target or key technology in order to take the right decision. If the technology in question is valuable enough, it will generally be protected by a patent because of the intrinsic insecurity and difficulty of keeping it secret. Therefore, the analysis of patent information can provide you with valuable technical and business information regarding the target or the key technology. Before entering into licensing negotiations, it is most important that you have a very good understanding of the target technology itself, and its value in terms of its strengths and weaknesses.

When preparing to 'license in' a technology, analyze the patent information and consider:

- whether the technology in question is not protected by patent and is therefore in the public domain. This may be because a patent was not applied for; or was applied for but not granted; or was granted but has now lapsed for whatever reason; or has been invalidated in a hearing or court proceeding;
- whether there is a possibility of someone else bringing an action for infringement against you to make you liable for payment of any damages; and
- whether the technology is overvalued or undervalued by comparing it with other related or alternative technologies, etc.

Similarly, when preparing to 'license out' your technology, analyze the patent information and consider:

- who could be prospective licensees in the marketplace;
- how valuable is your technology; and
- whether the technology is a core technology in your business, which if licensed out might become an obstacle to your own business

‘Cross-licensing’ is an exchange between two companies to license one or more patents to one another, which gives the companies *the freedom to operate*; that is, without any fear of being accused of infringing the patent rights of the other party. Payment(s), if any, in a cross-licensing agreement is made by the party which is perceived to have a patent portfolio of lesser value.

Example 1

Company X is negotiating with Company Y. If company X argues that its patent portfolio is more valuable than that of company Y, it may require company Y to fill in the gap in the form of one-off or recurring payments. Here, patent analysis can play a role in comparing the patent portfolios of the two companies and in identifying key patents, to help to decide who should pay whom and how much. Often we read in the news that a certain well-known company has paid a large sum of money to acquire another up-and-coming business. This decision could well have been made after analyzing qualitatively the value of the patent portfolio and quantitatively the potential of the technology of the smaller company.

2.9.3 Supporting mergers and acquisitions (M&A)

If a company wishes to acquire a specific technology along with other complementary technical information and has no idea where to obtain these, then it first needs to identify all other companies with relevant patents and related assets. As we examined earlier, a good place to start could be a state-of-the-art search for a specific and current technology. Further identification could be made through a technical activity search. These will help in identifying all of the patents related to the area of interest. Once one or more potential target technologies/companies are identified through name and legal patent searches, then the company can undertake additional patent analysis to narrow down its choices and decide which of the companies are the best targets for a merger or an acquisition.

Once a company identifies a target company, patent analysis can also address additional issues that need to be ironed out, such as: Is the target’s technology as good as it is claimed to be? Is the company priced fairly? Who are the key inventors and will they stay with the merged or acquired company?

Example 2

As part of a broad strategic plan to fill the gaps in its technical base, company X, a large high-tech company acquired company Y, a small specialty business. Soon after completing the acquisition, the acquiring company discovered that the R&D capabilities of the acquired company were quite limited. They were certainly not

consistent with its perception of company Y at the time of the acquisition. Company X subsequently discovered that company Y's technical expertise was dependent on one key researcher and he did not come on board as part of the acquisition but was transferred to the parent company before the sale was completed. If patent analysis had been done before proceeding with the acquisition, the company would have been able to make early discovery of who the key researcher was and take the appropriate measures to retain him as part of the acquisition.

For more information, you may wish to read an article at http://halshs.archives-ouvertes.fr/docs/00/18/59/84/PDF/prolificliteraturesurvey.pdf, which discusses the "prolificness" of inventors and their value as "technological goalkeepers."

2.9.4 Guiding the management of research and development (R&D)

In order to enter into a new business or to develop a new product, a company should be able to get an overview of the relevant field of technology and accurately forecast the market needs. Patent analysis makes it possible to identify the flow of technology starting from elementary technologies to the larger technologies, the trend of technological change, the life cycle of the technology (consisting of growth, development, maturity and decline), the problems and solutions in the development of the particular technology, the competitors' technologies and solutions to cope with possible problems. Knowing the life cycle of a technology makes it possible to judge the timing of a research and development policy help determine the direction the company wishes to take. It might also prevent patent infringement from occurring, which can be extremely costly in terms of litigation expenses and damages.

Patents are often linked to research and development and can be considered as indicators of strong R&D output. If one company has more patents than another, this could suggest that the company with more patents is strongly committed to R&D. Not all patents, however, are equally valuable. Few patents have radically changed the way we use technology. Most patents are granted for incremental and non-obvious inventions which slowly improve the state-of-the-art technologies. When analyzing patents, a patent which is more frequently cited than others of the same age, is regarded as a patent of greater impact or of higher value/quality. From links between patents revealed by *patent citation analysis*, it is possible to target the acquisitions of strong patents, which indicate strong R&D output and, consequently, much improved new products.

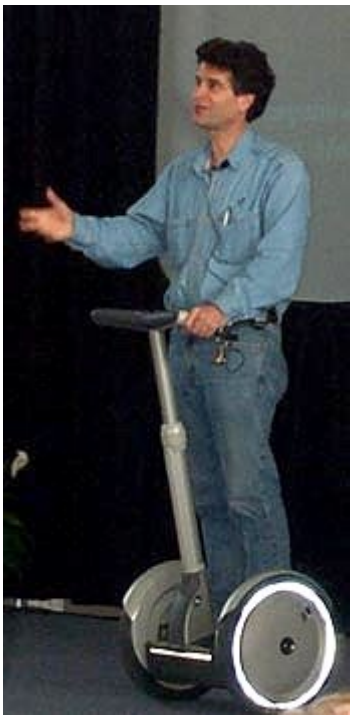
2.9.5 Human Resources Management

It has been repeatedly shown that a small number of highly prolific inventors drive technological development when compared to a much larger number of researchers producing only one or two patents in any laboratory or company. Patent analysis,

such as a ‘co-inventor brain map’ of a company, can show the key inventors who are vitally important for the future of the company. Such brain maps can identify not only star inventors within a company, but also key inventors in other competing companies. This is useful analysis for headhunting and in developing an effective M&A (Merger & Acquisition) strategy when considering human resources. Many companies offer patent analysis/mapping tools and services.

Example 3

Imagine you are interested in acquiring or teaming up with a company or inventor who is bursting with ideas. What are the key considerations to take into account when seeking new ideas for your company; and what steps or action could be taken to support these considerations?



Consideration 1: Consider that some inventors are more prolific than others.

Action A: You might do a search on Google for “prolific inventors” and find hints from this website: https://en.wikipedia.org/wiki/List_of_prolific_inventors that may be of value. For example did you know that Dean Kamen, the inventor of more than 226 inventions with 1183 patents also invented the Segway human transporter pictured here on the left?

Consideration 2: You may want to consider “licensing-in” from a company that has a similar profile to yours.

Consideration 3: you may wish to employ a company to do patent analysis of the performance of companies in your technology area.

Action B: You have seen a very basic analysis using Patentscope. Many companies provide professionally detailed and specific mapping in different technological fields – try Googling *Patent mapping services*

2.9.6 The Use of Creating Thinking - a qualitative analysis of patents

Patent information provides a source of technological information that can be used by researchers and inventors to find new solutions to technical problems. A specific methodology developed on the basis of patent information is the TRIZ methodology (Russian acronym for Theory of the Solution of Inventive Problems). Genrich

Altshuller and his colleagues developed the TRIZ methodology, starting in 1946, based on the study and analysis of a set of worldwide patent documents. TRIZ began with the hypothesis that there are universal principles of invention which form the basis of creative innovations that advance technology, and that if these principles could be identified and codified, they might be taught to people to create or enhance their inventive capabilities. This hypothesis examines qualitatively the problems that are solved by patents and analyses the methods used by the inventor.

The TRIZ research has proceeded in several stages and more than two million patent documents have been examined, classified by level of inventiveness, and analyzed to look for principles of innovation.

TRIZ is currently being applied internationally to create and to improve products, services and systems. Large and small companies, including many Fortune 500 companies use TRIZ at many levels of their business to solve real and practical problems as well as to develop strategies for the future of their technology. Based on one of the conclusions of the theory, that inventiveness and creativity can be learned, universities worldwide have introduced undergraduate courses related to the TRIZ methodology to enhance the inventive abilities of their students. Patent information, therefore, provides an extremely useful source of information for learning and developing a methodology for any kind of problem solving.

So TRIZ is a theory that considers engineering problems and suggested solutions based on their structure.

One of the 40 principles is Segmentation. An example to solve a problem using the segmentation principle is to divide an object into independent parts e.g., replacing a large truck by a truck and trailer.

The seventh principle is by using the inventive principle Nested doll where one could place one object inside another; place each object, in turn, inside the other such as in the example of measuring cups or spoons.

Another principle is the other way round where you could make movable parts (or the external environment) fixed, and fixed parts movable, e.g. rotate the part instead of the tool.

For more information see *http://www.triz40.com/TRIZ_GB.php*

Looking at creative thinking from a more prosaic point of view, patents could lead to interesting debates on how best to apply a specific technology to a specific problem. Companies, however, are using creative thinking primarily to make money. Where is the money? Is it in the product, or how the components are put together, or perhaps

in the way the product is made? For these companies, patents are not just academic exercises but serve as a pioneer source of methods on how to approach a competitor or how to run a business. After completing your study of this course you will have seen several patent documents which have been successful at solving problems and have introduced improvements over the years. You will begin to answer these questions for yourself.

2.10 Suggestions for further reading

http://www.pravel.com/docs/inventive%20thinking.pdf

http://www.mindtools.com/pages/main/newMN_CT.htm

http://www.wannalearn.com/Personal_Enrichment/Increasing_Creativity/

http://web.mit.edu/invent/h-main.html

http://inventors.about.com/library/lessons/bl_activity_1.htm

http://inventors.about.com/od/inventing101patents/a/patent_searchin.htm

http://inventors.about.com/library/lessons/bl_isaksen_treffinger.htm

2.11 Self-Assessment Questions (SAQs)

SAQ2.1: What type of search is aimed at finding solutions to a technical problem?

1. State-of-the-art search
2. Freedom to operate search
3. Name search
4. Technology activity search
5. Novelty/patentability search
6. Validity search

SAQ2.2: What type of search is aimed at finding whether I can obtain a patent for my invention?

1. State-of-the-art search
2. Freedom to operate search
3. Name search
4. Technology activity search
5. Novelty/patentability search
6. Validity search

SAQ2.3: What type of search is aimed at finding whether a patent can be challenged?

1. State-of-the-art search
2. Freedom to operate search
3. Name search
4. Technology activity search

5. Novelty/patentability search
6. Validity search

SAQ2.4: What type of search is aimed at finding out what inventions a particular company has been involved in?

1. State-of-the-art search
2. Freedom to operate search
3. Name search
4. Technology activity search
5. Novelty/patentability search
6. Validity search

SAQ2.5: What type of search is aimed at finding out how a particular technology has developed over time?

1. State-of-the-art search
2. Freedom to operate search
3. Name search
4. Technology activity search
5. Novelty/patentability search
6. Validity search

SAQ2.6: What type of search is aimed at finding out whether a particular product can be commercialized in a particular country?

1. State-of-the-art search
2. Freedom to operate search
3. Name search
4. Technology activity search
5. Novelty/patentability search
6. Validity search

SAQ2.7: Which of the following searches is most likely to be confined to a particular country or region?

1. State-of-the-art search
2. Freedom to operate search
3. Name search
4. Technology activity search
5. Novelty/patentability search
6. Validity search

SAQ2.8: What information is a patent document likely to contain?

1.Names
2. Dates
3. Assessment of the commercial value of the invention
4. Description of the invention
5, Claims

SAQ2.9: What is the purpose of an abstract?

1. to categorize the invention
2. to summarize the invention
3. to define the scope of the invention
4. to describe the difference between the invention and existing technology

SAQ2.10: Which one of the following is least likely to own a patent?

1. inventor
2. agent or attorney
3. applicant
4. assignee

SAQ2.11: Which of the following can be regarded as <u>strategic</u> patent information searches?

1. a search aimed at finding whether a patent can be challenged
2. a search aimed at finding out what inventions a particular company has been involved in
3. a search aimed at finding prospective licensees for an invention
4. a search aimed at finding who are the key inventors in various companies
5. a search aimed at finding solutions to a technical problem
6. a search aimed at finding out whether a technology is overvalued or undervalued
7. a search aimed at finding out whether a patent is likely to be granted on an invention
8. a search aimed at finding potential companies for merger or acquisition
9. a search aimed at finding whether a particular product can be commercialized in a particular country
10. a search aimed at finding out how a particular technology has developed over time
11. a search aimed at finding out how best to guide a company's research and development policy

[End of Module II]