

# Learning path for patent examiners

## Designing search strategies: Intermediate level

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## Introduction

This publication, "**Designing search strategies, Intermediate level**", is part of the "Learning path for patent examiners" series edited and published by the European Patent Academy. The series is intended for patent examiners at national patent offices who are taking part in training organised by the European Patent Office (EPO). It is also freely available to the public for independent learning.

Topics covered include novelty, inventive step, clarity, unity of invention, sufficiency of disclosure, amendments and search. Also addressed are patenting issues specific to certain technical fields:

- patentability exceptions and exclusions in biotechnology
- assessment of novelty, inventive step, clarity, sufficiency of disclosure and unity of invention for chemical inventions
- the patentability of computer-implemented inventions, business methods, game rules, mathematics and its applications, presentations of information, graphical user interfaces and programs for computers
- claim formulation for computer-implemented inventions

Each publication focuses on one topic at entry, intermediate or advanced level. The explanations and examples are based on the European Patent Convention, the Guidelines for Examination in the EPO and selected decisions of the EPO's boards of appeal. References are made to the Patent Cooperation Treaty and its Regulations whenever appropriate.

The series will be revised annually to ensure it remains up to date.

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All references to natural persons are to be understood as applying to all genders.

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## 1. Learning objectives

Participants to this course will learn:

- How to harvest information from the Internet, non-patent and patent literature
- How to select a relevant subset from a broad collection of results
- How to search starting from a specific combination of features
- How to use the problem/solution approach in search

## 2. Where to search – the internet

The advantages of searching the internet are that a huge amount of information is available free of charge and the search is very rapid, yielding almost instantaneous results. In addition, some search engines and commercial providers offer advanced search options (for example Google Scholar).

The drawbacks of internet searches are that the information retrieved may be unreliable (for example due to a lack of peer review). Furthermore, it may be difficult to determine the publication date of any relevant prior art retrieved, along with issues concerning the lack of confidentiality of searches, which makes the internet unsuitable for searching unpublished inventions. Lastly, internet searches are prone to generating many irrelevant hits.

When searching external document collections for material in relation to unpublished subject-matter using non-encrypted connections (e.g. Google Patents or the internet in general), search examiners should be careful when formulating search strategies not to reveal confidential material (i.e. the subject-matter of the unpublished patent application; see Guidelines (GL) B-III, 2.4).

In general, internet searches seem to be best suited to quickly evolving fields of technology which require keyword-based searches, to the domain of traditional knowledge (for example folk medical treatments) and to products having a large commercial impact (for example ink-jet printing on coffee or beer).

### Examples

See the citations of [EP17927427](#) (cf. Braun MultiQuick 9 Stabmixer).

### Examples

See the patent [US2008127786](#) (suitable for internet search).

### Legal references:

GL B-II, 3; GL B-IX, 2; GL B-IX, 3; GL B-IX, 4

## 3. Where to search – non-patent literature (NPL), patent literature and specialised databases

### NPL

NPL offers the following advantages as an information source:

- There is little “noise” since NPL is limited to technical/scientific publications in specific fields.
- There is the possibility to search in abstracts and sometimes in full texts and citations.

- NPL searches offer a uniform way of accessing papers from a variety of publishers.
- Advanced search tools are available, for example for drawing chemical formulae or entering sequence listings.
- Information retrieved from NPL is reliable due to peer review.

Disadvantages of searching NPL include:

- The coverage is limited because not all relevant journals or conferences may be indexed.
- Access to NPL is restricted because it is usually subscription-based and sometimes expensive.
- Papers on theoretical concepts or discoveries are often irrelevant because this subject-matter is not patentable under Article 52(2)(a) EPC.
- The search interfaces vary widely in the field of NPL and there is a lack of standardisation.

Search in NPL is well suited to keyword-based searches and is worthwhile in technical fields in which a large share of research activity originates in academia (for example life sciences, natural sciences, medical devices and computer science). Furthermore, NPL searches may be important for searches requiring specific search tools (for example biotech or organic chemistry).

It is possible to search the many periodicals (including abstract journals) to which the EPO subscribes. Furthermore, records of conference proceedings, reports, books, standards, etc. covering the three official languages of the EPO and the various technically important geographical areas are also available for search in the NPL database.

The systematically accessible NPL search documentation includes the relevant articles from the list of periodicals belonging to the minimum documentation under the Patent Cooperation Treaty (PCT), as established by the competent World Intellectual Property Organization (WIPO) body, and from other periodicals when deemed useful by the search division. In principle, copies of the articles selected as relevant for search purposes are added to the EPO search databases with a fictitious country code "XP", scanned for inclusion in the electronic "BNS" collection and included in the manual search files, where appropriate.

In addition to the NPL being useful for search purposes (see GL B-IX, 3), the NPL arranged for library-type access also includes literature that can be used primarily as sources of information and education for the search division, as regards general and background technical information and also new technical developments.

Furthermore, the collection includes many reports, pamphlets, etc. Internet-based document delivery services of publishing companies are made available to the members of the search division in the form of an Electronic Virtual Library (EVL), which examiners can access from their computer.

## Examples

Explore the following search tools:

- Mesh database
- PubChem database
- Entrez

You can also make use of the Wayback machine to look at the history of a website.

## Patent literature

The advantages of patent databases as an information source are as follows:

- The information regarding publication, filing and priority dates for patent documents is reliable.
- Patent databases (such as WPIAP and EPODOC) are well suited to structured search with classification symbols.
- The coverage in patent databases is comprehensive with few gaps.
- Patent documentation is freely accessible from various national and international patent offices (for example the Espacenet search tool provided by the EPO).

One disadvantage is that different patent offices require knowledge of different languages and classification systems (e.g. a knowledge of German is required to search in the databases of the German Patent and Trade Mark Office (DPMA)). However, searching in patent databases is essential when the search relies on classification symbols. Patent search is important in technical fields in which research is performed by companies.

## Examples

Explore the following search tools:

- [Espacenet](#)
- [Google Patents](#)

## Legal references:

GL B-II, 3; GL B-IX, 2; GL B-IX, 3; GL B-IX, 4

## 4. Search using classification: Espacenet example

Let us look at a search for "transfer" combined with B41M5/382/C/IC (i.e. searching for the keyword "transfer" combined with the classification symbol B41M5/382 in the Cooperative Patent Classification (CPC) and International Patent Classification (IPC) classification schemes):

The screenshot displays the Espacenet patent search interface. At the top, the search bar contains the query: "(ti all "transfer?" AND claims all "transfer?") AND (cpc any "b41m5/382" OR ipc any "b41m5/382")". Below the search bar, the interface shows the search results page with 9,932 results found. The search criteria are displayed as follows:

- AND** (selected) + Field
- Title** (selected) all: transfer?
- Claims** (selected) all: transfer?
- OR** (selected) + Field
- CPC** (selected) any: b41m5/382
- IPC** (selected) any: b41m5/382

The results list shows the following entries:

- 1. TRANSFER LAMINATION**  
US10105981B2 (A1) • 2018-10-23 • ASSA ABLOY AB [SE]  
Earliest priority: 2015-08-13 • Earliest publication: 2017-02-16  
In a transfer printing method using a transfer layer on a carrier layer, an image is printed over a transfer section of the transfer layer using a thermal print head and a print ribbon. At least one non-transfer portion of the transfer section is heated using the thermal print head without bonding the at least one non-transfer
- 2. TRANSFER APPARATUS AND TRANSFER METHOD**  
US2014238254A1 (B2) • 2014-08-28 • AIHARA YUICHI [JP]  
Earliest priority: 2013-02-22 • Earliest publication: 2014-08-27  
To peel off a transfer film varying in easy-to-peel according to the temperature of a recording medium (temperature of an adhesion surface) with a suitable peeling tension and to suppress the occurrence of peeling residues, in a transfer apparatus for nipping a transfer film 46 and recording medium K with a
- 3. TRANSFER SHEET**  
US10336115B2 (A1) • 2019-07-02 • DAINIPPON PRINTING CO LTD [JP]  
Earliest priority: 2015-09-11 • Earliest publication: 2017-03-16  
SOLUTION There is provided a transfer sheet comprising a substrate, as well as a releasing layer and a hot melt colored layer in this order on the substrate, the hot melt colored layer comprising, as a binder resin, a (meth)acrylic resin having a glass transition temperature of not less than 75° C., and a colorant.

## Examples

Open Espacenet and search for "clippers for chocolate".

[Clippers for chocolate – search results](#)

## 5. Broadening the search to perform a "complete search"

As we have seen previously in previous learning modules, if their preliminary search does not anticipate the claim(s) – though this is not usually the case – search examiners will go on to perform a complete search by broadening the scope of their search. This will involve one or more of the following:

- Building on the search table defining the scope of the search by adding synonyms, different spellings, plurals, etc.
- Combining the keywords with classification symbols using Boolean operators.
- Incrementally adding further keywords to rationalise and reduce excessively large result sets.
- Updating the search table iteratively if further search terms and/or search concepts appear relevant.
- Searching an example from the embodiments.
- Retrieving search reports or cited/citing documents when relevant documents are found.

The search division (primarily the first examiner) starts the search process by formulating a search strategy, i.e. a plan consisting of a series of search statements expressing the subject of the search and resulting in sections of the documentation to be consulted for the search. In its initial phase, a search strategy will contain one or more combinations of the basic components mentioned in [GL B-III, 2.2](#). The search process is iterative in the sense that the search division reformulates its initial search statement(s) according to the relevance of the documents retrieved (see [GL B-III, 1.1](#) and [B-IV, 2.4](#) and [B-IV, 2.6](#)).

When using classification groups, the search division selects the groups to be consulted for the search, in both directly relevant fields and related fields. When appropriate, the search division will also consult other classification or indexing schemes (for example the Japan Patent Office's FI and F-term schemes). Consulting colleagues in a similar technical field or in fields related to the content of the application is also an option (see [GL B-I, 2.1](#)). When in doubt about the appropriate fields in which to conduct the search, the search division may request advice from appropriate classification experts.

Usually various search strategies are possible, and the search division exercises its judgement, on the basis of its experience and knowledge of the available search tools, to select the search strategy most appropriate to the case in hand. The search division gives precedence to search strategies consulting sections of the documentation in which the probability of finding relevant documents is highest. Usually, the main technical field of the application will take precedence (see [GL B-III, 2.2](#)).

When considering whether to extend the search to other less relevant sections of the documentation, the search division will take account of the search results already obtained.

### Legal references:

GL B-IV, 2.2; GL B-III, 2.2

## 6. Searching with classes: Espacenet example

Let us revisit the previous search for "transfer", this time combined with B41M5/382/C/IC and limited to "laser transfer printing":

The screenshot shows the Espacenet patent search interface. The search query is: (ti all "print?" AND to all "laser?") AND (cpc any "b41m5/382" OR ipc any "b41m5/382"). The search results show 9 results found. The first result is: 1. Proof print producing process using laser-induced heat transfer, DE19811028A1 (B4) • 1999-09-23 • ROLAND MAN DRUCKMASCH [DE]. The second result is: 2. METHOD AND APPARATUS FOR MAKING COLOR PRINTS ON PAPER, US3780214A • 1973-12-18 • AGFA GEVAERT AG. The third result is: 3. Print method for laser packaged product and all-in-one machine adopting same, CN107336535A • 2017-11-10 • QINGZHOU XINHUA PACKAGING PRODUCTS CO LTD.

## 7. Example of a complete search in Espacenet

Study the following example of a complete search, resulting in the retrieval of two documents which anticipate the first claim:

### Feature table for claim 1

#### Claim 1:

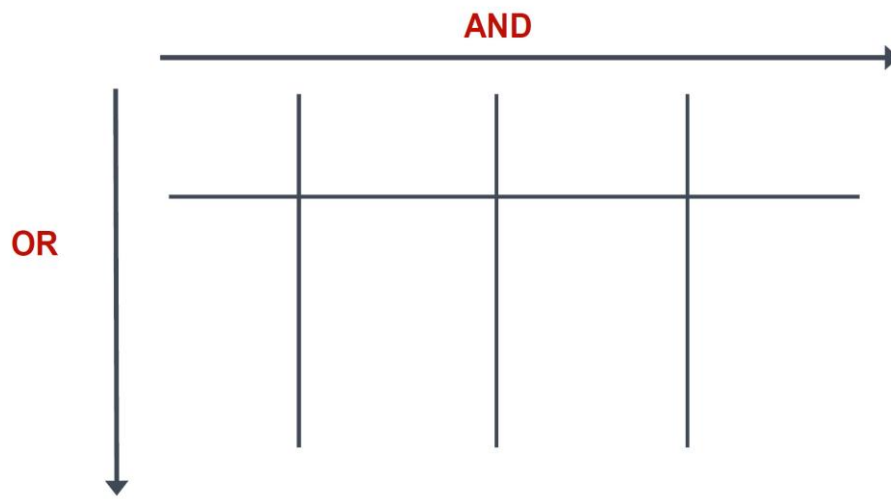
"A method of lifting an object fully or partially submerged in a fluid, comprising the step of introducing buoyant bodies through an opening on the surface of the object into the interior of said object."

Feature	Feature explanation (claim 1)
F1	Lifting
F2	A submerged object
F3	By buoyant bodies
F4	Introduced into the object's interior

Terminology from thesaurus or synonyms dictionary

	Search concept 1	Search concept 2	Search concept 3	Search concept 4
	Lifting	submerged object	By buoyant bodies	Introduced into the object's interior
<b>Classification</b> /C /IC  /FT				
<b>Keywords</b>	Lifting Raising Pushing up  Refloating	Submerged body Sunken (yacht) Sunken (boat or ship) Wreck	Buoyant bodies (Ping-pong) balls Floating (aid)	Into interior Hose through hole Introduce

How to search with a search table



Query language: en de fr

AND + Field

Title, abstract or claims all → Group

lift? or raise? or raising? or float? X

Title, abstract or claims all → Group

submerged? or sunken? or wreck? X

Search Reset

## 2 results found

List view List content Sort by  
Text only All Relevance

(0 patents selected) Select the first 2 results

1. No title available  
US526163A • 1894-09-18 • No applicant available  
Earliest publication: 1894-09-18  
No abstract available

2. No title available  
US60671A • 1867-01-01 • No applicant available  
Earliest publication: 1867-01-01  
No abstract available

1. >

★ US526163A

Patent Translate

Bibliographic data Description **Claims** Drawings Original document Citations Legal events Patent family

Original claims Claims tree

Data originating from sources other than the EPO may not be accurate, complete, or up to date.

UNI'I'M STATES, PATENT OFFICE.

E\_NOS. B\_PETRIE., qF BUFFALO, NEW YORK, ASSIGNOR OF ONE-11ALF TAO GEORGE311.13LANCHARD, Or BOSTON, MASSACHUSETTS.

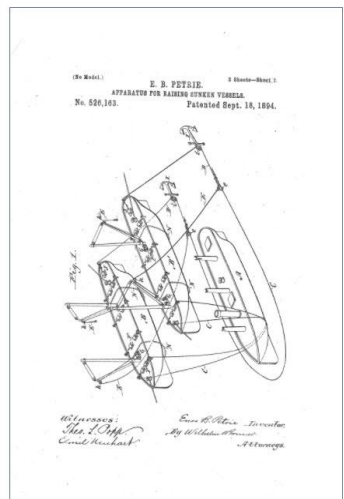
APPARATUS FOR RAISING SUNKEN VESSELS.

SPECIXOATION forming part of Letters Patent No. 526,163i dated Septembpr 18. 1894, Applioatioil filed Maxoh27,1894. Serial No, 506,233. (Nomodel.) To all wkom,it may concerib:

Be 'it knon.that 1, Eiqos'B. PETRIE, a Citizen of the United Stat6sresiding at Buffalo,. in'the county OfErle and State Of New York, have invented a new and useful Improvement in Apparatus for Raising Sunken Vessels, of which the following is a specification.

This invention Telates to an apparatus,,for raisin g sunken vessels and is designed more 4 r) especially for recovering vessbls which are sunkento a, depth -that, it is im practicable for divers toOperate.

The object of,,my invention is the prbvslonnof an. appAratu ' 8wher4by t3lo-lifting -cables! (5 may be



2. >

☆ US60671A

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Bibliographic data Description **Claims** Drawings Original document Citations Legal events Patent family

Original claims Claims tree

Data originating from sources other than the EPO may not be accurate, complete, or up to date.

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ERNEST B.AZIN, OF PARIS, FRANCE.

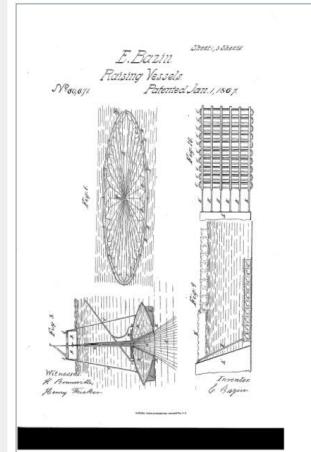
Letters Patent No. 60,671, dated January 1, 1867.

IMPROVED MEANS FOR RECOVERING **SUNKEN SHIPS**.

TO, ALL WHOM IT MAY CONCERN:

Be it known that I, ERNEST BAZIN, of Paris, in the empire of France, have invented a new and useful Machine for Recovering **Sunken** Ships or Vessels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation, of the same, reference being had to the accompanying drawings, making a part of this specification, in which Figure 1 is a view of the net spread out on the surface of the water by means of an air-tight tu l be, to which it is made fa8b.

Figure 2, a view in elevation of the whole apparatus, by means of which the vessel is lifted from the bottom of the water.



## Examples

In Espacenet, search for a "nut holding device".

## Nut holding device – search results

For example, a relevant result is US2669894A.

Espacenet Patent search

nut holding device

Office/Language

My Espacenet Help Classification search Results Advanced search Filters Pop-up tips Report data error Feedback

Home > Results > US2669894A

632 724 results found

List view List content Sort by: Relevance

Text only All

(0 patents selected) Select the first 60 results

Earliest priority: 2008-11-03 • Earliest publication: 2010-08-25  
...The utility model relates to a screw holding orthopedic repository comprising a hollow screw-holding main body, a slide sleeve, slide pins, nut sleeves and an orthopedic reposition cap. The front part of the

32. Wheel nut locking device  
GB2518409A (B) • 2015-03-25 • NUT SAFETY LTD  
Earliest priority: 2013-09-20 • Earliest publication: 2015-03-25  
...A wheel nut locking device (10) comprises a torsion spring having a coil (12) for locating on a wheel nut... on a second wheel nut. The second arm (16) terminates in a second hook (20). ...

33. Nut-holding device  
US2669894A • 1954-02-23 • No applicant available  
Earliest priority: 1951-04-03 • Earliest publication: 1954-02-23  
No abstract available

34. Thread holding nut  
CN213360776U • 2021-06-04 • LIU KELIANG  
Earliest priority: 2020-10-13 • Earliest publication: 2021-06-04  
...The utility model discloses a wire holding nut which comprises a nut body, a nut inner hole is formed in the nut body, an extrusion belt and a guide installation belt are integrally arranged at one end of the nut...

35. SELF-LOCKING NUT  
US991016A • 1911-05-02 • GRIP NUT CO  
Earliest priority: 1907-05-13 • Earliest publication: 1911-05-02  
No abstract available

☆ US2669894A Nut-holding device

Patent Translate ▾ ⋮

Bibliographic data Description **Claims** Drawings Original document Citations Legal events Patent family

Data originating from sources other than the EPO may not be accurate, complete, or up to date.

Patented Feb. 23, 1954 2966%894  
UNITED STATES PATENT OFFICE  
2,669,894  
NUT-HOLDING DEVICE  
Alvin Kassel, Bronx, N. Y.

Application April 3, 1951, Serial No. 218,952 1 Claim. (Cl. 81-13) This invention relates to a nut-holding ring adapted to be used in applying and tightening nuts to bolts or screws.

Sometimes as in the assembling of airplane parts, a number of nuts have to be started and tightened onto screws or bolts to assemble the parts and in many cases it is impossible to insert a wrench or pliers or any ordinary nut-holding tool to hold the nut against turning when the bolt or screw is rotated. Often it is impossible to get much more than the hand into the space in which the nut must be held. When the fingers are used they cannot possibly hold the nut tightly and the fingers quickly become scratched and sensitive in the attempt.

An object of this invention is to provide a new tool for holding nuts which can be quickly moved to the desired spot and which does not require much, if any, more space for manipulation in a narrow space than the space required for the insertion of the flat hand.

Another object of the invention is to provide a nut holding tool which can be attached to and retained by the hand while not substantially increasing the width of the hand or further limiting the size of the space into which the hand can be inserted.

These objects and others ancillary thereto are obtained by adding a holding means to a flat nut holding device in such a way that the latter is adapted to be held on a finger adjacent the palm of the hand. A very convenient way to adapt the nut holder for securing to the finger is to add a loop to the flat nut-holding device so that the combination of the loop and nut-holder forms a finger ring.

The nut-holder can be made in various shapes but in general comprises a flat piece of metal with a nut-holding opening in a central

Feb. 23, 1954 A. KASSEL, NEW YORK OFFICE FILED MAR 5, 1954 2,669,894

## 8. Broadening the search using the problem-solution approach

An alternative or additional way to improve the search table, broaden the search and improve its completeness uses the problem-solution approach (also used to rationalise inventive step). To use the problem-solution approach, search examiners should consider doing the following:

- Consider the technical problem that the invention seeks to solve.
- Determine which technical features solve the above-mentioned problem.
- Consider alternative solutions to the technical problem and describe these solutions using keywords.
- Add synonyms, alternative spellings and plurals to the search statements.
- Formulate search queries which describe the problem or the solutions.

As per Rule 42(1)(c), EPC, the description must mention the technical problem the application intends to solve (see also GL F-II, 4.5). This allows the technical problem addressed by the invention to be recognised even though it might not be immediately apparent from the claims.

### Legal references:

GL B-III, 3.2.2; GL G-VII, 5.3

## 9. Beyond the course

You can deepen what you have learned during this course with the following further readings:

- Guidelines for Examination in the European Patent Office, Part B: Guidelines for Search
- WIPO, PCT International Search and Preliminary Examination Guidelines

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