

Learning path for patent examiners

Structured searches: Entry level

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Introduction

This publication, "Structured searches, Entry 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 the principles of searching, illustrated by simple examples:

- What is a search strategy and why it is important
- How to harvest bibliographic and technical information
- What is a search table and how to build it
- How to define a search target
- Where to hunt references
- The principle of evaluating the prior art and finishing a search

2. Purpose of the search

The objective of a patent search is to discover the closest state of the art which is relevant for determining whether the claimed invention for which protection is sought is new and involves an inventive step. Patents should only be granted for applications which are novel and have an inventive step with respect to the prior art. Therefore, search examiners carry out a search to determine the closest prior art. This prior art may include patents, non-patent literature, internet disclosures or even videos on YouTube.

Once search examiners have carried out their search, they then compare the results with the invention claimed in the patent application to determine whether the claimed invention is novel and inventive with respect to the prior art found.

For the EPO, the concepts of novelty and inventive step used to evaluate the relevance of the documents found during the search are those defined in the European Patent Convention (EPC); for national offices, they will be those defined in the respective national laws. The relevant articles in the EPC relating to novelty and inventive step are Articles 54 and 56 EPC, respectively.

Under Article 54 EPC, the state of the art includes everything made available to the public by means of written or oral description, by use, or in any other way before the filing date of the European patent application.

Under Article 56 EPC, an invention is regarded as involving an inventive step if, having regard to the state of the art found in the search, the claimed invention is not obvious to a person skilled in the art.

The search is not usually aimed at retrieving prior art which may be of interest to the applicant. However, under certain circumstances, documents not directly relevant for assessing the patentability of the claimed invention may be cited in the search report (technical or legal background, for example; see the Guidelines (GL) B-X, 9.2.2 and 9.2.5).

The examination procedure and the preparation of the search opinion depend on the search for the state of the art on which the assessment of the invention's patentability is based. The search must be as complete as possible, within the limitations necessarily imposed by issues such as unity of invention and other considerations. For example, there may be so many independent claims or the application may be so unclear that a complete search is not possible; see GL B-III, 2, B-VII and B-VIII.

Legal references:

Art. 52 EPC, Art. 53 EPC, Art. 54 EPC, Art. 55 EPC, Art. 56 EPC, Art. 92 EPC, R. 61(1) EPC, GL B-II, 2

3. Search strategy

The first stage in the search is the formulation of a search strategy by the search examiner. This search strategy consists of a series of search statements expressing the subject of the search in terms of keywords, synonyms and classification symbols. Examiners will then select suitable databases and information sources before carrying out the search (see GL B-III, 2.2 for more details).

The search process is interactive and iterative in the sense that the search division reformulates its initial search statements according to the results obtained during the search (see GL B-III, 1.1, B-IV, 2.4 and B-IV, 2.6).

When using classification groups, search examiners select the groups to be consulted for the search, in both directly relevant and related fields. For example, an ink-jet printer may be used in coating or in 3D printing, so it may be necessary to search in these fields for an application claiming an ink-jet printer. When necessary, search examiners will consult colleagues working in similar or related technical fields (see GL B-I, 2.1).

When appropriate, search examiners will also consult other classification or indexing schemes (for example the Japanese FI or F-term schemes, or the International Patent Classification (IPC) scheme).

When in doubt about the technical 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, depending on its experience and knowledge of the available search tools, to select the most appropriate search strategy. The search division gives precedence to search strategies consulting documentation in which the probability of finding relevant documents is highest. Generally, the search is carried out in the main technical field of the application (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 results already obtained.

Legal references:

GL B-IV, 2.2; GL B-IV, 2.3

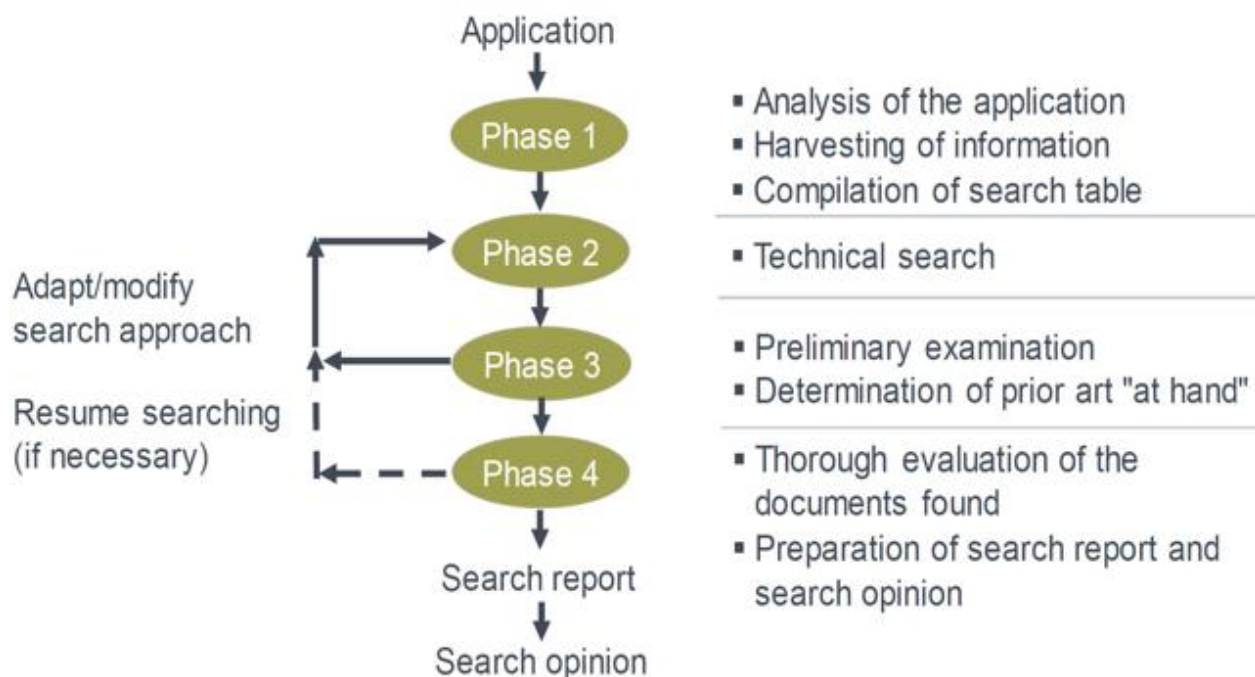
4. Searching – an iterative process

Search examiners continuously evaluate the results of their search and will reformulate the subject of the search accordingly. For example, the selection of the classification symbols to be searched (or the order in which they are searched) may need to be changed during the search if too many or too few relevant documents are being found.

During the search, examiners may also consult documents cited in the description or search report of a particularly relevant patent document. In addition, examiners may consult documentation from external databases that is not held in-house at the EPO (such as the Singapore patent database IP4SGor the Indian patent database INFULL).

When searching external document collections for unpublished subject-matter, search examiners must be careful when formulating their search strategies not to reveal confidential material, i.e. any

part of the unpublished patent application (see GL B-III, 2.4). The following flowchart graphically illustrates the iterative search process:



Legal references:

GL B-IV, 2.4

5. Harvesting bibliographic information (Phase 1)

During Phase 1 of the search, search examiners harvest bibliographic information. This includes not only the title of the application, but also the inventor's name, the applicant's name and the date of filing and/or priority.

The title of the application should indicate the technical field of the application. The name of the inventor(s) and applicant(s) may be of use in finding similar applications previously filed by the same inventor(s) and applicant(s) (especially if the inventor's name is "unusual"). The filing date and priority date are important because these dates define the beginning of the period of legal protection of the invention.

Examiners should ascertain if the application has "family members" already searched by other patent offices, especially one of the world's five biggest patent offices, the "IP5" – the Chinese Patent Office (CNIPA), the EPO, the Japan Patent Office (JPO), the United States Patent and Trademark Office (USPTO) and the Korea Intellectual Property Office (KIPO) – since there may be search results already available which can assist search examiners with their work. This information can be accessed using Global Dossier and the Common Citation Document available via Espacenet or the IP5 website. Be aware that the claims may be different at respective patent offices and hence, the cited documents can be not necessarily relevant.

Examples

Look up WO-A-2011 099 678 on the IP5 website and via Espacenet and search for family members having citations.

A simple patent family is the collection of patent applications that have been filed for the same invention in different countries/regions claiming the same priority or the same combination of priorities.

Legal references:

GL B-III, 3, GL B-IV, 1.1

6. Harvesting technical information (Phase 1)

When studying an application to be searched (Phase 1), search examiners read the description, drawing(s) and claim(s) of the application to determine the subject of the claimed invention (see GL B-III, 3). Examiners should note any prior-art references cited in the description and any fallback positions (inventive concepts not yet claimed) mentioned in the application.

Examiners analyse the claims with a critical eye in the light of the description and drawings to identify the problem addressed by the invention, the inventive concept leading to its solution, the features essential to the solution as found in the claims and the results and effects obtained (see, however, GL B-III, 3.5).

Examiners identify the independent claims and their categories (physical entities or activities). Physical entities include products, devices and apparatuses while activities include methods, processes and uses.

Where technical features which are not present in the claims are indicated in the description as being essential for solving the stated problem, these features must also be included in the search (see GL F-IV, 4.3(ii); T 32/82).

Examples

The application documents available to the examiner to carry out the search are those checked by the Receiving Section for compliance with the formal requirements laid down in Article 90(3) and Rule 57 EPC.

The bibliographic information may exceptionally include missing parts of the description and/or missing drawings filed under Rule 56 EPC (see GL B-III, 3.3), one or more claims filed after the date of filing or under Rule 58 EPC (see GL B-VIII, 6) or sequence listings filed after the date of filing under Rule 30(3) EPC (see internal instructions IB-IV, 1.2.4.1).

Legal references:

GL B-III, 3, GL B-IV, 1.1

7. Building a search table (Phase 1)

Next in the Phase 1, search examiners build a search table (see the example shown below). The search table lists the technical features of a claim and helps first to formulate a search query and later to assess the relevance of prior-art documents found during the search. As you can see, the technical features of a claim are divided into search concepts.

The classification symbols appropriate for each search concept are also added to the table. Cooperative Patent Classification (CPC) symbols are given as /C, IPC symbols are depicted as /IC, and Japanese F-terms and FI classes are shown as /FT and /FI, respectively.

The European search is a thorough, all-encompassing search. Nevertheless, bear in mind that no search can obtain 100% completeness due to the inevitable imperfections of any information retrieval system and its implementation.

The search is carried out such as to minimise the possibility of failing to discover anticipations for any claims or other highly relevant prior art. For less relevant prior art, a lower recall ratio can be accepted (see, however, GL B-III, 2.3). For limitations of the subject-matter searched by the EPO, see GL B-VIII.

Table 1: search table example

	Search concept 1	Search concept 2	Search concept 3	Search concept 4
Classification				
/C				
/IC				
/FT				
/FI				
Keywords				

Examples

Think about a claim directed to a furniture polish incorporating a fragrance, the fragrance being micro-encapsulated in self-adhesive microcapsules.

Search concept 1 could be "furniture polish", search concept 2 could be "fragrance", search concept 3 could be "microcapsules" and search concept 4 could be "self-adhesive".

It goes without saying that synonyms of these terms could be added to each search concept before combining the four concepts with a Boolean AND operator to perform a simple preliminary search. For instance, search concept 3 could be expanded to include microcapsule, microcapsules, micro-encapsulated, B01J13/02/IC, etc.

Legal references:

GL B-III, 2.1

8. Preliminary search (Phase 2)

Defining the search target in Phase 2 involves the following steps:

1. reading and analysing the claims
2. identifying the search concepts
3. studying the description
4. identifying the claimed inventive idea in the description (e.g. by summarising in your own words the core aspects of the invention claimed)
5. comparing the claims and the description for clarity and support
6. refining the analysis

Having determined the subject of the invention as outlined in [GL B-IV, 1.1](#), search examiners prepare a search statement defining the search subject as precisely as possible (this is called a "preliminary search"). In many instances, one or more of the claims may themselves serve this purpose, but they may have to be generalised to cover all aspects and embodiments of the invention.

In the process, examiners must remember to consider subjects excluded from patentability (see [GL B-VIII, 1](#) and [2](#)) and any lack of unity of invention (see [GL B-VII, 1.1](#)).

Examples

A "preliminary search" for the furniture polish example would be something like "furniture polish" AND "fragrance" AND "microcapsules" AND "self-adhesive".

Legal references:

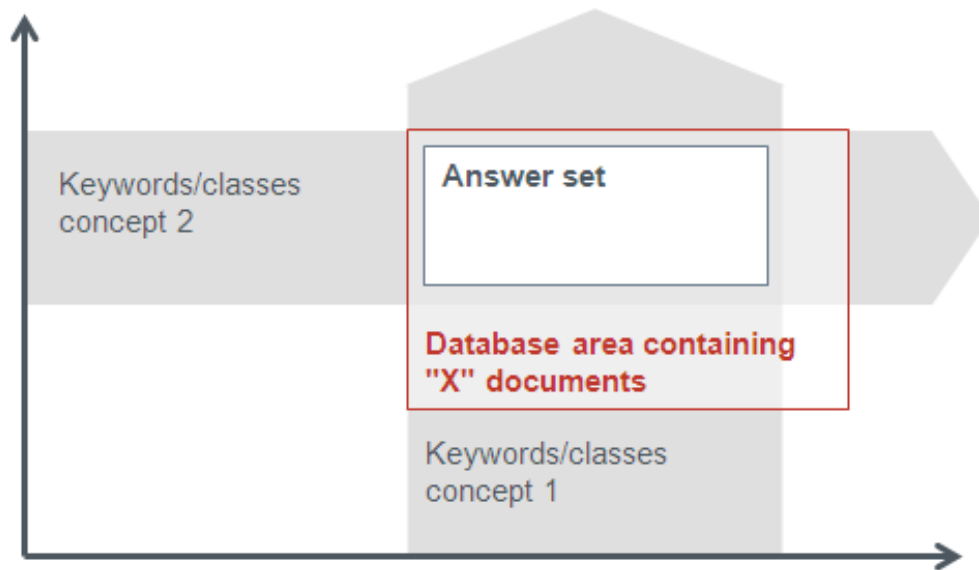
GL B-IV, 2.1

9. Performing the search in Phase 2

Think about the simple case of a patent claim having only two distinct search concepts, for example "an **ashtray** made of **graphene**".

As shown in the following diagram, combining keywords/classes for search concept 1 (**ashtray**) with keywords/classes for search concept 2 (**graphene**) using an AND Boolean operator should yield an answer set containing the "X" documents (if any) anticipating the novelty of the application. The examiner is unlikely to find any publications describing "graphene ashtrays," so they would need to broaden the search by expanding search concepts 1 and 2 with Boolean OR operators. For example, search concept 1 could be expanded to read "ash_tray OR ash_trays OR A24F19/00/IC" (the IPC classification symbol for ashtrays is A24F19/00).

Search examiners may consider using priority, filing and publication dates to exclude documents which do not qualify as prior art. They may also make use of applicant, inventor or author data to retrieve related applications.



The search is carried out in collections of documents or databases which are most likely to contain material in technical fields pertinent to the invention. The search strategy determines the documentation to be consulted and should cover all directly relevant technical fields. The search may have to be extended to include documentation in related fields, but the need for this must be judged by the search division in each individual case, depending on the outcome of the search in the documentation initially consulted (see [GL B-III, 3.2](#)). The question of which technical fields are to be regarded as related is to be considered in the light of the technical contribution of the invention and not only the specific functions expressly indicated in the application.

The decision to extend the search to cover fields not mentioned in the application must be left to the judgement of the search division, which does not put itself in the place of the inventor or try to imagine all the possible applications of the invention. The overriding principle when deciding on the extension of the search to analogous fields is whether it is probable that an objection of lack of inventive step could be established on the basis of what is likely to be found by the search in these fields (see [T.176/84](#), [T.195/84](#); [GL G-VII, 3](#)).

See the following examples using Espacenet as the search engine. [Espacenet](#) permits both keyword-based and classification-based searches. The first example shows a "preliminary search"

for a "cell phone with self-defence facility" while the second shows an expanded search for the same subject-matter using Boolean AND and OR operators to extend the scope of the search:

The screenshot shows the Espacenet search results page for the query "cell phone with self defense facility". The search has returned 1,737 results. The top result is DE202005016794U1, titled "Cell phone with self-defense facility, has integral deterrent spray device to incapacitate an attacking person or animal". The abstract of this patent states: "The cell phone self-defense facility comprises an exchangeable cartridge filled with either tear gas or pepper spray, which is useful against attacking persons or animals. The gas is released by means of a trigger (3) and led through an atomizer (5)." To the right of the text, there is a technical drawing of a mobile phone with a spray nozzle attached to the bottom, labeled with numbers 1 through 5.

This screenshot shows the same search results as above, but with a search filter table on the left side. The table lists the search terms used in the query: "cell", "phone", "with", "self", "defense", and "facility". Each term is in a separate input field with a dropdown menu and a search icon. Below the table are "Search" and "Reset" buttons. The main search results area is identical to the previous screenshot, showing the top result and its abstract.

Legal references:
GL B-III, 2.3

10. Complete search: broadening search concepts

To ensure a complete and thorough search in Phase 2, examiners look for more keywords, synonyms and classification symbols to add to the search table already prepared. For example, documents cited in the application may explain the technical background of the invention and where

it is classified. Patent applications and/or scientific publications by the same company or inventor/author may be mentioned in the description and can be a valuable source of information.

In the exceptional case that the application cites a document that is not published or otherwise not accessible to the search division but which appears to be essential for properly understanding the claimed invention, to the extent that a meaningful search of at least part of it would not be possible without knowing the content of that document, the search division issues an invitation under Rule 63 EPC (see also GL B-VIII, 3) containing the following information:

- which cited document is needed
- why the document is needed
- the consequences of not supplying the document in time (see below)

In reply to this communication, the applicant can submit a copy of the document in question, argue why the document in question is not essential for carrying out a meaningful search of the claimed invention and/or indicate a part of the application whose subject-matter can be searched without knowing the content of the document in question.

If no copy of the document is received within the time limit under Rule 63(1) EPC and the applicant is unable to convince the search division in a timely response to the Rule 63(1) invitation that the document is not essential for a meaningful search, the search division will prepare an incomplete search report or, where applicable, a declaration replacing the search report under Rule 63 EPC (see GL B-VIII, 3.2.1). This incomplete search report or declaration will be issued stating the following grounds:

- a. The non-availability of the document rendered the claimed invention insufficiently disclosed within the meaning of Article 83 EPC.
- b. The disclosure was so insufficient that a meaningful search was not possible on at least part of the claimed invention (see GL B-VIII, 3).

Where the applicant furnishes the document after the search report and the search opinion (if applicable; see GL B-XI, 7) have been prepared, an additional search on the subject-matter originally excluded from the search may be carried out now that the deficiency which led to the incomplete search has been remedied (see GL C-IV, 7.3).

However, applicants must be aware that information contained in documents referred to in the application can only be considered for sufficiency of disclosure pursuant to Article 83 EPC under the circumstances indicated in GL F-III, 8.

Legal references:

GL B-IV, 1.3

11. Complete search: finding family members

The application under consideration often has patent family members that share one or more priority documents. Analysing the work performed by other patent offices on these applications is often useful to streamline the search process.

Search reports for other applications which cite the application in question as prior art (for example in the description) may also be relevant.

Under the utilisation scheme at the EPO (see Article 124 EPC; Rule 141(1) EPC; GL B-XI, 9; OJ EPO 2010, 410), for applications where a priority is claimed, the applicant is expected to file a copy of the results of any search carried out by the office of first filing (for more details, see GL A-III, 6.12). If the prior-art information of the office of first filing is made available before the search is completed, the search division will check these citations and evaluate their relevance to the examination and the definition of the search strategy.

When drafting the search opinion, the search division takes into consideration any prior-art document provided by the applicant under Rule 141(1) EPC or by the office of first filing under Rule 141(2) EPC (see OJ EPO 2011, 62; OJ EPO 2012, 540; OJ EPO 2013, 216; OJ EPO 2015, A2; OJ EPO 2016, A18), if available at the time the opinion is prepared (see GL A-III, 6.12 and B-IV, 1.3).

Requests for information on prior art under Rule 141(3) EPC may be made only when the application has entered the examination phase (see GL C-III, 5).

Legal references:

Art. 124 EPC, R. 141 EPC, GL B-IV, 1.3, GL B-XI, 9

12. Espacenet – search sources

Espacenet can search in full-text documents (classified or unclassified patents, for example EP or US patents), abstracts (either with or without limitation by classification symbols) and non-patent literature (a large selection of journals can be searched, for example IBM Technical Disclosures).

Examples

Beyond Espacenet, the internet could of course also be searched (with or without limitation to specific classification symbols, e.g. Google Patents or Google Scholar), including online technical journals, online databases or other websites (see OJ EPO 2009, 456). The extent of any such internet searches depends on the case in hand, but a systematic internet search is essential in some technical fields; in fields related to information or software technology in particular, searches bypassing the internet will often not yield the most relevant prior art.

The search division may use the internet as necessary when searching unpublished applications but must take great care not to disclose confidential information inadvertently in its search terms. When performing an internet search, the search division should select keywords that enable a search to be performed while respecting the duty of confidentiality regarding unpublished applications. This would entail, for example, choosing only a few keywords which do not disclose the invention rather than entering long portions of the text of a claim as a search term.

An important consideration is the date of internet citations (see GL G-IV, 7.5), particularly when using an internet publication for assessing novelty and/or inventive step.

Legal references:

GL B-III, 2.4

13. Espacenet example (pepper spray)

We will now take you through a complete example using Espacenet.

The application claims a "portable telecommunication device incorporating a defence spray".

As set out above, the search is carried out in two phases:

Phase 1: harvesting information, analysing the application and compiling a search table

During this initial phase of the search, search concepts and keywords that might be helpful for the search are identified. A search table is drawn up and a decision is taken on how the prior art found will be used.

The logical steps are the following:

- Classify the application according to its technical field, in this case G08B.
 - As the examiner, we are aware of class G08B15/004, which relates to alarm systems. This class will be in the first column of the search table.
- Add another concept (a second column) for the portable telecommunication device.
- Add keywords reflecting the search concepts in the two columns.

Examiners working in G08B will not be experts in the classification of mobile telephones, so they should consult a colleague working in this field for advice on the right classification symbols to use. In the search table, the two appropriate CPC classification symbols are added: G08B15/004 (personal defence systems) and H04M1/21 (combinations of mobile equipment with other functionalities).

Although consulting US or Japanese colleagues is not possible, classification schemes from these offices can also be used to define the set of documents to be considered for the search.

Table 2: pepper spray, search table

	Defence spray	Portable telecommunication device
Classification		
/C	G08B15/004	H04M1/21
/IC		
/FT		
/FI		
Keywords		

Examples

Search query

Phase 2: technical search ("coarse sieve")

Search examiners now flesh out their search statements, study additional classification symbols, look for references in the description, carry out a classification-based search, search for previous applications filed by the same inventor(s) and try combining classification-based and keyword-based

searches. The search concepts in the search table are broadened by adding the additional keywords, synonyms and classification symbols found.

Apart from H04M1/21 (combinations of mobile equipment with other functionalities) – the starting point for this search – the following classification symbols are also relevant:

- G08B15/02: dye, smoke or liquids in personal defence systems
- G08B25/016: personal alarms (for example panic buttons, which are often integrated into a mobile phone)
- F41H9/10: hand-held defence devices

- | |
|--|
| <ul style="list-style-type: none"> ▪ <u>H04M1/21</u> ▪ <u>G08B15/02</u> ▪ <u>G08B25/016</u> ▪ <u>F41H9/10</u> ▪ <u>G08B15/004</u> |
|--|

The search table is expanded after studying the application further:

	Defense spray (search concept 1)	Portable telecommunication device (search concept 2)
Classification		
/CCI	G08B15/004, F41H9/10	H04M1/21
	G08B15/02	H04M1/72541
Fterms		
IPC	OR	AND
Keywords		
	(irritat+, Pepper) d (spray, atomi+, aerosol), Portable d defence	Mobile d telephone, GSM, cellular d telephone, GPRS PDA, wireless d telephone

In the search table shown above, the proximity operator "d" means that the words are separated by one word and can be in any order ("portable d defence" will find "portable defence" and "defence

portable"). The search can now be carried out using the "Advanced search" option in Espacenet. For example:

(nftxt=("portable" prox/distance<3 "defen[c,s]e") OR nftxt=("pepper" prox/distance<3 "spray")) AND ((nftxt any "gsm" OR nftxt any "mobile" OR nftxt any "wireless" OR nftxt any "cellular") AND nftxt = "telephone")

OR

(nftxt=("portable" prox/distance<3 "defen[c,s]e") OR nftxt=("pepper" prox/distance<3 "spray")) OR ((nftxt any "gsm" OR nftxt any "mobile" OR nftxt any "wireless" OR nftxt any "cellular") AND nftxt = "telephone")

NB:

- "nftxt" means that the search is being carried out in all the available Espacenet full-text documentation (in the claims and the descriptions of around 100 million documents).
- The truncation symbol "+" represents unlimited truncation (so "irritat+" will find irritating, irritation, irritated, etc.).

Regarding proximity operators in Espacenet:

- The proximity operator "prox/distance<3" means that the query finds words within three words of each other.
- "Prox/unit=sentence" finds words within a sentence.
- "Prox/unit=paragraph" finds words within a paragraph.
- "Prox/ordered" finds words in a specific order.

The screenshot displays the Espacenet patent search interface. At the top, the search bar contains the query: `(nftxt=("portable" prox/distance<3 "defence") OR nftxt=("pepper" prox/distance<3 "spray")) AND ((nftxt any "gsm" OR nftxt any "mobile" OR nftxt any "wireless" OR nftxt any "cellular") AND nftxt = "telephone")`. The interface shows 199 results found. The search criteria are broken down into two main groups connected by 'AND'. The first group contains two sub-groups connected by 'OR': one with 'portable' and 'defence' (proximity <3 words away from each other), and another with 'pepper' and 'spray' (proximity <3 words away from each other). The second group contains a single sub-group connected by 'AND' with 'gsm', 'mobile', 'wireless', and 'cellular' (any of these) and 'telephone' (exact match). The results list shows five patent entries, each with a thumbnail, title, number, date, and a brief description.

14. Evaluating the results; completing the search

Examiners complete the search by carrying out Phases 3 and 4.

Phase 3 involves evaluating the search results (the "fine sieve"), with search examiners verifying the dates of the documents and deciding whether they belong to the state of the art. Examiners fill in the search table to show which technical features are disclosed in each document, noting down the presence or absence of technical features. They then refer to the search table to select the most relevant documents and consider whether any further searching is necessary. If required, Phase 2 is repeated with different search terms/classes.

Lastly, in Phase 4 examiners write the search opinion and draw up the search report identifying the documents constituting the relevant state of the art (see GL B-X, 9). The search report provides the applicant, the examining divisions of the EPO and, by means of its publication, the public with information on the relevant state of the art.

The search report is accompanied by the search opinion (see GL B-XI, subject to the exceptions mentioned in GL B-XI, 7), which together with the European search report constitutes the extended European search report.

The effectiveness and efficiency of any search for relevant documents (Rule 61(1) EPC) depend on the degree of order which is available in, or which can be applied to, the collection of documents to be searched, the order allowing the search division to determine sections of the documentation to be consulted.

The basic components for creating order in a collection of documents are words, classification units, indexing codes or bibliographical links between documents by commonly cited documents. The order may have a permanent character, as with indexing words, classification symbols or indexing codes, or it may be created on demand by a search strategy judiciously using the above-mentioned basic components, the outcome of which is a section of the documentation which is likely to contain material pertinent to the invention.

For reasons of economy, the search division exercises its judgement, based on its knowledge of the technology in question and of the available information retrieval systems, to omit sections of the documentation in which the likelihood of finding any documents relevant to the search is negligible (for example documents falling within a period before the technology in question began to develop; there is no point in looking for internet technology before 1980 or laser technology in 1940). Similarly, the search division needs only to consult one member of a patent family unless it has good reason to suppose that, in a particular case, there are substantial differences in the content of different members of the same patent family (see GL B-IX, 2.4).

Sometimes the search division cannot find any documents published before the earliest priority date which prejudice the novelty or inventive step of the claimed invention. In these cases, the search division must cite in the search report, whenever possible, the prior art it found during the search which discloses a solution to the same problem as that addressed by the claimed invention and in which the known solution is technically the closest to the claimed solution ("closest prior art"). This prior art is cited as an "A" document in the search report (see GL B-X, 9.2.2).

If no such document can be found, the search division cites as the closest prior art any document which solves a problem closely related to the problem addressed by the claimed invention and in which the solution is technically most similar to that of the application under search.

Where the search division retrieves documents which are incidentally prejudicial to the novelty of the claimed invention (to be cited as "X") but which do not affect its inventive step after appropriate

amendment of the application, and does not retrieve any other documents prejudicing inventive step, it also proceeds as above. For example, a claim to a chemical compound used as an ink is anticipated by a compound used as a perfume.

When dealing with a European application that derives from an international application and undergoes a supplementary European search after entering the European phase (Article 153(7) EPC; see GL B-II, 4.3), the search division might not uncover any further relevant prior-art documents in the search over and above the documents already cited in the international search report by the International Searching Authority. In these cases, it is permissible to have no further relevant documents in the supplementary European search report (see GL B-X, 9.1.4).

Reasons of efficiency dictate that the search division uses its judgement to end its search when the probability of discovering further relevant prior art becomes extremely low in relation to the effort needed. The search may also be stopped when documents have been found that clearly demonstrate lack of novelty in the entirety of the subject-matter of the claimed invention and its elaborations in the description, apart from features which are trivial or common general knowledge in the field under examination, the application of which would not involve an inventive step. The search for conflicting applications (see GL B-VI, 4) is, however, always completed to the extent that these are present in the available documentation.

Legal references:

GL B-III, 2.1, 2.2, GL B-II, 4, GL B-IV, 2.5, 2.6

15. 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 (World Intellectual Property Organization), PCT International Search and Preliminary Examination Guidelines
- Guidelines for Examination in the EPO, B-VIII, 1 and 2 (exclusions from patentability).
- Guidelines for Examination in the EPO, B-VII, 1.1 (lack of unity).
- Espacenet (<https://worldwide.espacenet.com/patent/>) tutorials on searching

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