Are You Effectively Using Japanese File Index And F-Terms In Patent Searching

Japan is an important source in patent searching – it is well known in IP field that Japan has a rich collection of patent literature and that this collection is crucial in certain technical innovations. Although you feel comfortable looking up International Patent Classification (IPC) codes which are easy to browse and ready to understand its hierarchical organization, can you use the Japanese national patent classification system with the same confidence?

To effectively search the Japanese collection, this short article introduces two in-house classification systems developed by the Japanese Patent Office, known as Japanese File Index (also called F-Index or FI) and Japanese F-terms, respectively. While these two classification systems are often treated together, they are quite different and both offer many advantages in patent searches.

1. Introduction of FI codes/F-terms

(1) FI codes

As the subdivision and extension of IPC, File Index (FI) is structurally similar to IPC codes. It uses the hierarchical structure of IPC classification, and on this basis, the main groups and subgroups are subdivided by IPC and/or file as required. Thus, after hundreds of thousands documents uncovered in one group are subdivided, only thousands of documents are contained under one IPC-subdivision symbol and/or File discrimination symbol, and accordingly searching efficiency can be improved. The FI codes attached to objectives and invention information are presented in the documents, which are respectively corresponding to a technical problem to be solved by the invention and technical solutions for solving this technical problem. Therefore, utilizing these two kinds of codes to perform an "AND" search during a searching process will improve searching efficiency greatly.

A complete FI term is composed of IPC code/+IPC-subdivision symbol/+File discrimination symbol. The IPC-subdivision symbol is a subdivision symbol devised by the Japanese Patent Office with respect to the IPC code with 3-digit numbers and used for classifying documents according to different aspects such as application occasions, or structural features. The File discrimination symbol is a single letter further subdivided by the Japanese Patent Office with respect to the IPC code or IPC-subdivision symbol. However, the IPC-subdivision symbol and File discrimination symbol are not the necessary parts contained in the FI terms. The File discrimination symbol is indicated by a letter 'A' to 'Z' (the letters "I" and "O" are excluded for avoiding ambiguity), wherein the letter "Z" indicates "others" for subject matters which do not belong to a subgroup already presented by a File discrimination symbol, or subject matters in a subgroup indicated by one or more File discrimination symbols are classified into the subgroup by the File discrimination symbol "Z".

There are four main FI codes: (1) only IPC code, such as H01M10/02; (2) IPC code +IPC-subdivision symbol, such as H01M10/00 & 118; (3) IPC code + File discrimination symbol, such as H01M10/06&L; and (4) IPC code + IPC-subdivision symbol + File discrimination symbol, such as H01M10/00 &301A.

(2) F-terms

F-term system is a classification system used for computer-based searching. F-terms re-classify or further segment each specific technical field of IPC from a variety of viewpoints, including objective, application, structure, material, manufacturing process, processing and operation method, control method, etc. Combining F-terms with IPC effectively narrows down relevant documents, for example less than 100 documents discovered. F-terms are used to break down subject areas by technical application based on the decomposition of claims, or on the contents in specification and accompanying drawings. Accordingly, F-terms assigned to a patent document can fully reflect the claimed invention, as well as additional information such as those F-terms with respect to one patent document.

The components of an F-term include: 5-character alphanumeric theme code + 2-characters view point + 2-digits figure. For example, 5H011AA01 represents a theme code of "5H011" relating to a technical field, a view point of "AA" relating to material, method, structure in the invention, etc., and a 2-digits figure of "01" relating to a further subdivision of features indicated by the viewpoint.

F-terms have the following characteristics:

(1) In the F-term classification system, multiple terms may be related to one subject matter, but directed to different viewpoints, which results in an excessive number of F-terms

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with respect to one patent document, and these

F-terms do not have primary or secondary hierarch. F-terms can be mainly classified into three categories to represent specific technical features extracted respectively from objective and usage, application, and claims. Such a characteristic has two advantages: first, a multi-angle index is given to a document such that a user can acquire the document from different viewpoints with specificity and accuracy. For instance, documents may be searched from different viewpoints, such as an F-term of objective category, an F-term of application category, an F-term of specific technical feature category; technical features with two or three of the described viewpoints in technical solutions of prior art are searched by means of a combination of various F-terms. Thereby, one may locate documents with the most relevancy with respect to an invention or in prior art search. Second, multi-viewpoint index meets requirements of searching documents in a cross-disciplinary application, such as statistical analysis of a certain technology.

(2) In F-term classification system, a term is assigned to a patent document by considering the document as a whole, and is also extracted from specific technical features of claims. In other words, F-terms are determined on the basis of details of a document with dozens or hundreds of terms assigned. More, some terms can be used instead of keywords during searching using this classification system to avoid a sceario that keywords are not enough, and missed retrieval can be reduced. For instance, a search can be performed by search strategies of F-terms of specific technical feature category "AND" F-terms of specific technical feature category, or F-terms of specific technical feature category "AND" keywords, etc. In an IPC system, codes are extracted from the whole contents or key subject matter of documents, while F-terms have a multidimensional faceted structure, and are often much narrower in scope than IPC.

In fact, one Japanese patent document can be indexed with FI and F-terms, which can be searched alone or in combination.

## 2. Application of FI/F-terms in a search

Background:

Provided are a fuel cell unit and fuel cell unit assembly, wherein a membrane electrode assembly and a current collector plate are closely contacted with each other, so that a liquid fuel hardly leaks out therefrom, and an electronic apparatus equipped with those therein. A DMFC unit Ul for generating electricity through supply of methanol solution therein comprises: a MEA 11, a

pair of current collector plates (12, 13) for the MEA, a fuel tank 20 having a fuel chamber (20a) where the methanol solution is stored therein, and a holding means (40) for holding the current collector plates (12, 13) within an area where the MEA 11 is disposed. The holding means holds the current collector plates at around a central position of said area for disposing.

In prior art, as illustrated in drawings below, the holding force for the current collector plate is the largest at the four corners, and the holding force at the central position is the smallest. When the holding force at the central position is small to some extent, a gap may be formed between the current collector plates and the membrane electrode, resulting in liquid fuel leakage.
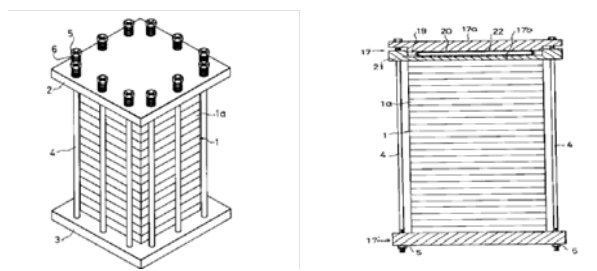
In the present application, circular current collector plates and MEA are used and the holding means are disposed at the central position of the fuel cell stack. Therefore, a fuel cell stack having MEA and current collector plates which are closely contacted with each other is provided.
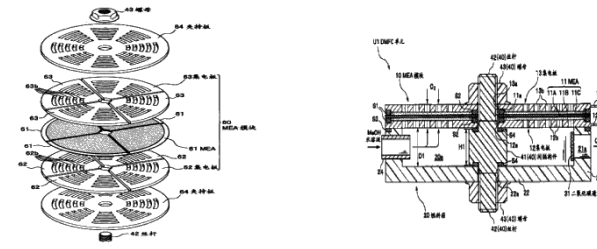
A claim:

1. A fuel cell unit for generating electricity through supply of a liquid fuel therein, comprising a membrane electrode assembly, a pair of current collector plates for said membrane electrode assembly; a fuel tank having a liquid-fuel storage space for storing the liquid fuel therein; and a holding means for holding said current collector plates, there between, within an area for disposing said membrane electrode assembly.

Searching process and analysis:

An IPC code of the present invention is H01M8/10, and keywords that can be extracted from the present invention are "circular", "central"

and "center". If a search is performed based on these search elements, a lot of noise would be caused. Since the "circular" in the present invention is used to define the shape of battery and cannot be reflected by the code and keywords, the search result may cause other noises. Considering that there are further subdivisions involving the fuel cell in the F-terms, it is preferable to search using F-terms.

The F-term includes a symbol related to the shape of the fuel cell: 5H026/CV00 (shape, structure, and pack of the battery cell), the subject matter of the present invention belongs to CV01 (plate shapes except for square and rectangular, such as round, or fan) contained in this group, thus searching with this symbol can avoid the noise caused by the case that "circular" does not define the shape of the battery. In searching with F-terms, 278 related patents are located, and 3 reference documents are found after careful reading.

3. Summary

FI classification system is an extension of IPC,

but is very precise and very numerous. F-terms, on the other hand, re-classify each specific technical field of IPC from a variety of viewpoints such as objective, application, structure, material, manufacturing process, processing and operation method, control method, etc. As F-terms are often much narrower in scope than IPC or FI terms, they may especially useful for capturing documents of interest. In some fields, the use of FI/F-terms searching is more accurate than the keywords searching. Searchers can determine the FI/F-terms of a technical subject from various viewpoints, and then an operation of "and" may be performed. Accordingly, it is often possible to obtain very relevant Japanese patent documents, and the number of documents to be reviewed can be reduced.

However, the use of FI/F-terms for searching also has some limitations, because the patent documents in other countries are not given the F-terms, so the current searching using the F-terms can only be applied to search Japanese patent documents and the patent documents having the Japanese family patents.

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