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Review Article

Japanese Patent Classification: An Auxiliary Tool in Patent Analytics

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ABSTRACT

With advancements in technology, new inventions are emerging day-by-day, resulting in more number of patent filings all over the globe. The analysis of existing patents to analyze novelty or patentability of upcoming inventions and to check the non-infringing process of the patented technology, there is need to analyze patents of targeted domain technology. The analysis of patents is done not only to analyze novelty or infringement but also to explore the undiscovered innovative knowledge covered in patents. Patent searching using keywords, sometimes, gives very broad results. The analysis of thousands of patents becomes difficult for patent analyst. The methodology used with IPC (International Patent Classification) codes helps to reduce the result of patent search and helps patent analyst in targeted search. But in case of Japanese patent search, IPC alone unable to give targeted results. Then it becomes important to understand the concept of JPC (Japanese Patent Classification) codes and their use to make the Japanese patent search easy. The Japanese Patent Classification includes File Index, Facets and F-term. In this article, Japanese Patent Classification codes are explained in details with their consequences, applications, constructions and search methodology using them.

Keywords: JPC, Classification, Japanese, Patent, Tool, File Index, F-term, Facets

INTRODUCTION

Classification is the distribution or arrangement of information in such a way so as to retrieve the particular information becomes easy and faster. Text Searching gives us quick information but not so precise. The required specific information may not be present in text but in drawings only. In that case use of synonyms may or may not be useful for retrieval of precise information. This problem resulting from unstructured search can be solved by creating structured source of data by means of classification. There are lots of indexing and classification schemes to reorganize the data.

In patent analysis, same problem appears with text searching and to avoid this problem patent classification codes introduced. Patent classification schemes are used to organize the patent data for accurate and easy access. The usefulness of patent classification is understood in terms of refinement of search by patent examiner or any other non-expert searcher to focus on desired technology.

Types of Patent Classification Systems:
1. The International Patent Classification (IPC)
2. The European Patent Classification (ECLA)

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3. The United States Patent Classification (USPC)
4. British Patent Classification (UKPC)
5. Japanese Patent (FI, Facets and F-term) Classification
6. German Patent Classification
7. DWPI Patent Classification

Introduction of JPC

Japanese Patent classification System (JPC) introduced in order to organize and index the technical information given in Japanese patent documents. This classification system helps in retrieving the patent document quicker by sub-dividing and indexing technological subject matter for studying a particular area of technology in Japanese patents.

The JPC is constructed with three fragments:

1. File Index (F-I) Classification e.g. C02F9/00 **501 *A***
2. Facets (complement to FI classification) e.g. **ZAB or ZCC**
3. F-terms e.g. **4D006 GA01 *A***

The F-I classification system is more or less an extension of the IPC. Facets are useful in combination with F-I classification search to index subject matter in a different prospective.[5] F-terms are independent of IPC and are the combining result of multiple F-I subdivisions into broader "themes."

HISTORY OF JPC

Japanese Patent Office (JPO) located in Tokyo administers the laws relating to patents, industrial designs, utility models and trademarks to promote the growth of Japanese economy. In 1978, Japan agreed with PCT (Patent Cooperation Treaty) and then JPO endorsed International Patent Classification (IPC), abandoning its own patent classification in 1980.[4]

The F-term system was formulated in 1987 by the Japan Patent Office (JPO) and its maintenance exercised by the same body. The F-term system does not have any legal foundation, whereas the IPC system was agreed by the Strasbourg Agreement of 1971.[3]

CONSEQUENCES OF JPC

A Patent Classification provides a code for categorizing the invention. It also represents a group of searchable patents based on their similarity of claimed subject matter. A classification is used as a tool in finding relevant patents and assigning patent application in a particular group according to their technical domain.

Any person looking for a patent or utility model on a technology, especially in the jurisdiction of Japan, have to check whether their patent, or utility model is novel and is not claimed by any other person or organization in Japan or in any other country. To check this one should go for deep data-mining. One can use JPC for the data-mining as well as for searching of: Novelty, Patentability, Invalidity, Infringement issues or other related information and analysis thereof.

The classification based searching has various **advantages**:

a)It gives domain specific results than comprehensive text search results

b) It is independent of the language of the text

c)It is independent of the changes in terminology.

The **applications** of F-terms (JPC) are:

· Used in those areas where IPC alone unable to retrieve precise answers

· Not used alone but in combination with keywords and IPCs

· Used to define uses of concerned technolog

· Often used for polymer searching e.g. process

· Not used much for low molecular weight substance searching

· Efficiently used in structure searching (i.e. chemical structure fragment searching).[6]

Construction of JPC

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The JPC classification is constructed with three fragments:
i. File Index (F-I) Classification
ii. Facets (complement to F-I classification)
iii. F-terms

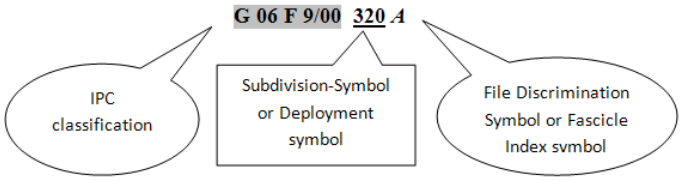
i. File Index (F-I) Classification:
F-I classification began in 1980 based on IPC-4 classification. F-I is searchable via IDPL (Industrial Property Digital Library of Japanese patent office) for patents since 1855. The F-I classification has increased IPC sub-divisions from approx. 70,000 to 170,000 in its database. F-I classification system updated biannually to introduce upcoming technologies.
F-I is the internal classification applied to all Japanese patents and utility model in parallel to IPC. F-I classification is the sub-division extension of the IPC and called 'IPC sub-division symbols.' F-I is assigned based on claims but may include technology from disclosure. The formation of F-I symbol is as:

FI symbol formation	**Example**
IPC symbol	A21D 2/04
IPC symbol + fascicle index symbol	B01D 53/02**B**
IPC symbol + deployment symbol	B31B 1/00 **301**
IPC symbol + deployment symbol + fascicle index symbol = F-I symbol	C04B 35/58 **104B**

For example, the F-I class ''G06F9/00 101.'' (One dot) corresponds to the IPC class G06F9/00 denoting 'arrangements for program control (. . .)', with the additional IPC-subdivision symbol 101 referring to 'consoles'.

''G06F9/00 310..'' (Two dots) refers to 'operation controls' for consoles; ''G06F9/00 320...'' (Three dots) refers to operation controls for consoles 'related to display controls'.

And finally, ''G06F9/00 320A'' refers to ''operations in general'' of operation controls for consoles related to display controls. In this example, the letter 'A' is the file discrimination symbol.[8]



ii. Facets
Facets are a set of three digits of alphabetic codes which are also complement to F-I classification and used in combination with F-I classification to search patent data. Facets classify the technological information in a different perspective.[5]
A facet code generally starts with the first letter of the IPC/F-I class that it is considered related to specific domain of technology. General facets that are not associated with a specific IPC begin with the letter "Z." The Z codes index patents around multiple IPC classes and these codes are also called as "Broad List Facets." For example, ZAB (Environmental protection technology) or ZCC (Combinatorial chemistry related technology). Because these are "Z" facet, this type of assortment is applicable to any IPC class.[9]

iii. F-Terms
F-Terms classification system introduced by the JPO (Japanese Patent Office) to tackle the ever increasing volume and diversification of technologies so that prior-art searching or other types of data mining for patent

examiner/analyst becomes easier. F-term classification is independent of IPC but uses in addition to IPC in patent documents to classify technological information. F-terms are unable to cover all Japanese documents due to its limitation to cover all technologies.[11] F-terms assigned to any patent document based not upon the abstract part but assigned on the basis of all sections of patent document.

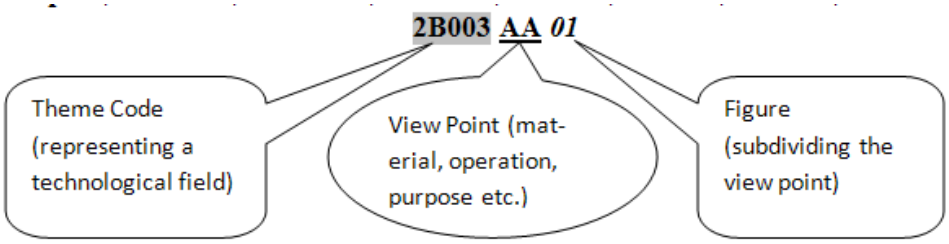
F-terms categorize into different themes and each theme is given a special 'theme code.' Each theme code covers a corresponding F-I classification. Themes are further divided into terms, called 'term codes' and are assigned to any particular technology according to various technical viewpoints (e.g. material, operation, product, purpose etc.). Presently, F-term contains 1700 'theme codes' and 350,000 'term codes.' Still, 800 theme codes are pending to examine by JPO examiner on the basis of FI classification.8 F-terms get updation annually to introduce upcoming technologies.

Every F-term consists of a five-digit theme code and a four-digit term code, for example 2B003 AA01. In our example, 2B003 is the theme code (represents 'artificial fish reefs'), corresponding to the F-I classes A01K61/00 311 or 61/00 321. AA01 is the term code, in this case referring to 'sunken installation configurations'.

F-term theme code format: Number + Alphabet capital letter + Number + Number + Number

F-term (Theme Code)	3D016
Theme Title	Automobile Bumper
IPC range	B60R 19/00 ~ 19/56

F-term subdivides the 'theme-code' based on several technical points of view; **Purpose, Function, Structure, Material, Method, Process, Control, etc.**



The chart of these theme codes and term codes are available on JPO's IPDL webpage (ipdl.jpo.go.jp/homepg_e.ipdl).

For example……..

2B003		Artificial fish reefs				
		A01K61/00,311 - 61/00,321				
AA	AA00	AA01	AA02	AA03	AA04	
	INSTALLATION CONFIGURATIONS	. Sunken installation configurations	. . Floating and sinking configurations	. Floating configurations	. Bulkheads	
BB	BB00	BB01	BB02	BB03	BB04	BB05
	STRUCTURES	. Blocks (i.e., only integrally molded)	. Knockdown-type structures	. . Blocks	. . Pole-shaped bodies	. . Tubular bodies
CC	CC00	CC01	CC02	CC03	CC04	CC05
	CHARACTERISTICS OTHER THAN STRUCTURE	. Upwelling flow generation	. Surface processing	. Induction means (i.e., including fertilizer)	. Installation methods (i.e., including devices)	. Manufacturing methods
DD	DD00	DD01	DD02	DD03	DD04	DD05
	MATERIALS	. Concrete	. Metals	. Synthetic resins	. Industrial wastes	. . Tires
EE	EE00	EE01	EE02	EE03	EE04	
	TARGETED ORGANISMS	. Abalone (i.e., including shells)	. Crustaceans (i.e., including shrimp)	. Squid, octopus, and sea urchins	. Seaweed	

Search Methodology

The introduction of F-I classification system and F-term is to facilitate the searching and retrieving of patent data by the examiner, non-expert searcher and non-Japanese searcher/English speaking searcher. This search methodology using JPC (i.e. F-I and F-term) allows one to search for concepts rather than the keywords themselves.

It is recommended to start searches with the main IPC class, determine the F-I class in question, from the F-I class there is a link to the corresponding F-term list. The methodology to search patent data with JPC (i.e. F-I and F-term) includes various steps and those are:

Step-1: Identify IPC for search

i. Similar Documents: We can identify the relevant IPC using documents or data obtained from normal keyword search in various free or paid databases.

ii. Catchword Index:We can identify the related IPC using catchword index by clicking on the catchword relevant to our invention.

iii. IPC-class:We can search IPC using WIPO-PATENTSCOPE webpage. This page gives us list of IPC relevant to our technology.

Step-2: Determine F-I class

i. Open the main searching page of Japanese patent office “Industrial Property Digital Library” menu and click on Patent Map Guidance.

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Enter the IPC e.g. A01K61/00 in the box to identify F-I in concordance with concerned IPC.

ii. Go through the various links in the list to ensure that they are relevant to the concerned technology and find out the relevant F-I class.

Step-3: Search F-term 'theme' corresponding to F-I class / Facet

i. Click on the relevant F-I class / Facet to get related F-term 'theme-code' e.g. 2B003.

Step-4: Search from different viewpoints to identify relevant 'Term-Code'

i. Click on the concerned F-term 'theme-code' to get the tabulated view of 'term-codes' from different viewpoints of the technology.

ii. Identify the relevant F-term 'term-code' e.g. AA 01 (view-point + figure).

ALTERNATE SEARCH METHODOLOGY

The search methodology using Patent Abstract of Japan (PAJ) is as simple as other free databases. This search can be forwarded using keywords, date of publication of application, IPC, patent number, application number, publication number and appeal/trial number. The search methodology using PAJ as follow:

Step-1: Use PAJ for keyword (e.g. computer AND table AND laptop) search to retrieve F-term code in original publications.
Step-2: Select and capture F-term theme e.g 5B087.
Step-3: Find suitable F-term codes from F-term theme e.g. DD12*DH02*DH05.
Step-4: Use F-term theme code (5B087) and search formula (DD12*DH02*DH05) into the columns in FI/F-search to find related prior-art documents.[7]

Advantages of JPC

1.Japanese patent classification (FI and F-term) helps to enhance the coverage of patent classifications in INPADOC.[12]
2.JPC codes (FI and F-term) makes easy not only to search Japanese patent literature available in INPADOC on STN but also to search Japanese patent literature on "Industrial Property Digital Library" in Japanese patent office website.[12]

PATENTSCOPE WIPO IP SERVICES

The patent data of Japan is now available on PATENTSCOPE searching database of WIPO IP services. This database facilitates those searchers who are unknown to Japanese language. This database includes more than 3,000,000 records out of this 2,900,000 records are in full-text XML. The database covers data from January 2004 to July 2012 only.
This database used to search patents only with key-words but the problem of arresting untargeted results will remain the same. This ultimately shows the importance of Japanese Patent Classification which can never be denied for the sake of getting targeted results.[2]

CONCLUSION

According to a report, it is considered that more than 70% of the unexplored knowledge is in patents. So, it becomes important to explore that undiscovered knowledge. The language used in the patents of Non-English speaking countries (e.g. Japan) is not English. This language problem can be a barrier in the exploration of patent data. The solution to this barrier is given by machine translation and PATENTSCOPE WIPO IP Services. But the problem to have domain unspecific and broadly categorized patents is solved only by using the classification codes with keywords while searching targeted patents.
Finally, we can say that Japanese Patent Classification (JPC) really acts as an auxiliary or supportive tool in the analysis of Japanese patents.

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