

Patent Search For Engineers and Lawyers
Prof. M. Padmavati
Rajiv Gandhi School of Intellectual Property Law
Indian Institute of Technology, Kharagpur

Lecture -12
Hands on Patent Search

Welcome to the week 3 of the Hands on and Patent Search. So, far we have understood the basic aspects of what are different databases, particularly the public databases. The relevance of keyword search, how classification search is done from a theoretical perspective and why do we sometimes do a combination search of keywords and classification? In this week, we will understand the practical aspects of the keyword search, IPC search and also the combination search.

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So, the concepts that we will be covering in this lecture are commercial databases and their utility, hands on practical aspects of patent search using keyword, classification and combination search.

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Database: A database is a collection of information that is organized so that it can easily be accessed, managed, and updated. They can be classified according to the type of content: Bibliographic, full-text, numeric and images

Database Content <ul style="list-style-type: none">(a) What are the years of coverage?(b) What is the subject matter?(c) Does the bibliographic information include documented publication dates?(d) Does the database include abstracts and/or full text?(e) Thoroughness of indexing.(f) Frequency of updates.	Accessibility <ul style="list-style-type: none">(a) Is the database publicly available?(b) If so, what are the operational hours?
Continuity <ul style="list-style-type: none">What is the database policy on maintaining back file data?	Technical Support <ul style="list-style-type: none">What is the availability of technical support?
	Mode of Access <ul style="list-style-type: none">(a) Online.(b) Web-based.(c) In-house CD-ROM or other electronic media.<ul style="list-style-type: none">(1) networked.(2) stand-alone system.

At the bottom of the slide, there are logos for 'swayam' (Free Online Education) and 'Media Store, IIT Madras'.

Databases come with different aspects; databases are basically information pools of various aspect such as either bibliographic data, image data or even sometimes curated data. Databases differ in terms of their content, in terms of what are the years of coverage, what is the subject matter and also some of the databases are also updated in terms of providing the backup data.

Accessibility of a data is very important from the point of view of whether the database is available publicly or it comes as a part of a subscription. Many databases today also provide technical support in terms of providing user enhanced data. The mode of access of databases can be in various forms; online is the more preferable form these days because of the digital revolution. Many databases are available offline as CD-ROMS and in other forms. Sometimes databases are available as part of network. So, today databases are more relevantly used in relation to patent search.

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Examples of commercial databases

TotalPatent		WIPS Global	
Patbase		PatSeer	
Orbit		Ambercite	
Derwent Innovation		Patsnap	

Logos at the bottom: Swamyam, IIT Bombay, IIT Madras.

Let us examine some of the examples of some of the commercial databases. These are some of the different commercial data databases available for patent searches Total Patent is one, Patbase is another database, Orbit is one another database which provides patent data, Derwent innovation, WIPS Global, Patseer, Ambercite, Patsnap. These are a few examples of the commercial databases that are available for on subscription.

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Difference between commercial and free patent databases

Free Databases

- Only (some) bibliographic data (front page)
- Limited technical disclosure (sometimes abstract)
- Limited legal information
- Regularly published gazette editions (weekly, monthly,...)
- Published editions are not updated
- Changes/corrections appear in new edition
- Search interface and functionalities are more basic and simple
- Do not permit searches as efficient as commercial databases

Logos at the bottom: Swamyam, IIT Bombay, IIT Madras.

There are several differences between commercial and free databases. Now, free databases provide only limited information in terms of the bibliographic data. The disclosure information in terms of the full text information is also limited in some only abstracts are provided. Gazette information is something which is again limited in terms of the public databases. Often changes or corrections can appear in the new additions. Typically free databases are more simple and basic and of course, do not permit searches like the commercial databases.

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Difference between commercial and free patent databases

Commercial Databases

- Collect data from various primary sources and make it accessible through single interface
- Broad coverage of searchable and retrievable data
- Valued added services e.g., analysis and visualization tools, data enhancement, ranking/score information, curated information
- Greater text mining ability

The slide features a yellow background with a dark blue header and footer. A small inset image of a woman in a pink and white sari is visible in the bottom right corner. Logos of institutions are present in the bottom left corner.

So, there are different commercial databases and today commercial database offer a wide range of solutions, the essential difference between the commercial databases and the free databases is that commercial databases often provide a collection of patent information from various patent offices.

Today, we have commercial databases providing anywhere between 50 different patent office information to up to 100. So, therefore, you can imagine millions of documents are available for search. Hence, there is also better searchable information and also retrieving of data is also quite elaborated.

They also provide a lot of value added services in terms of the analysis and visualization tools where you can actually draw graphs, pie charts, you can prepare a landscape and also they also provide a greater text mining ability in terms of providing various links not only to the patent family information, they also provide information relation to non-

patent literature. So, therefore, there is a seamless link that commercial databases offer and generally are use is a user friendly in terms of the use of information.

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Advantages of commercial databases

- Value-added data
 - Corrected bibliographic data
 - Enhanced title and abstract
 - Improved classification/indexing
- Sophisticated search and analysis tools
 - Chemical formula/Sequence search tools
 - Patent topographical maps
 - Citation analysis
 - Semantic search
- Provide integrated access to multiple sources of patent and non-patent literature (NPL)

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Today, commercial databases are also providing what we call sequence searches, structure searches, citation analysis and also a very integrated access to in relation to different source of data.

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Patent Bibliographic references: Free database vs. Commercial database

Free database: e.g., Espacenet **Commercial database: e.g., WIPS Global**

The slide compares two patent search interfaces. On the left is the Espacenet interface, and on the right is the WIPS Global interface. Red boxes and arrows highlight differences: the WIPS Global interface has a 'Status' dropdown menu and an 'Application history' section, which are absent in the Espacenet interface. The WIPS Global interface also shows a 'Patent Number' field with a dropdown menu. The slide features a yellow background with a blue header and footer. The footer includes the Swayam logo and a woman in a pink sari.

One example of the difference between free database to commercial database is what is represented in this illustration where we are looking at something like a simple

bibliographic reference. On the left panel is what you see the patent application from Espacenet.

Visibly you are looking at the commercial database for instance let us say WIPS Global this is how you could see the information provided in the illustration where you can see the bibliographic information all into one page. This is now in the case of commercial database you have links to all other information whether in terms of the application history all at one place, the details in relation to publication and also you can look at the current status and also the other information that is available.

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Commercial database: e.g., WIPS Global

Drawings:

Exemplary Claim

A carbon coated brake rim with ceramic brake portion (1) comprising a carbon coated brake rim (10) including two brake portions (11) respectively formed on two sides thereof, with each brake portion (11) having an outer surface (11a), and a protective film (12) formed on the outer surface (11a) of the brake portion (11), wherein the protective film (12) includes an aluminum layer (20) coated on the brake portion (11) and a ceramic layer (30) coated on the aluminum layer (20), wherein the aluminum layer (20) has a first side (21) and a second side (22) opposite to the first side (21), wherein the first side (21) connects with the outer surface (11a) of the brake portion (11) via thermal expansion to provide an excellent bond strength therebetween so that the aluminum layer (20) is firmly coated on the outer surface (11a) of the brake portion (11).

Classification Code

Classification	Current
EPC	no:2001 0000-0000/02 0000-0001/00
IPC	no:2001 0000-0000/02 0000-0001/00

Inventor
Agent

Examination Request

EPO Designated Contracting States

Legal status

Date	Code	Description
2013.08.01	100	SEEMED TO BE WITHDRAWN Expiry Date: 2013.02.16
2011.05.10	100	REQUEST FOR EXAMINATION FILED English, Chinese, Japanese

Legal status

- Exemplary Claim
- Examination Request
- Designated Extension States
- Legal status

swayam

This also provides a very user enhanced feature in terms of looking at all the images in one go. So, for instance, if you are looking at figures and looking at novelty of an invention and ascertaining that, this provides an easier way of looking at it. Besides that it also provides you the exemplary claim, the details in relation to whether the examination request has been filed for it and the legal status so, all of this information can be seen in one go. So, many a time for the patent searchers, time is an important requirement in terms of gathering as much information on a particular patent.

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Commercial database: e.g., WIPS Global

The screenshot displays a search results page with several sections:

- WIPS Family:** A table with columns for Number, Date, Title, and Applicant. It lists patent entries with their respective dates and titles.
- Family Legal Status:** A section showing search results for a specific patent family, including details like Category, Number, Backward Citation, Title, and Applicant.
- Citation Reference:** A table showing citation references for a selected patent, including Citation Number, Title, and Date.

On the right side of the slide, a list of features is highlighted with a red bracket:

- Family
- Family legal status
- Search Report
- Backward & Forward Citations

The slide also features the Swamyam logo and a woman in a pink sari in the bottom right corner.

And so, subscribe databases provide you this sort of an option. Also the other information that you can get is the family and the family legal status, you can also get the details in relation to back backward and forward citations in terms of the value of the patent information.

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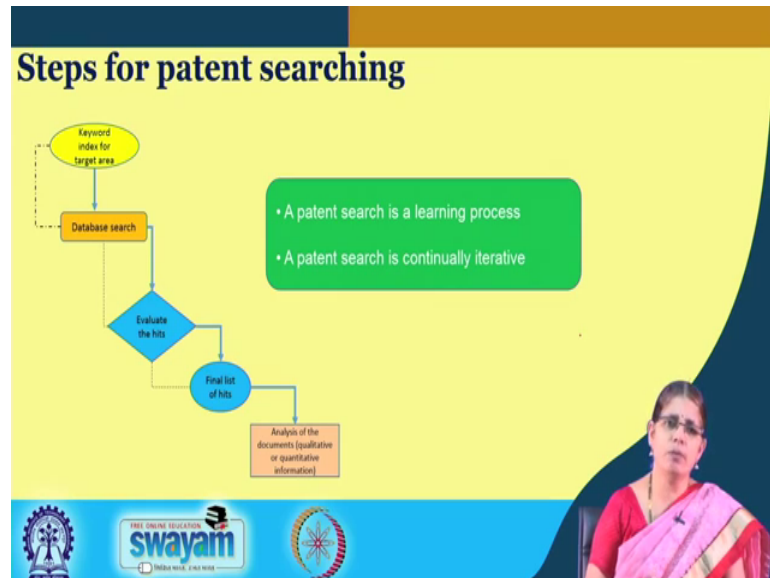
Practical Demonstration of Keyword and Classification - Mechanical related

The slide features a yellow background with a dark blue curved shape on the right side. At the bottom, there is a woman in a pink sari and the Swamyam logo.

So, moving on, we will be looking at the practical aspects of keyword and classification search. One of the areas that we are beginning with today is the aspect of mechanical engineering which is the simplest of all in terms of understanding patterns because most

of the times mechanical and electrical arts belonging to the area called the predictable arts.

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So, let us take an example today to understand this, before we go into the specific aspects of the mechanical search, let us recall what are the different steps in patent searching. The first part of it is what we call assembling the keyword and the keyword index for the target area followed by looking at the appropriate database for search.

Now, one can go back and forth in terms of understanding whether a database is suitable or even one needs to actually go into performing an enhance search. Once the database provides you the results it is important to evaluate the hits based on which it is possible that at times we may need to go back and do the refining of the search in which case we generate the specific hits. And so, once you assemble the total number of hits, you actually come about with the final list of hits and why is this important? It is important many a time because it depends on the area in which you are actually conducting the search.

A given area may be representing a whole lot of information already available in the public domain as well as in patterns. So, depending on the type of information that we are searching for often it is important to screen out the hits for irrelevant data, for those which are relevant to then looking at something which is relevant to the specific category and then pulling in the hits. So, many a time when you conduct search we get a lot of

false results out of it. So, those false hits are taken out and then we pull the data and get the final list. So, this is where one should recall that we have already understood the aspects of using truncations and operators.

So, these help us to actually home down the specific results of the search and so, therefore, after we assemble the finite list of hits, we actually go in for what we call the analysis of patterns. So, the analysis of patents can be done just to simply understand something as simple as a patentability search to actually conducting a patent landscape.

So, therefore, the purpose of search will also lead us to identifying what are the final list of hits that we would evaluate. Today subscribe databases provide you the option of drawing different analytical tools in terms of providing graphs information, providing pie charts. So, patent search is a learning process no search is complete in that sense.

Every week you conduct the search you will get new hits. So, one important thing a patent search you must know is to put the start date of the search and the end date of the search. So, typically when we look at information that is generated out from patent search either you create a word document or you create an excel file, it is important to put the start date of the search and the end date of the search, not only that it is also important to identify what is the database you are using, the results will differ with respect to each database.

Also the categories in which you are searching is also important either you use title or abstract or claims, many a time when you are looking at specific hits you also include claim search so, you include title abstract and claim search. So, therefore, patent search is a continuously iterative process and refining of results is a key to understand the value that can come out of this sort of data.

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Switchgear improvements

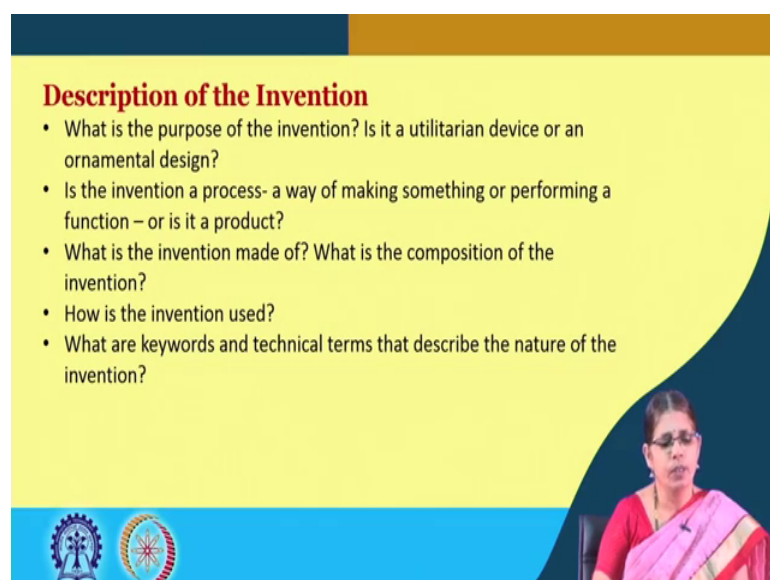
An improvement in Switchgear design

In an electric power system, switchgear is composed of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment. Switchgear is used both to de-energize equipment to allow work to be done and to clear faults downstream.

The slide features a yellow background with a dark blue header and footer. A photograph of a woman in a pink and white sari is in the bottom right corner. On the left, there is an image of a grey circuit breaker. A green text box contains the descriptive text. Logos of institutions are visible in the bottom left corner.

Let us understand one of the important areas of them of a mechanical invention and understand how to go about with the keyword search. Switchgear is one area where the lot of improvements have been and let us understand what our how to go about using this as a search and looking at the results. So, typically in an electric power system switchgear is composed of electrical disconnect switches, fuses or circuit breakers that are used to control protect and isolate electrical equipment. Now, this is used both to de energize equipment so that work can be done and it also helps in clearing faults downstream.

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Description of the Invention

- What is the purpose of the invention? Is it a utilitarian device or an ornamental design?
- Is the invention a process- a way of making something or performing a function – or is it a product?
- What is the invention made of? What is the composition of the invention?
- How is the invention used?
- What are keywords and technical terms that describe the nature of the invention?

The slide features a yellow background with a dark blue header and footer. A photograph of the same woman in a pink and white sari is in the bottom right corner. The text is in red and black. Logos of institutions are visible in the bottom left corner.

So, given this area of invention, one needs to understand what is the purpose of the invention whether it is a device or we are just looking at the design, is it that we are looking for a process or a product, what are the components of the invention, in which way is the invention being used and what should be the best terms that should be used for identifying different inventions in this area?

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Keywords for Switchgear

- Switchgear or switch gear or circuitbreak or circuit break or relay or switch
- Sulfur hexafluoride switchgear or circuit breakers
- Gas-insulated switchgear or circuit breakers
- Air switchgear or circuit breakers

To find synonyms, use dictionaries, thesauruses (synonym dictionaries) and even web search engines

ttl/((switchgear or "switch gear" or circuitbreak or "circuit break" or relay) and ("Sulfur hexafluoride" or SF6 or air or gas))

The slide features a yellow background with a dark blue header and footer. A woman in a pink and white sari is visible in the bottom right corner. Logos of institutions are in the bottom left.

So, when we assemble what we call the keyword index with respect to switchgear, these are the various options that we get. So, switch gear breaking the word switch gear circuit break the other component relay or switch. Now, switchgears also come in different forms in terms of the gas that is used for instance sulfur hexafluoride glass way back in the earlier times to different innovations in this particular area.

So, you can have something which is a specific type of a switchgear, you can have a very generic term like an air switchgear all of this. So, what do you do? You create a nested term and then look for a search. So, for instance this is one example of a string that is prepared.

So, ttl refers to title is the abbreviation; now, in one particular instance you are taking switch gear itself as a as a normal word that is switch gear switch gear with a gap circuit break and then you are looking at the interventions of it either with self sulfur hexafluoride, SF6 or air or gas.

So, what is it that we are doing in this instance, we are looking at the various synonyms that are used in relation to switchgear and also the technical terms which are represent in literature including the use of some generic terms. So, one can find the use of synonyms either through dictionaries or also look at the equivalence in the particular technical area.

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Patent Search Strategy Using USPTO

- USPTO web page
- The PatFT (Patent Full-Text & Image) page
- The AppFT (Patent Application Full-Text & Image) page

US PATENT & TRADEMARK OFFICE
PATENT APPLICATION FULL-TEXT AND IMAGE DATABASE
Data current through June 13, 2019.

USPTO PATENT FULL-TEXT AND IMAGE DATABASE
Data current through June 11, 2019.

Click on Advanced

This is the search that we are today undertaking in relation to the USPTO. So, what would you do? You would go to the USPTO website, you have two options available one is the full text image information and information, the other is the patent application information. So, this is the one with respect to the application and then you look at it from the point of view of the full text search which is the.

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Keywords Search for Switchgear

USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Home Quick Advanced Pat. Item Help View Cart

Data current through June 11, 2019.

Query (Title)
int:(switchgear or "switch gear" or switchgear or "switch gear" or relay) and ("switch gear" or int: or int: or int:)

Examples:
int:(relay and (transport or rack)) and 8 2002 and motorcycle in:us:us:us:us

Select Years (Title)
1976 to present (of total) [v]

Patents from 1700 through 1975 are searchable only by Issue Date, Patent Number, and Current Classification (US, CPC, or CPC). When searching for specific numbers in the Patent Number field, only patent numbers are entered as one to eight numbers in length, excluding commas (which are optional, as are leading zeros).

Field Code	Field Name	Field Code	Field Name
PN	Patent Number	IN	Inventor Name
NO	Issue Date	IC	Invention Class
TTL	Title	IS	Invention State
ABST	Abstract	ICN	Invention Country
APPLM	Applicant	ANM	Applicant Name
IPCCL	International Classification	ALC1	Applicant Class
CCL	Current US Classification	AAST	Applicant State
CPC	Current CPC Classification	AAFO	Applicant Country
CPCL	Current CPC Classification Class and Classification	AAAT	Applicant Type
		AREP	Attorney or Agent

So, when you go to the click on the advanced option you get the query window and this is where if you remember we prepared that nested list a word list that we are actually pasting it into this particular query window where we are selecting for the title. So, when in the query window, we have put this particular string we are then looking at the option of selecting the years.

So, for instance let us say we are looking at 1976 to current information on the full text patents available at the USPTO on switchgear which have the implementation of one of these. So, when you hit it against the database, you get certain results. So, there are different keyword truncations that are available in relation to the database so, one can select out that in terms of using the different field codes.

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Keywords Search for Switchgear

USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Home Quick Advanced Pat. Num. Help
Next List Next Page View Cart

Searching US Patent Collection...

Results of Search in US Patent Collection db for:
TTL:(switchgear OR "switch gear" OR circuitbreaker OR "circuit break") OR rctc) AND (("batter breakerside" OR SFG OR air) OR gas) 256 patents
Hits 1 through 50 out of 256

Next 50 Hits
Jump To

Refine Search: (switchgear or "switch gear" or circuitbreaker or "circuit break" or

Click Here

PAT. NO.	Title
10 261 881	Gas insulated switchgear
10 252 553	Circuit and the control the air admitted to the interior of a switchgear cabinet and a corresponding switchgear cabinet arrangement
10 263 451	Process and gas insulated switchgear using same and process tank manufacturing method
10 259 121	System for analysis of partial discharge defects of gas insulated switchgear
10 252 911	Abstract for the gas insulated switchgear and gas insulated switchgear
10 252 529	Gas conditioning system for a gas-insulating system for a cable
10 252 422	Large-disconnector and earth switch for gas insulated switchgear
10 252 121	Relay device and air conditioning system
10 252 001	Three circuit and resonant outdoor switchgear air circuit

Access each patent by clicking on the patent title or patent number

So, when you look for results at the USPTO on this particular string, you are getting a list of 256 patents and normally the hits that are presented at the USPTO are 50 hits at a time. So, you would have a listing of all the patent numbers and the titles provided.

So, once you look at each of those patents, you can select out some of the titles and look for the information in relation to each of those patents. So, that is how you can actually assemble your set.

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Review Technique

USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Home Quick Advanced Pat. Num. Help
Next List Next Page View Cart
Images

United States Patent
Yoshida, et al.
10,252,911
May 21, 2019

Gas insulated switchgear

Abstract

A base unit portion configured by a standard unit and a variable unit portion whose shape is configurable to be changeable. The base unit portion includes a first pressure tank with a first opening portion, a circuit breaker, a first bushing, a first disconnecting switch. The variable unit portion includes a bushing, a second pressure tank with a second opening portion, a second bushing whose movement member is disposed in a contact with the number of contacts to be normally connected, and second disconnecting switches which are arranged between the bushing and the second bushing. The first opening portion of the base unit portion and the second opening portion of the variable unit portion are joined facing each other to form one a conventional body.

Inventors: Yoshida, Tadatoshi (Tokyo, JP), Kawano, Taro (Tokyo, JP), Kagawa, Kazuki (Tokyo, JP), Tanaka, Naoki (Tokyo, JP)
Applicant: Name City State Country Type
Mitsubishi Electric Corporation Chiyoda-ku, Tokyo, N.A. JP
Assignee: MITSUBISHI ELECTRIC CORPORATION (Chiyoda-ku, Tokyo, JP)
Filing ID: 9665299
Appl. No.: 15/542,147
Filed: April 2, 2019
Pub. No.: 10,252,911
Pub. Date: May 21, 2019

If result set is large, scan the front page for the abstract and drawing.
If relevant, note that patent number for later closer inspection before going on the next patent

Now, for instance, let us say the patent data set is really large, what do you do then, it is possible that you can refine it further and how do you refine it further, you look at only specific instances of those patents in relation to certain implementation and that is how one can actually look at.

Normally as a beginner what would one do is to look at least a pilot set of patterns and identify whether those patents are relevant to the area or not and then identify if there is a need for truncation and other operators to be used, so that some of the data which is not representative of the area can be taken out from that hit list. So, therefore, one can do that way and also get hold of the details of a each of those patterns.

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The slide is titled "In-Depth Review of Selected Patents" and features a yellow background. On the left, there is a magnifying glass icon over a document. In the center, a bulleted list reads: "Review selected patents", "Discard irrelevant patents", and "Further closer examination similar patents". To the right, a technical drawing of a switchgear is shown with the title "Review Drawing Sheets" above it. The drawing includes various numbered components such as 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. At the bottom of the slide, there are logos for "swayam" and "INDIA RISE, TOGETHER" along with a circular logo. A presenter is visible in the bottom right corner of the slide.

So, once they find a list of patents is assembled together, one can go for what we call an in-depth review of the selected patents and why is that important? It is important because this is the way you can understand what are the different implementations of the invention, what are the improvements that have been done in relation to switchgear and where is it that the patents are going to be providing the advantage in a given area.

Since, this switchgear is from the mechanical area, it is also very relevant to look at the drawing sheets. So, to look at what are the different modifications that have been done to the switchgear and how are the how is the area represented in terms of the improvements.

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Review Specification and Claims

- Field of Invention
- Background
- Summary
- Brief Description of the Drawings
- Detailed Description of the preferred Embodiments

- Scope of patent protection
- Define the invention and what aspects are legally enforceable

swamyam
FREE ONLINE EDUCATION
INDIA WISE, LEAD WISE

Many a time we look at the different embodiments of the invention to understand the implementation of the invention and so therefore, it is also important to review the specification and the claims. So, understanding the technical field is important not only that based on the background that is presented in the invention in terms of the problems presented in the prior art, one can understand what is the modification done on this particular switchgear patent and then look at the different embodiments.

So, the brief description of the drawings and the detailed description will provide us the details of the modification, understanding the claims is important because that is where you can understand the claims in terms of the specific invention which define the scope of the legal right.

(Refer Slide Time: 18:12)

Review Cited Classifications

(12) United States Patent
Yoshida et al.

(11) Patent No.: **US 10,297,987 B2**
(22) Date of Patent: **May 21, 2019**

(71) Applicant: **Hitachi Energy Corporation**
Chiyohashi, Tokyo (JP)

(72) Inventor: **Yoshida Yoshida, Takuya (JP), Tera Akio, Tera (JP), Kashi Kageura, Takuya (JP), Nishi Takashi, Takuya (JP)**

(73) Assignee: **HITACHI ENERGY CORPORATION**, Chiyohashi, Tokyo (JP)

(*) Name: Subject to any disclaimer, the name of this patent is reserved to applicant under 35 U.S.C. 109(b) by 20 days.

(21) Appl. No.: **15/582,147**

(22) PCT Filed: **Apr. 2, 2018**

(86) PCT No.: **PCT/JP2018/006475**
E.P. No. 1,375,947X
(21) Int. No.: **A01**
Pub. No.: **WO/2018/167838**
PCT Pub. No.: **WO/2018/167838**

(41) Prior Publication Date
US 20190290463 A1 **Apr. 25, 2019**

(13) Int. Cl. **H02J 3/04 (2006.01); H02J 3/02 (2006.01)**
@ (continued)

(12) U.S. Cl. **H02J 3/04 (2016.01); H02J 3/02 (2016.01); H02J 3/06 (2016.01)**
@ (continued)

(74) Firm of Classification Search
CPC **H02J 3/04 (2016.01); H02J 3/02 (2016.01); H02J 3/06 (2016.01)**
@ (continued)

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4,845,037 A * 4/1989 Hester et al.
5,985,937 A * 4/1999 Tomura et al.
@ (continued)

FOREIGN PATENT DOCUMENTS
JP 2005-183362 A
JP 2008-078585 A
@ (continued)




OTHER PUBLICATIONS
International Search Report of PCT/JP2018/006475, filed by the Applicant, dated Oct. 23, 2018, by the Japanese Patent Office as the International Searching Authority for International Application No. PCT/JP2018/006475.
@ (continued)

Primary Examiner—Adnan B Durrani
Pat. Attorney, Agent, or Firm—Duckman, Ingersoll & Berry, PC

ABSTRACT
A heat sink portion configured by a standard sink and a variable heat portion whose shape is configured to be changeable. The heat sink portion includes a first pressure sink with a first opening portion, a second bracket, and first heating, a first thermally conductive material. The variable heat portion includes a bracket, a second pressure sink with a second opening portion, a second thermally conductive material is disposed in accordance with the number of holes in the secondly compressed and second thermally conductive material which are arranged between the bracket and the second opening portion of the heat sink portion and the second opening portion of the variable heat portion are joined using solder to form into a conventional body.

17 Claims, 4 Drawing Sheets

- IPC and US patent classification
- Field of Classification Search: USPTO Patent Examiner searched classifications
- Run classification search with each one in PatFT



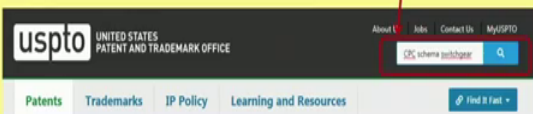
Many a time it is also important to look at the cited classifications in terms of the country classification as well as the IPC and so therefore, this category is also important because the examiner will pick up the relevant IPC for the representation. This can be a good starting point again to run a specific classification search on a patent database for instance you can go back to the same patent database website the USPTO or look at full text using the IPC search.

(Refer Slide Time: 18:46)




Patent Search Strategy Using Classification

Use the website's Site Search Text Box

- Search CPC classification schema in the site search text box
- Use specific language for search terms, such as "CPC scheme switchgear".
- Typing in only "switchgear" would be too broad and provide many unrelated results.

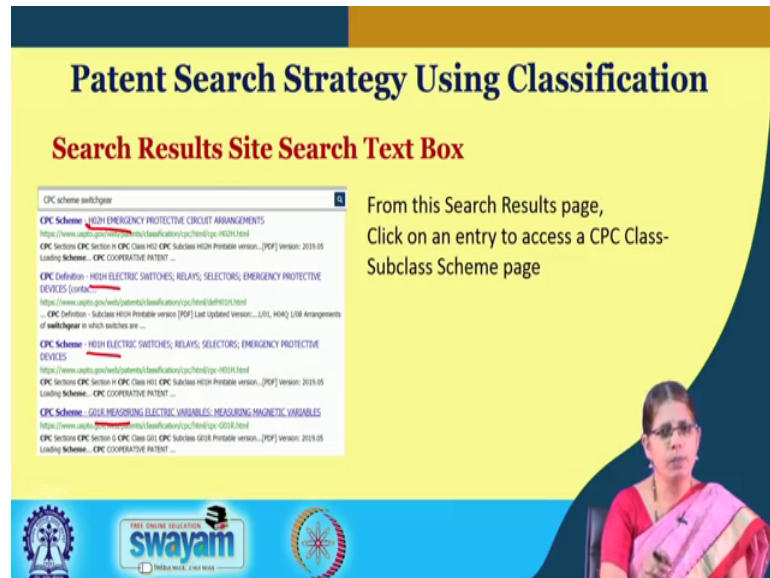


The image shows a screenshot of the USPTO website's search interface. The search bar contains the text "CPC scheme switchgear" and is highlighted with a red box. A red arrow points to the search bar from the text above. The website header includes the USPTO logo and navigation links for Patents, Trademarks, IP Policy, Learning and Resources, and a Find It Fast button.



So, let us understand further the aspects of the patent search using classification. So, since the area is many a times since the area is well represented, you can actually have the CPC code or the IPC code and use that code as a beginning point for looking at search. For instance, in this case let us look at the idea of the CPC classification. So, one today the tools are available such that the codes can be also taken out from the scheme.

(Refer Slide Time: 19:23)



Patent Search Strategy Using Classification

Search Results Site Search Text Box

CPC scheme switchgear

CPC Scheme - HIGH EMERGENCY PROTECTIVE CIRCUIT ARRANGEMENTS
<https://www.uspto.gov/web/patents/classification/cpc/chem/cpc.html#H02H.html>
CPC Section: CPC Section H - CPC Class H02 CPC Subclass HIGH Protective version... [PDF] version: 2019-05
Loading Scheme... CPC COOPERATIVE PATENT ...

CPC Definition - HIGH ELECTRIC SWITCHES, RELAYS, SELECTORS, EMERGENCY PROTECTIVE DEVICES (cont'd)
<https://www.uspto.gov/web/patents/classification/cpc/def/cpc.html#H02H.html>
... CPC Definition - Subclass HIGH Protective version [PDF] Last Updated Version... [01, H02] 1/08 Arrangements of switchgear in which switches are ...

CPC Scheme - HIGH ELECTRIC SWITCHES, RELAYS, SELECTORS, EMERGENCY PROTECTIVE DEVICES
<https://www.uspto.gov/web/patents/classification/cpc/chem/cpc.html#H02H.html>
CPC Section: CPC Section H - CPC Class H02 CPC Subclass HIGH Protective version... [PDF] version: 2019-05
Loading Scheme... CPC COOPERATIVE PATENT ...

CPC Scheme - G08 MEASURING ELECTRIC VARIABLES; MEASURING MAGNETIC VARIABLES
<https://www.uspto.gov/web/patents/classification/cpc/chem/cpc.html#G08.html>
CPC Section: CPC Section G - CPC Class G08 CPC Subclass G08H Protective version... [PDF] version: 2019-05
Loading Scheme... CPC COOPERATIVE PATENT ...

From this Search Results page,
Click on an entry to access a CPC Class-Subclass Scheme page

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So, if you put CPC scheme switchgear into the window, one would get the different set of patents in relation to the CPC scheme. In this if you can see, the different classes are represented already. So, you have H class and you have some in the G class. So, if you click on this particular entry, you can get the access to the sub scheme or classification page as well.

(Refer Slide Time: 19:48)

Patent Search Strategy Using Classification

Backup to Site Search the IPC Catchword Index

Check the World Intellectual Property Organization's IPC Catchword Index, a searchable index of International Patent Classification (IPC) using common language terms.

H01H GENERATION, CONVERSION, OR DISTRIBUTION OF ELECTRIC POWER

H01H 1305 Arrangement of **switchgear** in which switches are enclosed in, or structurally associated with, a casing, e.g. switchgear in association with main transformer H02B 3/00, H02B 7/00, **H02B 1305** having carriage withdrawable for maintenance H02B 1305 (2006.01)

H01H 1305 with main energy (2006.01)

H01H 1305 Gas-insulated (2006.01)

H01H 1305 *** Control of casing, e.g. gas tightness (see references for switches H01H 13/00) (2006.01)

H01H 1305 *** Features relating to the gas insulation of bush for switches H01H 13/22 (2006.01)

H01H 1305 *** Features for detecting or reacting to mechanical or electrical defects (see subclasses H01H 04/00, H01H 03/00, H01H 13/10) (2006.01)

H01H 1305 *** Earthing arrangements (2006.01)

So, there is something called the IPC catchword index which provides a very user friendly searchable index in relation to the classification and using the common language terms. So, here you have catchphrases where you can look at this particular information and here the different classes are presented as what you can see and specifically we were searching for gas insulated switchgear and so, this is shown in this particular color. It belongs to H 0 to be 13 slash 035.

(Refer Slide Time: 20:27)

Class-Subclass H01H Scheme Page

- Review the entire Class-Subclass H01H Scheme page.
- The class titles may provide additional information or cross references to other related CPC classifications.
- Scan for relevant classification

H01H SWITCHES, RELAYS, SELECTORS, EMERGENCY PROTECTIVE DEVICES (contact cables H01B 7/10; overvoltage protection reactors, resistive arresters H01C 7/12, H01C 8/04; electrolytic self-interrupters H01D 9/10; switching devices of the waveguide type H01F; devices for interrupted current collection H01F 20/10; overvoltage arresters using spark gaps H01F 4/00; emergency protective circuit arrangements H02C; switching by electronic means without contact-making H02K 17/00)

Linkup Symbol	Definition	Number	View
e.g. A23P 3/04	Switches mounted on the steering wheel	B60Q 1/0012	
	Lever attached to steering wheel for controlling the lights of a car, e.g. steering column stalk switches	B60Q 1/1409	
	Manually-actuated control mechanisms provided with one single controlling member co-operating with two or more controlled members, the controlling member being movable by hand about orthogonal axes, e.g. joysticks	G05G 9/47	
	Switching arrangements for the supply or distribution of electric power	H02B	
	Mounting switch and fuse separately on, or in, common support	H02B	
	Frameworks for mounting two or more relays or for mounting a relay and another electrical component	H02B 1/01, H04Q 1/00	
	Arrangements of switchgear in which switches are enclosed in, or structurally associated with, a casing; Gas-insulated switchgear	H02B 13/00	
	Switches for telephonic communication	H04M 1/06	

One can actually click on that and access the details of the available in relation to. Many a time, it is also important to look at the CPC definition to understand the depth of the information that is represented in relation to a particular area. For instance, if you are looking at H01H, this represent electrical switches, relays, selectors and emergency protective devices.

Now, if you look at the individual subclasses within that, it provides you information specifically in relation to certain implementations and so that is how one can actually look at the entire information. So, if you are looking for let us say arrangement or switch gears, it will belong to one particular subclass.

(Refer Slide Time: 21:14)

COOPERATIVE PATENT CLASSIFICATION

H02B BOARDS, SUBSTATIONS, OR SWITCHING ARRANGEMENTS FOR THE SUPPLY OR DISTRIBUTION OF ELECTRIC POWER (basic electric elements, their assembly, including the mounting in enclosures or on bases, or the mounting of covers thereon. *See* the subclasses for such elements, e.g. transformers H02F, switches, fuses H02H, line connectors H02K, installation of lines, cables, or other conductors for supply or distribution H02G)

NOTE
This subclass (2022) broadly, with its **H02B 13/00** or their installation, or the association of switching devices with each other or with other devices, e.g. transformers, fuses, meters or distribution boards, such apparatuses convertible substations or distribution points.

H02B 1/14 Shields or guards for preventing access to contacts (mounting of switching contacts in withdrawable **switchgear**)
H02B 1/16 Earthing arrangements (switching arrangements for substations **H02B 5/01**, for **switchgear** **H02B 11/00**, **H02B 13/00**, with poles, pins, or other contacts **H02B 4/00**)
H02B 1/18 Dispersion or arrangement of bases for **switchgear** having a withdrawable carriage **H02B 11/00**
H02B 1/20 Bases or other supporting devices, e.g. in relation to switchgear installation of bases **H02B 13/00**

H02B 5/00 Apparatus specially adapted for the manufacture, assembly, or maintenance of boards or **switchgear**

H02B 5/00 Non-enclosed substations. Substations with enclosed and non-enclosed equipment
H02B 5/01 Earthing arrangements, e.g. earthing rods
H02B 5/02 mounted on pins, e.g. pole transformer substation
H02B 5/06 gas insulated
H02B 7/00 Enclosed substations, e.g. compact substations
H02B 7/01 gas insulated
H02B 7/06 Distribution substations, e.g. for urban network (**H02B 7/01** takes precedence)
H02B 7/08 ... underground substations

H02B 11/00 **switchgear** having carriage withdrawable for location
H02B 13/00 Arrangements of **switchgear** in which switches are enclosed in, or structurally associated with, a casing, e.g. cubicle or enclosure with main transformer **H02B 5/00**, **H02B 11/00** **switchgear** having carriage withdrawable for location **H02B 11/00**

H02B 13/00 (Special arrangement of **switchgear**)
H02B 13/01 with main casing
H02B 13/02 with main casing
H02B 13/03 Safety arrangements, e.g. in case of excessive pressure or the due to electrical defect (the substage in general, ESAB 13A, devices for opening or closing safety wings ESOP 13C, emergency protective circuit arrangements for distribution gear, e.g. bus bar systems, or for switching devices **H02B 7/00**)
H02B 13/05 Gas-insulated **switchgear**
H02B 13/052 ... for three phase **switchgear**

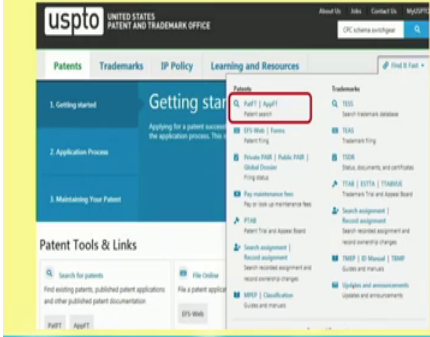
H02B 13/00: Arrangements of switchgear in which switches are enclosed in, or structurally associated with, a casing, e.g. cubicle

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So, therefore, this is how one can actually go for scanning of relevant information in relation to each class or a subclass. Now, it also is important for us to understand how is the implementation of the invention going to be relevant. For instance, we are looking at a switchgear whether it is structurally associated or enclosed, for instance in a casing or a cubicle. So, this is how you can actually understand with the different subclasses how the organization of the invention can actually happen.

(Refer Slide Time: 21:41)

Patent Search Strategy Using Classification



- Access the PatFT (**Patents Full-Text and Image**) Database
- Use the “Find It Fast” drop down arrow on the Home Page,
- then select “PatFT/AppFT” link.

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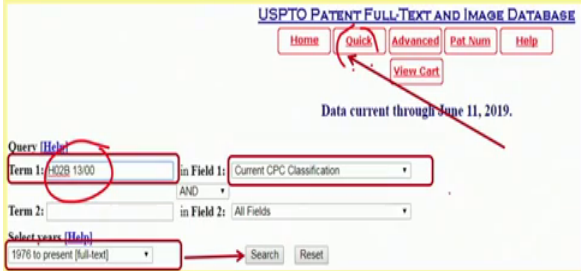
So, the patent search strategy using classification can be done with respect to the full-text database. Today we also have different options available at individual databases to search the data more seamlessly and quickly.

(Refer Slide Time: 21:59)

Patent Search Strategy Using Classification

The “Quick” search from display

Conduct patent search using CPC



USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Data current through June 11, 2019.

Query (Help)

Term 1: in Field 1:

Term 2: in Field 2:

Select years (Help)

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Another way to look at classification search is to even use the option of what we have the quick search button which is available as a link, here in you can actually provide this specific classification code, remember we have looked at the different individual classes and the subclasses. So, for instance if you are looking at just the arrangement or

switchgears, one can pick up that particular code and input that into the query data and you can also select the type of classification that you are looking at and also the database and hit the button search to get the detail.

(Refer Slide Time: 22:32)

The screenshot displays the USPTO Patent Full-Text and Image Database search results for the query 'CPC: H02B 1300'. The results are listed in a table with columns for 'PAT. NO.' and 'Title'. The first result is '10-521 514 Protective switch device'. A green callout box on the right side of the slide contains the text 'Access each patent by clicking on the patent title or patent number'. A woman in a pink sari is visible in the bottom right corner of the slide.

PAT. NO.	Title
10-521 514	Protective switch device
10-419 112	Operative device for power switchgear
10-242 216	Electric power distribution switchgear and method of breaking an electric power current
10-069 213	Switchboard for power distribution system
10-056 211	Mobile pole and cutter device
9-811 625	Switch cabinets for use in electrical switchgear and methods of assembling the same
9-811 564	Pressure-compensated fuse assembly
9-722 399	Electrical system and connection device and method of governing a switchgear bus in an electrical system
9-716 122	Switchboard for power distribution system

So, this is how you can get the results of the entire set of patterns. Now, remember in the earlier instance when we did a keyword search for use using the title search we got a whole number of hits about 250 odd hits, here in this case we are looking at a very narrow search of this particular subclass.

Look at the number of patents that we have got in this case, 32 patents these are very specific to this particular area. So, in this listing one can look at each individual patents and understand what are the implementations of that particular invention.

(Refer Slide Time: 23:07)

Patent Search Strategy Using Classification

USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Home Dash Advanced Pat Num Title View Cart

Data current through June 11, 2019.

Search [CPC:H02B1300] Search

Advanced search

	PAT. NO.	Field Name	Field Code	Field Name
1	10 056 741	Mobile pole and cutting device	H02B1300	Electric power distribution switchgear and method of breaking an electric power current
2	10 069 283	Switchboard for power distribution system	H02B1300	Switchboard for power distribution system
3	10 056 741	Mobile pole and cutting device	H02B1300	Mobile pole and cutting device
4	9 941 675	Switch cabinets for use in electrical switchgear and methods of assembling the same	H02B1300	Switch cabinets for use in electrical switchgear and methods of assembling the same
5	9 911 564	Pressure-compensated fuse assembly	H02B1300	Pressure-compensated fuse assembly
6	9 722 399	Electrical system and connection device and method of powering a switchgear bus in an electrical system	H02B1300	Electrical system and connection device and method of powering a switchgear bus in an electrical system
7	9 716 372	Switchboard for power distribution system	H02B1300	Switchboard for power distribution system
8	9 634 469	Complex electrically operated ground and test device using vacuum circuit interrupters and methods of operating the same	H02B1300	Complex electrically operated ground and test device using vacuum circuit interrupters and methods of operating the same
9	9 620 939	Hybrid circuit breakers	H02B1300	Hybrid circuit breakers

Of course, one can also look at the aspect of the advanced search and also carry out the CPC query in relation to that particular. So, in the query window earlier we reduced a title search now, in the same query window you can also use classification search to look at the data.

(Refer Slide Time: 23:26)

Patent Search Strategy Using Classification

Searching US Patent Collection...

Results of Search in US Patent Collection db for:
CPC:H02B1300: 30 patents
Hits 1 through 30 out of 30

Jump To

Refine Search CPC:H02B1300

Access each patent by clicking on the patent title or patent number

	PAT. NO.	Title
1	10 056 741	Electric power distribution switchgear and method of breaking an electric power current
2	10 069 283	Switchboard for power distribution system
3	10 056 741	Mobile pole and cutting device
4	9 941 675	Switch cabinets for use in electrical switchgear and methods of assembling the same
5	9 911 564	Pressure-compensated fuse assembly
6	9 722 399	Electrical system and connection device and method of powering a switchgear bus in an electrical system
7	9 716 372	Switchboard for power distribution system
8	9 634 469	Complex electrically operated ground and test device using vacuum circuit interrupters and methods of operating the same
9	9 620 939	Hybrid circuit breakers

So, this is one example of that so, after putting in the code in the classification search in the query window when you hit or hit the search button, you have got the set of patent.

So, accessing each patent can be done post the you can download this data into an excel sheet and then look at the details of the particular application.

(Refer Slide Time: 23:49)

Retrieve and Review US Published Patent Applications

AppFT (Applications Full-Text and Image) Published patent applications



The screenshot displays the USPTO AppFT database interface. The main heading is "Retrieve and Review US Published Patent Applications". Below it, the text reads "AppFT (Applications Full-Text and Image) Published patent applications". The interface includes a search bar, navigation tabs for "Patents", "Trademarks", "IP Policy", and "Learning and Resources", and a "Getting started" section with various links and resources. A woman in a pink and red sari is visible in the bottom right corner of the slide.

So, while you can search this on the full text database, one can also look at published patent applications from the AppFT database which is also the applications full-text and image databases are available at the USPTO.

(Refer Slide Time: 24:07)

Retrieve and Review US Published Patent Applications

The Boolean search form is displayed



The screenshot shows the Boolean search form for the US Patent & Trademark Office's Patent Application Full Text and Image Database. The form includes fields for "Term 1:", "Term 2:", and "Select years (Help)", along with a "Search" button and a "Reset" button. The text "Data current through June 13, 2019." is displayed above the search fields. A woman in a pink and red sari is visible in the bottom right corner of the slide.

So, you can conduct a search at the patent application full-text and image database by using the query window. Now, this also offers different Boolean search operators to undertake the search.

(Refer Slide Time: 24:18)

Retrieve and Review US Published Patent Applications

AppFT (Applications Full-Text and Image) Published patent applications

US PATENT & TRADEMARK OFFICE
PATENT APPLICATION FULL TEXT AND IMAGE DATABASE

Help Home Broken Manual Member
View Shopping Cart

Data current through June 13, 2019.

Query [Help]

Term 1: H02B 1300 Field 1: Current CPC Classification
AND
Term 2: in Field 2: All Fields

Select years [Help] 2001-present Search Reset

So, here we are again looking at H02B 13 slash 00 and we are looking at CPC as a classification.

(Refer Slide Time: 24:30)

Review US Published Patent Applications Search Results

Results of Search in PGPUB Production Database March 15th - September 30th 2001 for:
CPC® H02B 1300™: 25 applications.
Hits 1 through 25 out of 25

Jump To: []

Refine Search: CPC:H02B 1300

PUB. APP. No.	Title
1 20180139682	HVAC-CONDUCTING CERAMIC BUSHING FOR SWITCHGEAR
2 20180278111	CAMERA SYSTEM FOR GAS-INSULATED SWITCHGEAR SYSTEMS
3 20180226211	Electric Power Distribution Switchgear And Method Of Breaking An Electric Power Current
4 20180166865	LOW VOLTAGE ELECTRICAL DISTRIBUTION INSTALLATION
5 20180166205	OPERATING DEVICE FOR POWER SWITCHGEAR
6 20180115901	SERVICE DEVICE AND METHOD FOR USING A MULTI-COMPONENT INSULATING SYSTEMS
7 20170465986	SWITCHBOARD FOR POWER DISTRIBUTION SYSTEM

Review similar to issued patents

This is how you assemble the hits after the results are. So, one can actually review the patents that are available and look at you will find that there is certain difference in the

full text visibly the published weight and applications then it would mean that some new data is also coming up on that particular set of patent.

(Refer Slide Time: 24:54)

Broadening Patent Search

Broadening Patent Search may be based on

- Increasing the scope of related patent listing
- Availability of resources

Foreign Patent Search
Re-run the CPC search using Espacenet, the European Patent Office's worldwide patent publication database.

US Classification Search
From relevant pre-2015 US patents or published patent applications using CPC, note their assigned US Patent Classifications
Run a USPC search in PatFT and AppFT

USPC is no longer used to classify utility patents
Searchable for all pre-2015 US utility patents

Logos: Swayam, Free Online Education, Swamyam, and a circular logo with a gear and a person.

So, it is always beneficial to look at even the published patent applications because that represents the 18th month publication at each of the patent offices. One important consideration that all patent searchers must keep in mind is the need for broadening of patent search. And why is this important? This is important because it all depends on the results that you get from the initial search.

Sometimes the scope of the search can be very narrow, at other times you need to actually broaden the search. For instance, we are looking at inventions only in relation to switchgear maybe we are looking only at the aspect of SF 6 type, sulfur hexafluoride type switchgears. Sometimes you may really want to broaden the search into any of the different types of gas implementations in relation to that invention in which case there is a need for broadening of this search.

So, how does broadening of a patent search helps? But the broadens broadening of a patent search would help you by improving the scope of patents listed under a particular area. Today, many databases provide the extended list of patent families not only that many commercial databases are being updated with information from newer patent office's which means availability of resources also being enriched. So, in which case we

can have more number of patents listed in the particular database. Today, country based search is just not enough, it is also important to undertake foreign patent search.

So, we have understood the aspects of foreign patent search. So, it is not only important to do a country based patent search, many a time we need to look at the data available with foreign patent offices and so therefore, many patent office's provide you very good information. For instance, if you are running a search through a European patent office similarly many other patent databases provide you an extended search provided with respect to different patent offices.

There is also an instance of where many of the databases are actually no longer classifying certain patterns and so, therefore, it is very important to be aware of the changes that are happening at the individual patent database collection. There is also a reclassification in relation to kind code. Today, what is a B class is recoded into a C class. So, therefore, in terms of the kind code so, it is also important to understand some of these changes that happen at the a different patent database collection and so, keep in mind this particular aspect of broadening of the patent search.

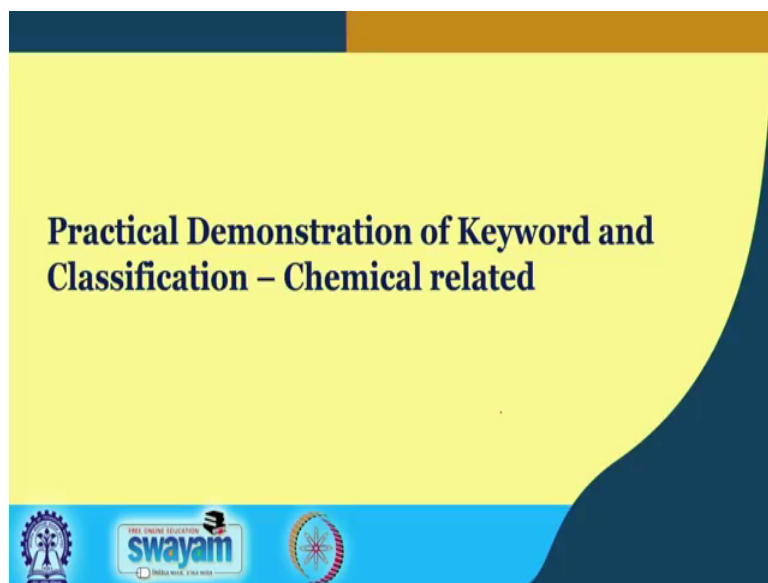
One example that I can give you on the relevance of broadening of patent search is many times we are not looking at specific area of inventions, we are looking at certain areas and for instance you are looking at something in relation to plants which are saline tolerant that is plants which can grow in salt conditions. From the area it is it can be easily understood that normally we are looking at all plants and we are looking at saline tolerance. One aspect of the area is such that when plants are saline tolerant they can also be drought tolerant.

So, when you are looking at broadening of the patent search for instance here let us let us say we are looking at the entire set of proteins in that particular area, it may be also relevant for us to understand that this could be also a relevant hit for that with respect to drought tolerance. So, that is how you go ahead and actually broaden research. Now, what can be drought tolerant could be also cold tolerant.

So, you go into distal areas of search where you are actually pulling in the entire data set. How does that help us? It helps us because we understand that the same protein set is induced under let us say salt conditions, it is also induced under drought and it is also induced under cold.

This may be a very good way of looking at a set of proteins or even a metabolic pathway which is relevant under all these different conditions. So, therefore, broadening of a patent search is always useful to really look at the distant set of patents in a given area. So, in the next instance, we will be looking at the lecture which will deal with the practical aspects of chemical search.

(Refer Slide Time: 29:30)



So, the practical demonstration of the keyword search and the classification search will be what we are taking up in this particular lecture.