# Patent Search

***WIPS Co., Ltd.***

# Contents

1. *What is the patent search?*
2. *The kinds of patent search*
3. *The process of patent search*
4. *The Basics of Creating & Refining Search Queries*
5. *Patent database*
6. *How to use patent database - WIPSGLOBAL*
7. *Exercise*

# What is the Patent Search?

*Patent search is not only prerequisite step in patenting procedure but also essential work in conjunction with many business activity, including research, manufacturing, marketing, etc. Patent search is to search and analyze relevant patents in product development step or prior to patent application process so that you can make sure the patentability of your invention and get current technology information and future trend of specific technology area. Also, it helps you to avoid a duplicated research and to invest your money to safe market having no legal problems related to patent.*

# The Kind of Patent Search (1)

| | |
|---|---|
| **Theme Search** | Theme searches provide the overview of patents related to your field of interest. These searches are helpful to detect the recent trend of your technology area and to establish your R&D direction |
| **Patentability Search** | Patentability search is the first step of patenting process. A patentability search surveys patents filed in each national intellectual property office to check whether there exists inventions similar to yours. |
| **Infringement Search** | Infringement search is to check whether patents which can be infringed by your product launched newly in a certain country exist or not in that country. |

# The Kind of Patent Search (2)

***Invalidity Search***

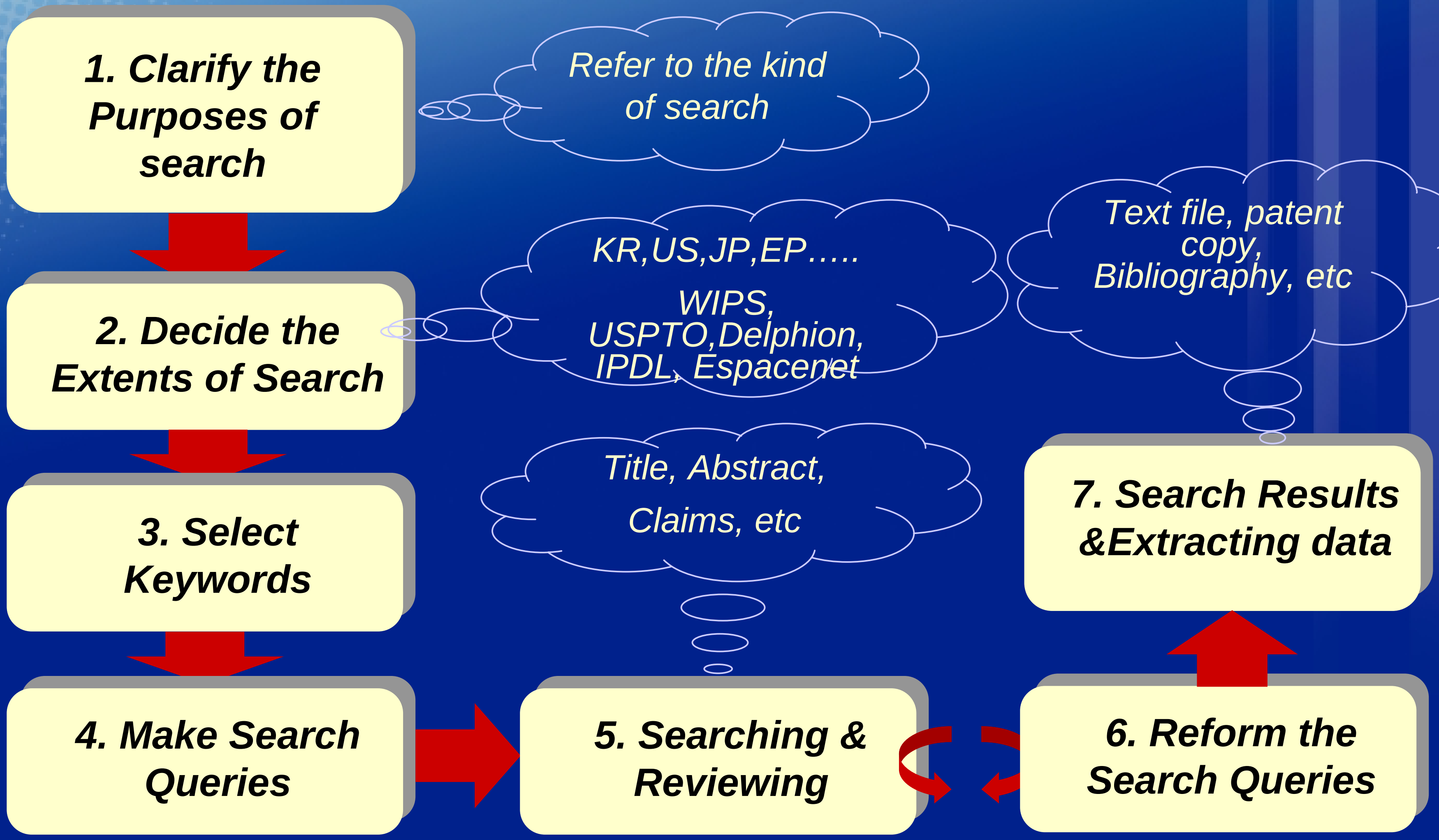
*When you intend to make some claims of a particular patent invalid, the invalid search can provide some prior art references that disclose claims that are infringed by the subject disclosure.*

***Family patent / Legal status search***

*Patent family search provide a list of all countries in which a particular patent was filed.*

*Legal status search gives the legal progressing status of a particular patent .*

# The Process of Patent Search



**1. Clarify the Purposes of search**

Refer to the kind of search

**2. Decide the Extents of Search**

KR,US,JP,EP…..

WIPS, USPTO,Delphion, IPDL, Espacenet

**3. Select Keywords**

Title, Abstract, Claims, etc

**4. Make Search Queries**

**5. Searching & Reviewing**

**6. Reform the Search Queries**

**7. Search Results &Extracting data**

Text file, patent copy, Bibliography, etc

# The Basics of Creating & Refining Search Queries (1)

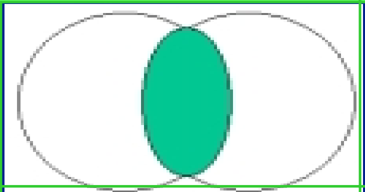
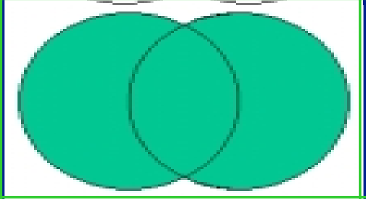
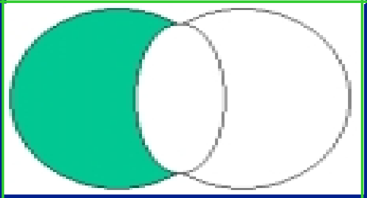
## 1. Extension of the range of search keywords(Wildcards)

*A wildcard is a symbol that stands for an unspecified number of characters in a queries. Right-hand truncation used in the end of words is generally applied in the most of database. This allows you to retrieve words that begin with that specific character string but have an unknown variety of characters at the end.*

| Kind | Wildcards | Meaning | Example |
|---|---|---|---|
| Full extension | * (Asterisk) | Represent to unlimited characters | file* : Retrieves file, files, etc. |
| Partial extension | ? (Question mark) | Represent to only one character | wom?n : retrieves woman, women, etc. |

# The Basics of Creating & Refining Search Queries (2)

## *2. Boolean operators*

| Function | Meaning | | Format |
|---|---|---|---|
| **Logical Product** | **Two terms must be existed** |  | **a AND b** |
| **Logical Sum** | **Any one term or two terms must be existed** |  | **a OR b** |
| **Logical Negation** | **A specific term following "NOT" must be excluded** |  | **a NOT b** |
| **Order of Precedence** | **An operator within brackets has a priority** | | **(a OR b) AND c** |

# The Basics of Creating & Refining Search Queries (3)

## *3. Adjacency operators*

| Format | Meaning | Example |
|---|---|---|
| a ADJn b | "a" and "b" exist in the same order with the input queries' order in a sentence and there are the same or less than the "n" words between "a" and "b" | Automobile ADJ2 System :<br>Automobile rear suspension system, Automobile heating system |
| a NEARn b | "a" and "b" exist in a sentence regardless the order and there are the same or less than the "n" words between "a" and "b" | Engine NEAR2 Control :<br>Engine brake control, Control system for engine |

# Free On-line Patent Database

| Country | | KIPRIS (KR) | USPTO (US) | Espacenet (EP) | IPDL (JP) | SIPO (CN) |
|---|---|---|---|---|---|---|
| Available DB | | KR(P,U,D,T KPA) | US | EP,JP(PAJ), PCT | JP(P,U,D,PAJ) | CN(P,U,D, CPA) |
| Website Address | | kipris.or.kr | uspto.gov | espacenet.com | ipdl.jpo.go.jp | sipo.gov.cn |
| SEARCH FIELD | Title | ○ | ○ | ○ | ○ | ○ |
| | Inventor | | ○ | ○ | | ○ |
| | Assignee | ○ | ○ | ○ | ○ | ○ |
| | Classification Code | ○<br>(IPC) | ○<br>(IPC,UPC) | ○<br>(IPC,ECLA) | ○<br>(IPC) | ○<br>(IPC) |
| | Application(No., Date) | ○ | ○ | ○ | ○ | ○ |
| | Publication(No., Date) | ○ | ○ | ○ | ○ | ○ |
| | Registration(No., Date) | | ○ | | ○ | |
| | Priority(No., Date) | ○ | ○ | ○ | | ○ |
| | Abstract | ○ | ○ | ○ | ○ | ○ |
| | Claims | | ○ | | | |
| | Detailed Description | | ○ | | | |
| | Reference | | ○ | | | |
| Patent Document Copy | | ○ | ○ | ○ | ○ | |
| Download | | ○(Not Free) | | | | |

# Charged On-line Patent Database(1)

| **DB Name** | **WIPSGLOBAL** | **Delphion** |
|---|---|---|
| Country | Korea(South) | US |
| Data Collections | Korea(P,U,D,T,KPA),<br>US(P), Japan(P,U,PAJ),<br>EP(P),PCT(WO), CN | US(P), JP(PAJ),<br>EP(P), PCT(WO) |
| Main Search Tool | ■ General Search<br>■ Advanced Search<br>■ Number Search<br>■ Step Search | ■ Quick/Number Search<br>■ Boolean Search<br>■ Advanced Search |
| Search Field | 1. All Bibliographical Items<br>2. Full Text(Abstract, description, claims, etc) | 1. All Bibliographical Items<br>2. Full Text(Abstract, description, claims, etc) |
| Patent Document Copy | Available | Available |
| Family patent/<br>Legal Status Info. | Available | Available |

# Charged On-line Patent Database(2)

| DB Name | | WIPS | Delphion |
|---|---|---|---|
| Data Download | Contents | All bibliography + Abstract+ Claims | All bibliography |
| | File Formats | TEXT, XLE, MDB, PMD(Format for PM manager) | TEXT, CSV |
| Supple-mentary Function | Search results managing tool | Cabinet | Work file |
| | Clustering | Clustering | Snapshot |
| | New patent informing system | SDI | Alerts |
| | Save search query & results | Search Query Save | Saved Search |
| | PM tool | PM Manager 2002 | Patent Lab II |

# The merits of the charged on-line database

- More Patent Database Collections : Saving search time and integrated search is possible because several countries' patent database is built in together
- Faster and more stable search : Less number of user than Free DB and high-quality internet infrastructure

3. Detailed and several search method : Full text search and free queries are available
4. Save search results : You can manage your search results
5. Easy to download and obtain patent document copy
6. Various and useful supplementary functions : Patent analysis tool, Searched patent management, Newly published patent informing service, etc.

# 1. WIPSGLOBAL Search Flow

**Input Query**

General, Advanced, Number & Step Searches

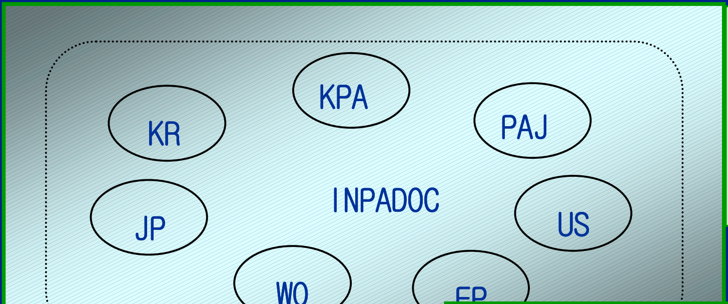
**Search Result List**

Additional Functions
(Collective View, Download, Cabinet, Clustering and etc.)

**Bibliographical Info.**

Related Patent Info.
(Patent Family, etc.)

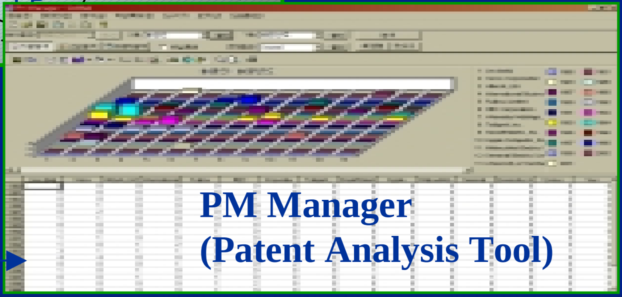
*DILS (Distributed Information Linkage System)*



(Citation, WIPS Family, Related Patent)

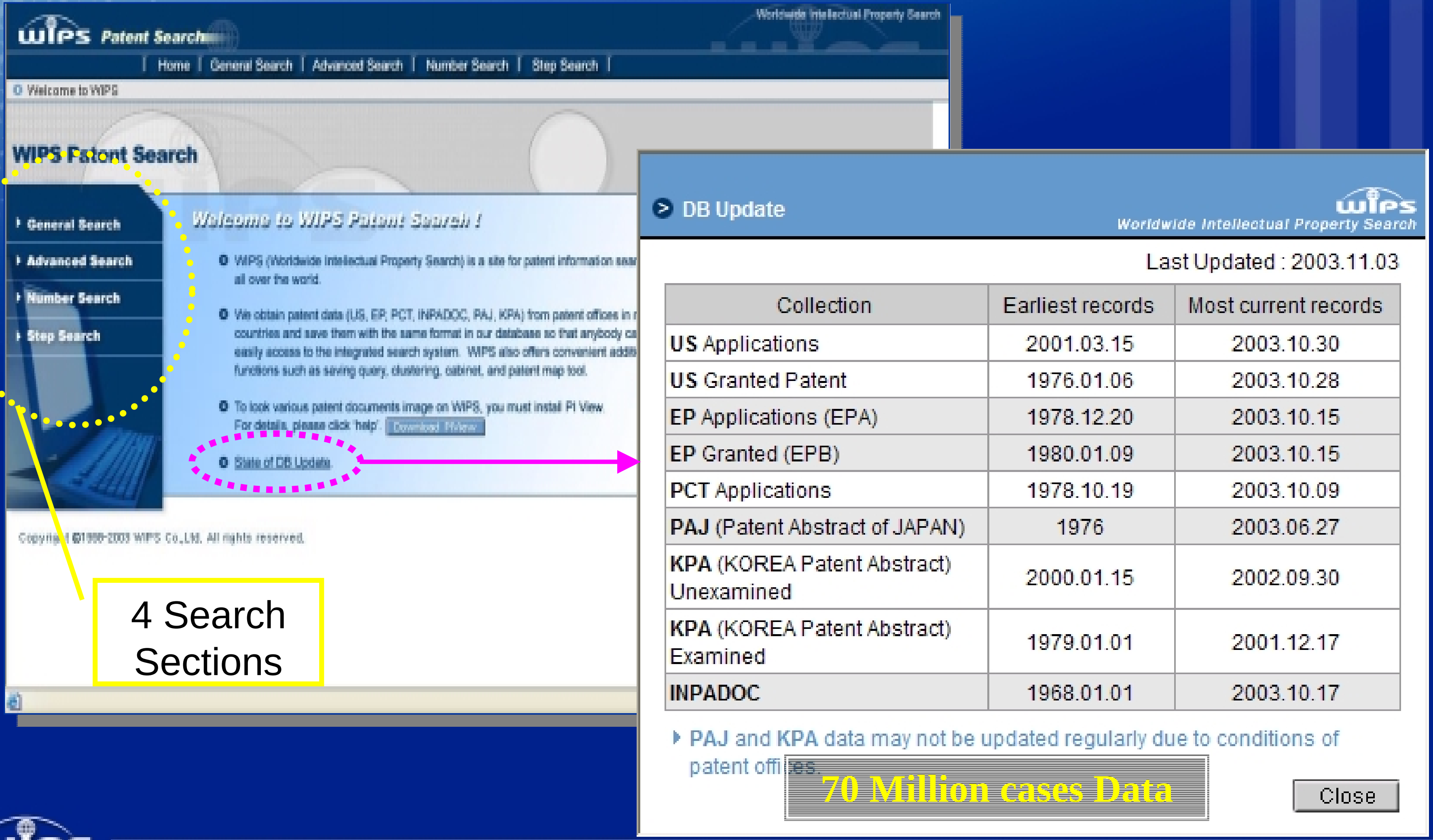
**Patent Doc. Image**

Data Download



**PM Manager**
**(Patent Analysis Tool)**

# 2. Search Sections, Data Coverage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- State of DB Update

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4 Search Sections

DB Update

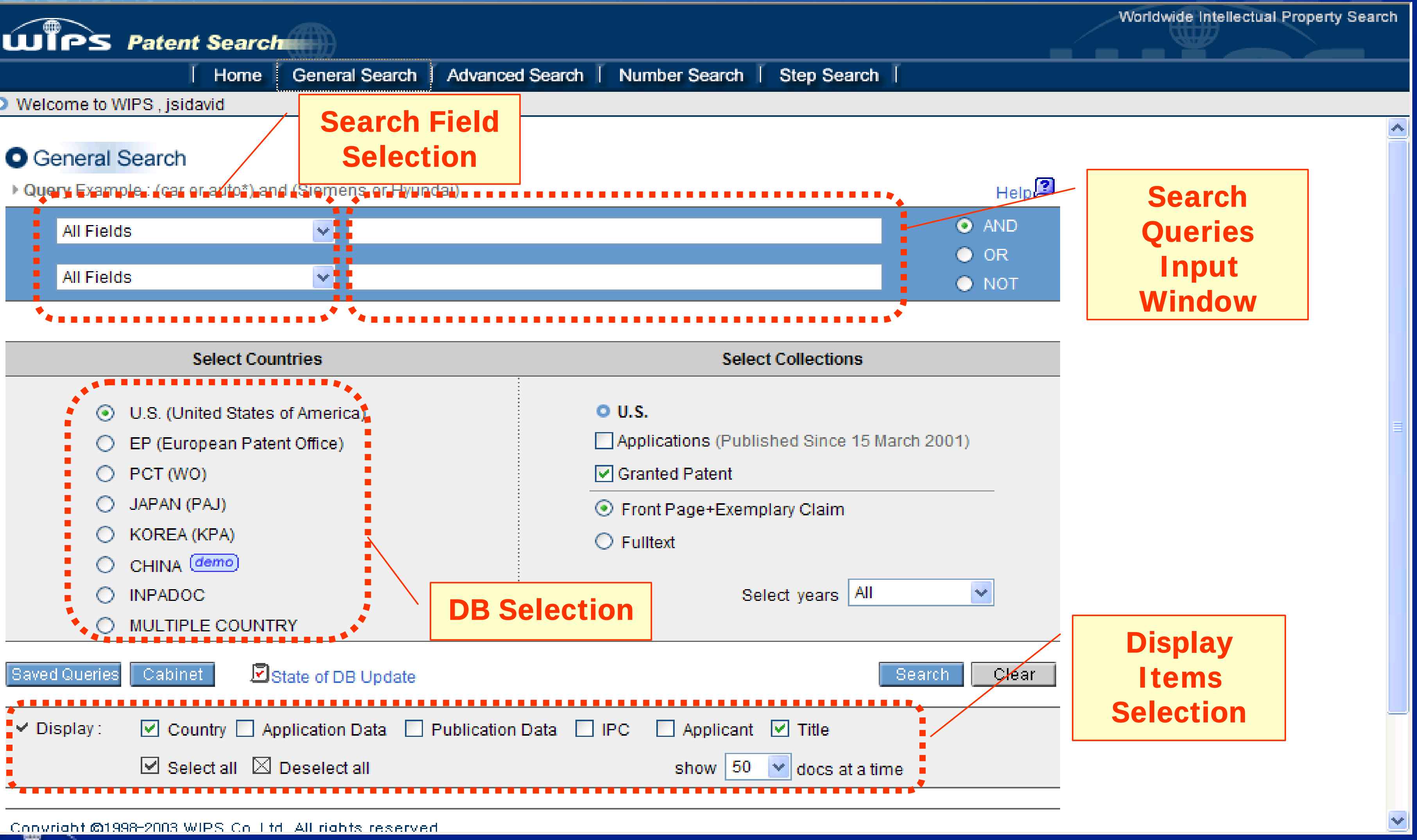
Last Updated : 2003.11.03

| Collection | Earliest records | Most current records |
|---|---|---|
| **US** Applications | 2001.03.15 | 2003.10.30 |
| **US** Granted Patent | 1976.01.06 | 2003.10.28 |
| **EP** Applications (EPA) | 1978.12.20 | 2003.10.15 |
| **EP** Granted (EPB) | 1980.01.09 | 2003.10.15 |
| **PCT** Applications | 1978.10.19 | 2003.10.09 |
| **PAJ** (Patent Abstract of JAPAN) | 1976 | 2003.06.27 |
| **KPA** (KOREA Patent Abstract) Unexamined | 2000.01.15 | 2002.09.30 |
| **KPA** (KOREA Patent Abstract) Examined | 1979.01.01 | 2001.12.17 |
| **INPADOC** | 1968.01.01 | 2003.10.17 |

- PAJ and KPA data may not be updated regularly due to conditions of patent offices.

70 Million cases Data

# 3. General Search (for beginner)



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General Search

Query Example : (car or auto*) and (Siemens or Hyundai)

Help

All Fields

All Fields

● AND ○ OR ○ NOT

**Select Countries**

- ● U.S. (United States of America)
- ○ EP (European Patent Office)
- ○ PCT (WO)
- ○ JAPAN (PAJ)
- ○ KOREA (KPA)
- ○ CHINA demo
- ○ INPADOC
- ○ MULTIPLE COUNTRY

**Select Collections**

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- ☐ Applications (Published Since 15 March 2001)
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**Search Field Selection**

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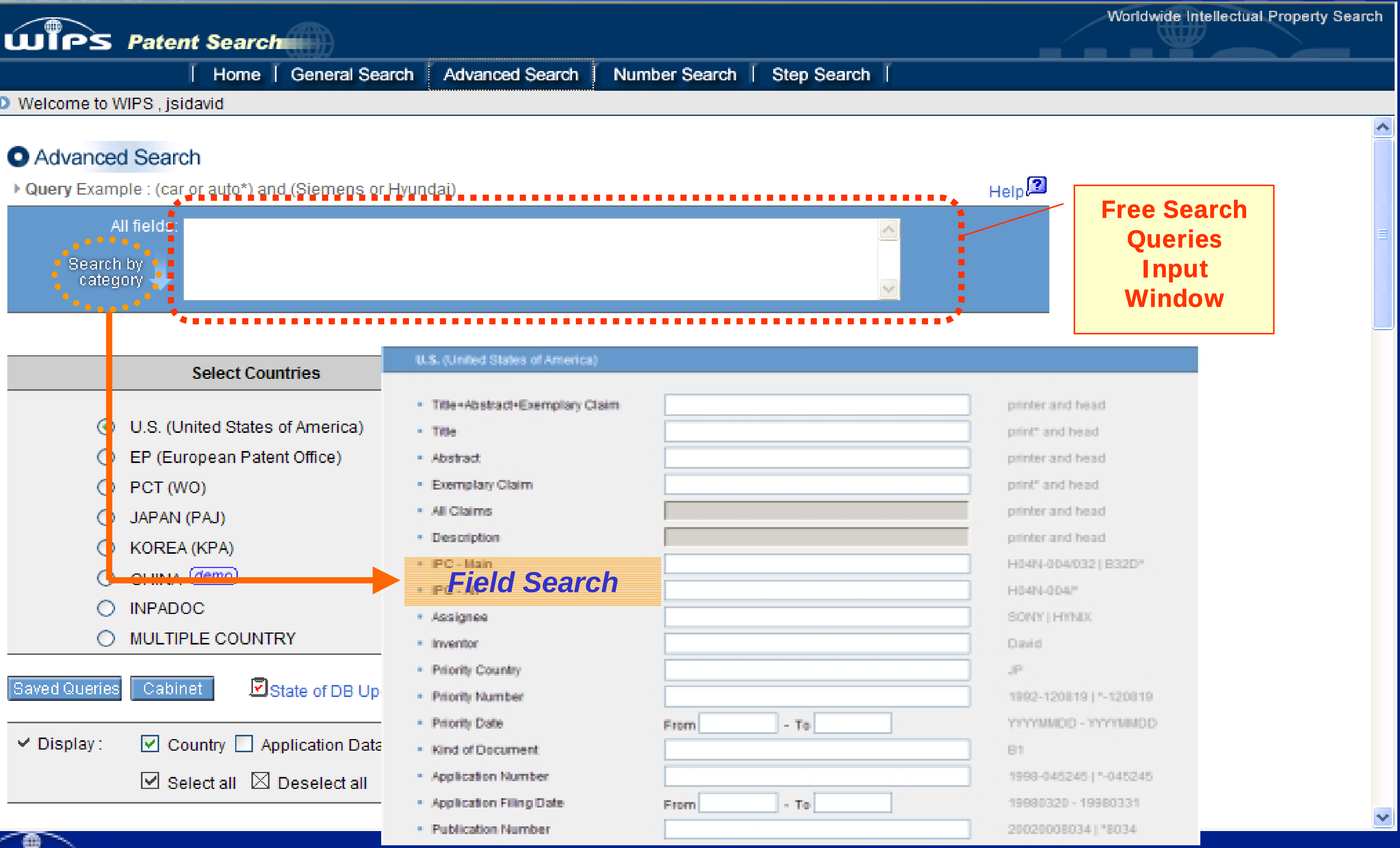
**Display Items Selection**

# 4. Advanced Search (for Experts)



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**Advanced Search**

Query Example : (car or auto*) and (Siemens or Hyundai)

Help ?

All fields:

Search by category

Select Countries

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- ○ INPADOC
- ○ MULTIPLE COUNTRY

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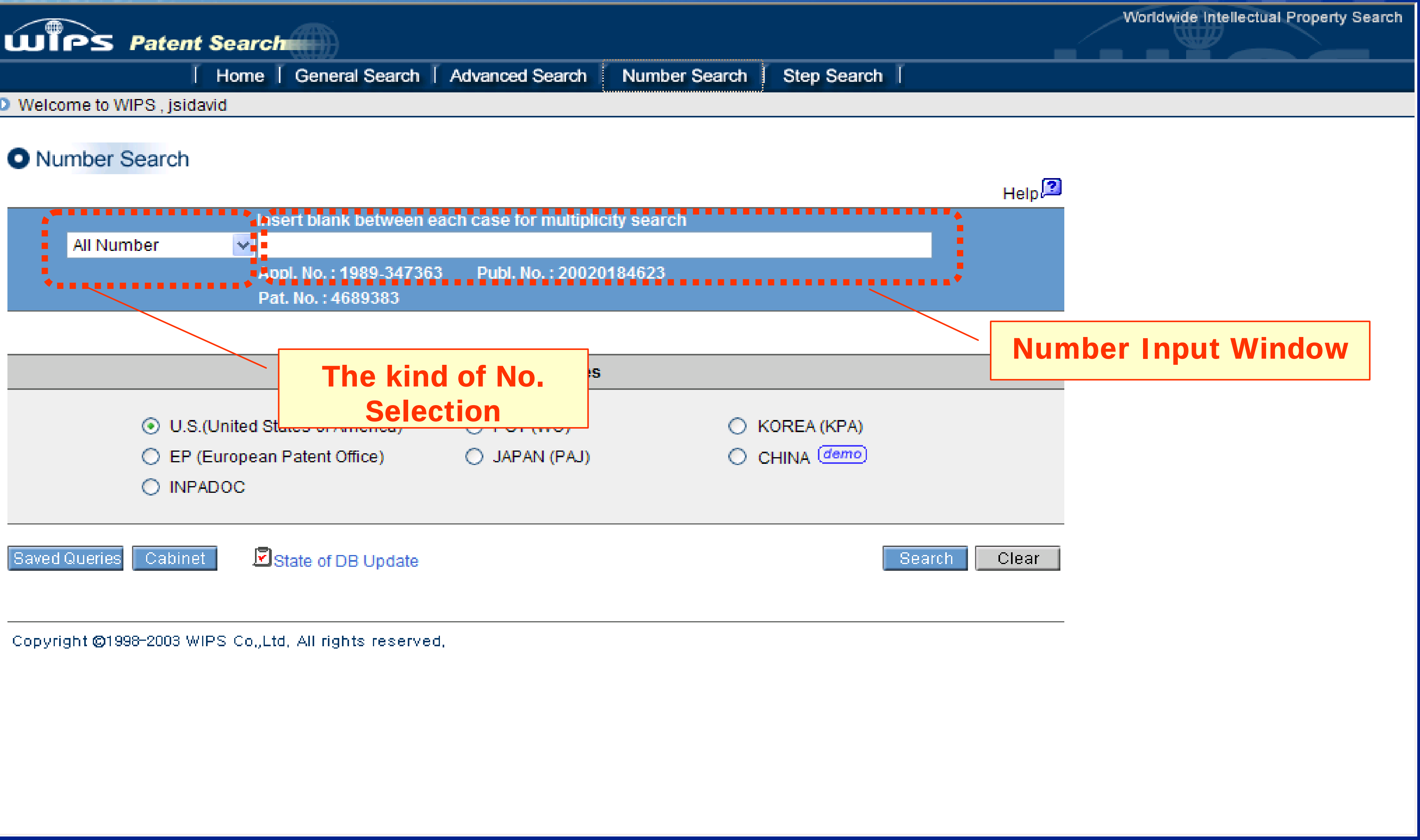
U.S. (United States of America)

| | | |
|---|---|---|
| Title+Abstract+Exemplary Claim | | printer and head |
| Title | | print* and head |
| Abstract | | printer and head |
| Exemplary Claim | | print* and head |
| All Claims | | printer and head |
| Description | | printer and head |
| IPC - Main | | H04N-004/032 \| B32D* |
| IPC - All | | H04N-004* |
| Assignee | | SONY \| HYNIX |
| Inventor | | David |
| Priority Country | | JP |
| Priority Number | | 1992-120819 \| *-120819 |
| Priority Date | From ☐ - To ☐ | YYYYMMDD - YYYYMMDD |
| Kind of Document | | B1 |
| Application Number | | 1998-045245 \| *-045245 |
| Application Filing Date | From ☐ - To ☐ | 19980320 - 19980331 |
| Publication Number | | 20020008034 \| *8034 |

Free Search Queries Input Window

Field Search

# 5. Number Search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Number Search

Insert blank between each case for multiplicity search

All Number

Appl. No. : 1989-347363    Publ. No. : 20020184623

Pat. No. : 4689383

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○ EP (European Patent Office)    ○ JAPAN (PAJ)    ○ CHINA demo

○ INPADOC

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**The kind of No. Selection**

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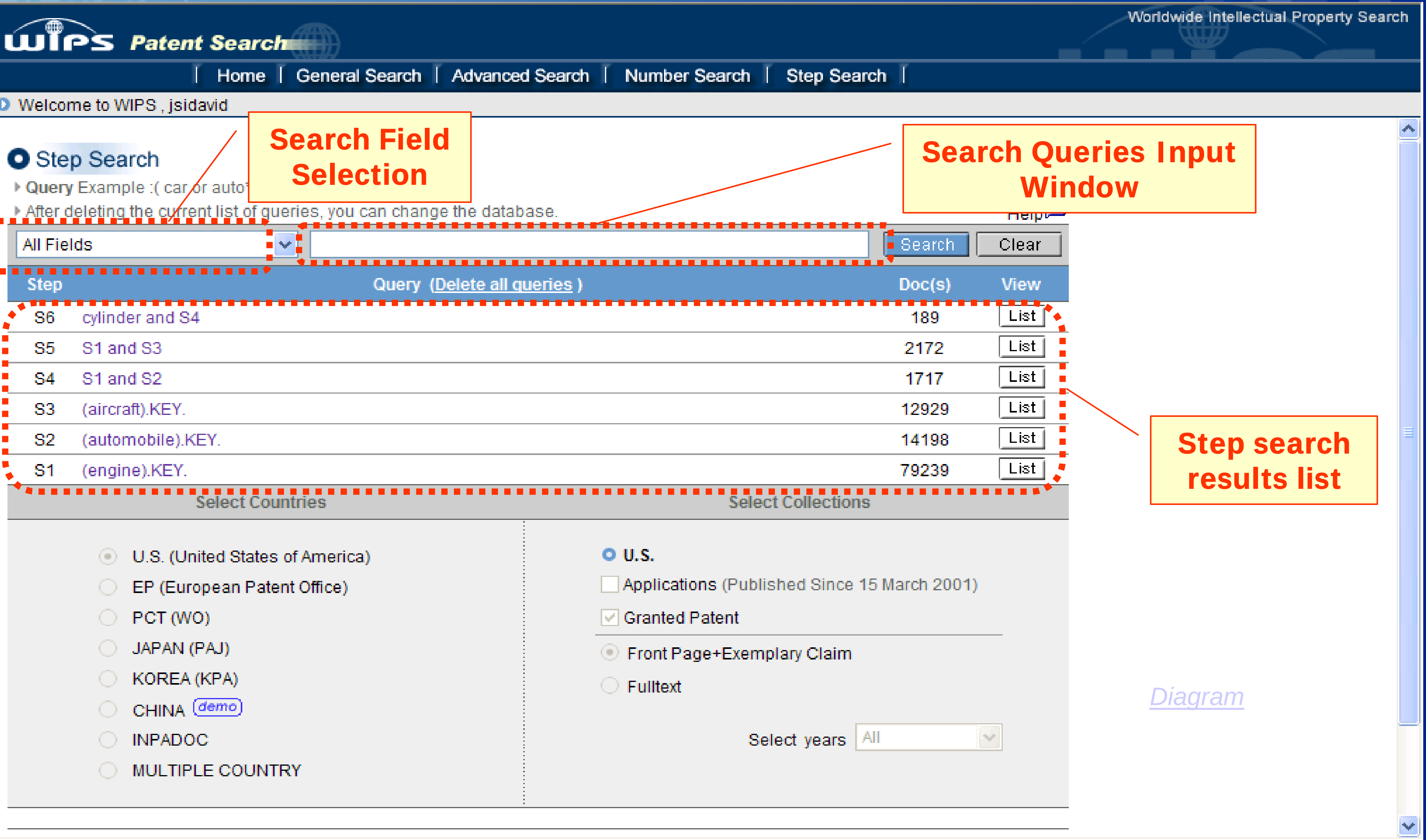
# 6. Step Search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**Step Search**

- **Query** Example :( car or auto
- After deleting the current list of queries, you can change the database.

All Fields

**Search Field Selection**

**Search Queries Input Window**

| Step | Query (Delete all queries ) | Doc(s) | View |
|---|---|---|---|
| S6 | cylinder and S4 | 189 | List |
| S5 | S1 and S3 | 2172 | List |
| S4 | S1 and S2 | 1717 | List |
| S3 | (aircraft).KEY. | 12929 | List |
| S2 | (automobile).KEY. | 14198 | List |
| S1 | (engine).KEY. | 79239 | List |

**Step search results list**

Select Countries

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- ○ EP (European Patent Office)
- ○ PCT (WO)
- ○ JAPAN (PAJ)
- ○ KOREA (KPA)
- ○ CHINA demo
- ○ INPADOC
- ○ MULTIPLE COUNTRY

Select Collections

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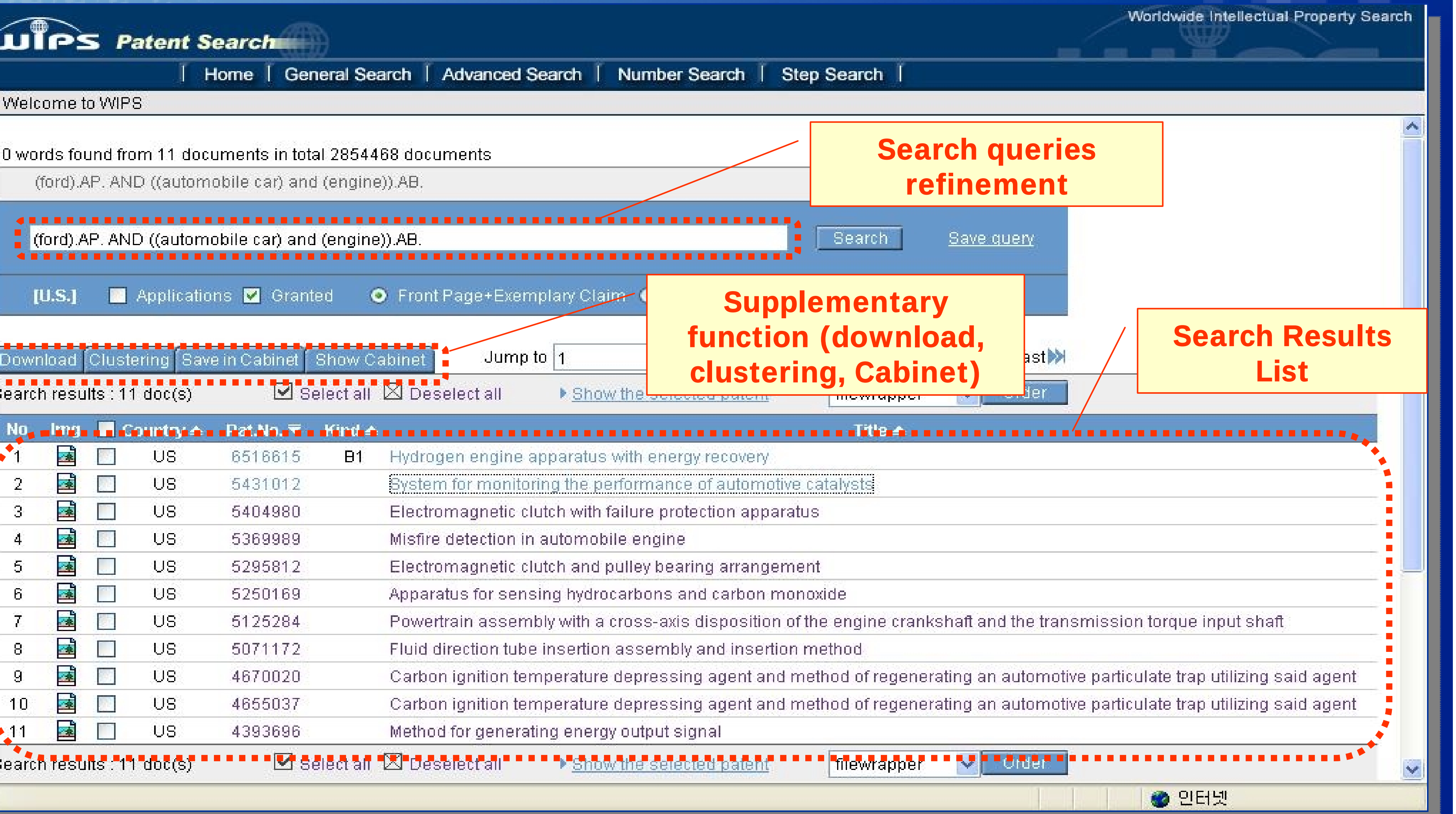
- ☐ Applications (Published Since 15 March 2001)
- ☑ Granted Patent
- ● Front Page+Exemplary Claim
- ○ Fulltext

Select years: All

# 7. Search Result View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(ford).AP. AND ((automobile car) and (engine)).AB.

(ford).AP. AND ((automobile car) and (engine)).AB.

[U.S.] ☐ Applications ☑ Granted ● Front Page+Exemplary Claim

Jump to 1

earch results : 11 doc(s) ☑ Select all ☒ Deselect all Show the selected patent filewrapper

| No | Img | ☐ | Country | Pat.No. | Kind | Title |
|---|---|---|---|---|---|---|
| 1 | | ☐ | US | 6516615 | B1 | Hydrogen engine apparatus with energy recovery |
| 2 | | ☐ | US | 5431012 | | System for monitoring the performance of automotive catalysts |
| 3 | | ☐ | US | 5404980 | | Electromagnetic clutch with failure protection apparatus |
| 4 | | ☐ | US | 5369989 | | Misfire detection in automobile engine |
| 5 | | ☐ | US | 5295812 | | Electromagnetic clutch and pulley bearing arrangement |
| 6 | | ☐ | US | 5250169 | | Apparatus for sensing hydrocarbons and carbon monoxide |
| 7 | | ☐ | US | 5125284 | | Powertrain assembly with a cross-axis disposition of the engine crankshaft and the transmission torque input shaft |
| 8 | | ☐ | US | 5071172 | | Fluid direction tube insertion assembly and insertion method |
| 9 | | ☐ | US | 4670020 | | Carbon ignition temperature depressing agent and method of regenerating an automotive particulate trap utilizing said agent |
| 10 | | ☐ | US | 4655037 | | Carbon ignition temperature depressing agent and method of regenerating an automotive particulate trap utilizing said agent |
| 11 | | ☐ | US | 4393696 | | Method for generating energy output signal |

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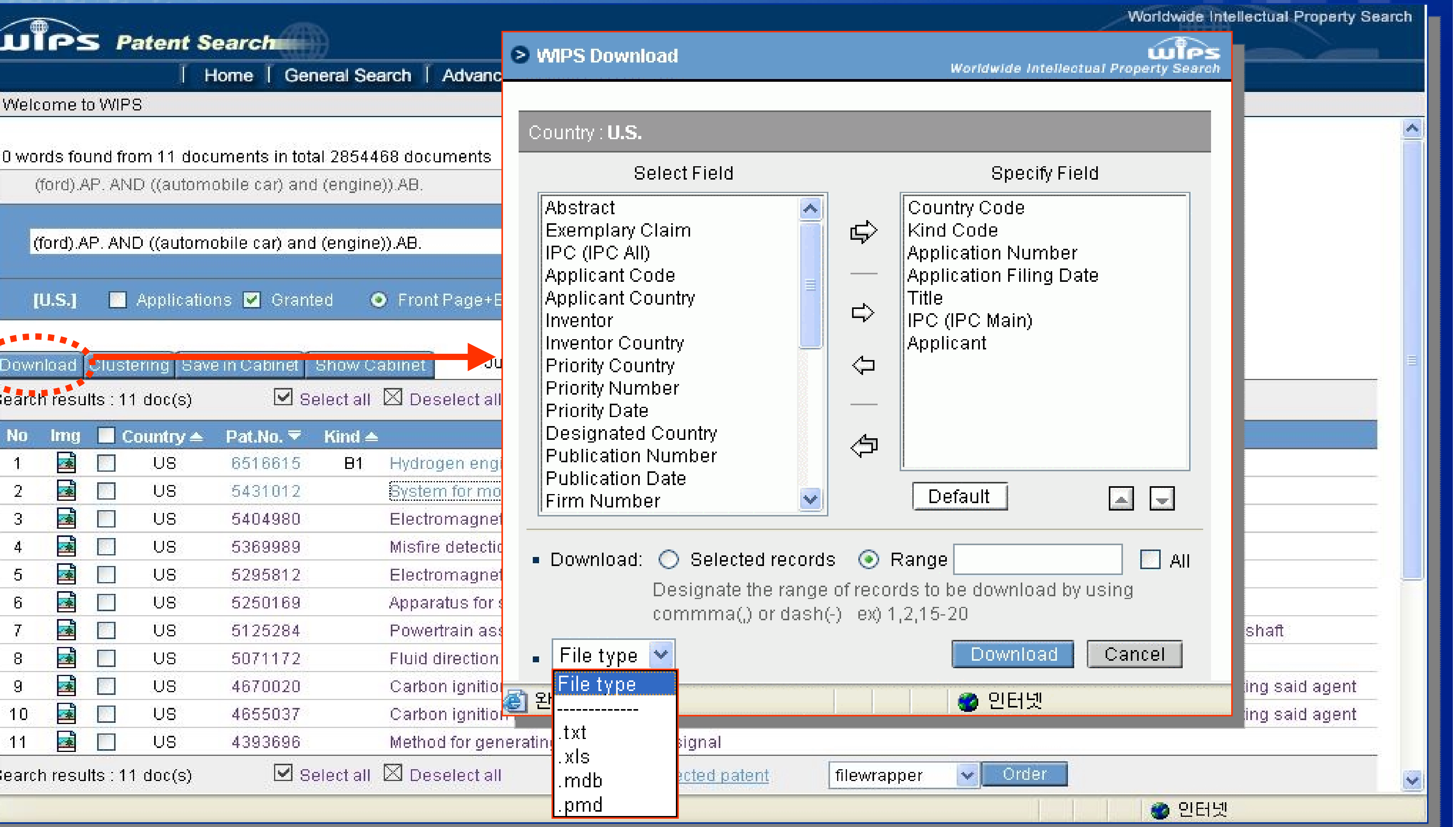
**Search queries refinement**

**Supplementary function (download, clustering, Cabinet)**

**Search Results List**

# 8. Data Download



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(ford).AP. AND ((automobile car) and (engine)).AB.

[U.S.] ☐ Applications ☑ Granted ● Front Page+E

Country : U.S.

| Select Field | Specify Field |
|---|---|
| Abstract | Country Code |
| Exemplary Claim | Kind Code |
| IPC (IPC All) | Application Number |
| Applicant Code | Application Filing Date |
| Applicant Country | Title |
| Inventor | IPC (IPC Main) |
| Inventor Country | Applicant |
| Priority Country | |
| Priority Number | |
| Priority Date | |
| Designated Country | |
| Publication Number | |
| Publication Date | |
| Firm Number | |

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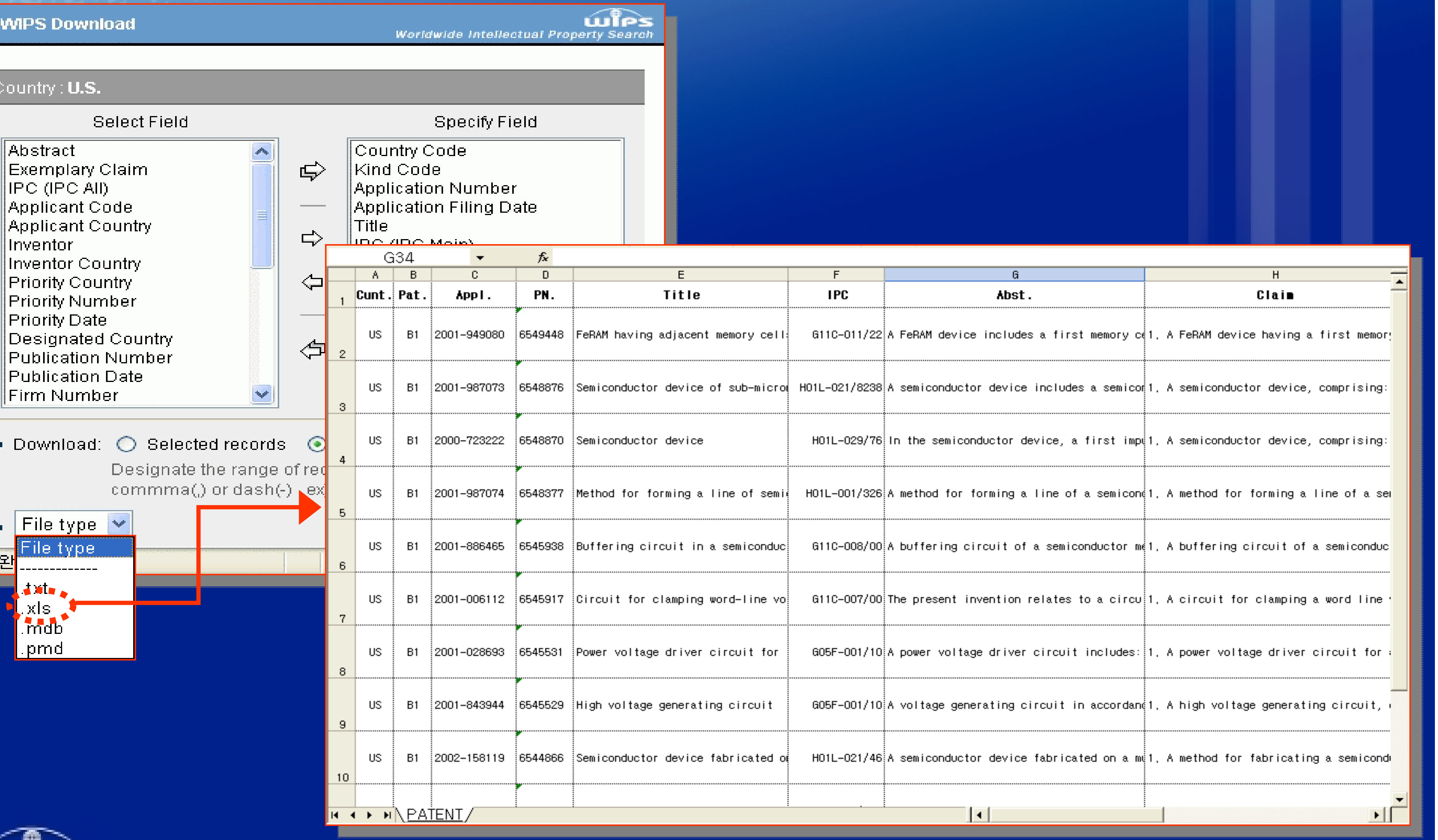
| No | Img | Country | Pat.No. | Kind | |
|---|---|---|---|---|---|
| 1 | | US | 6516615 | B1 | Hydrogen engi |
| 2 | | US | 5431012 | | System for mo |
| 3 | | US | 5404980 | | Electromagne |
| 4 | | US | 5369989 | | Misfire detecti |
| 5 | | US | 5295812 | | Electromagne |
| 6 | | US | 5250169 | | Apparatus for |
| 7 | | US | 5125284 | | Powertrain ass |
| 8 | | US | 5071172 | | Fluid direction |
| 9 | | US | 4670020 | | Carbon ignitio |
| 10 | | US | 4655037 | | Carbon ignitio |
| 11 | | US | 4393696 | | Method for generatin |

Search results : 11 doc(s) ☑ Select all ☒ Deselect all

filewrapper | Order

# 9. Download as Excel data



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ountry : **U.S.**

Select Field

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- Applicant Country
- Inventor
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Specify Field

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- Title
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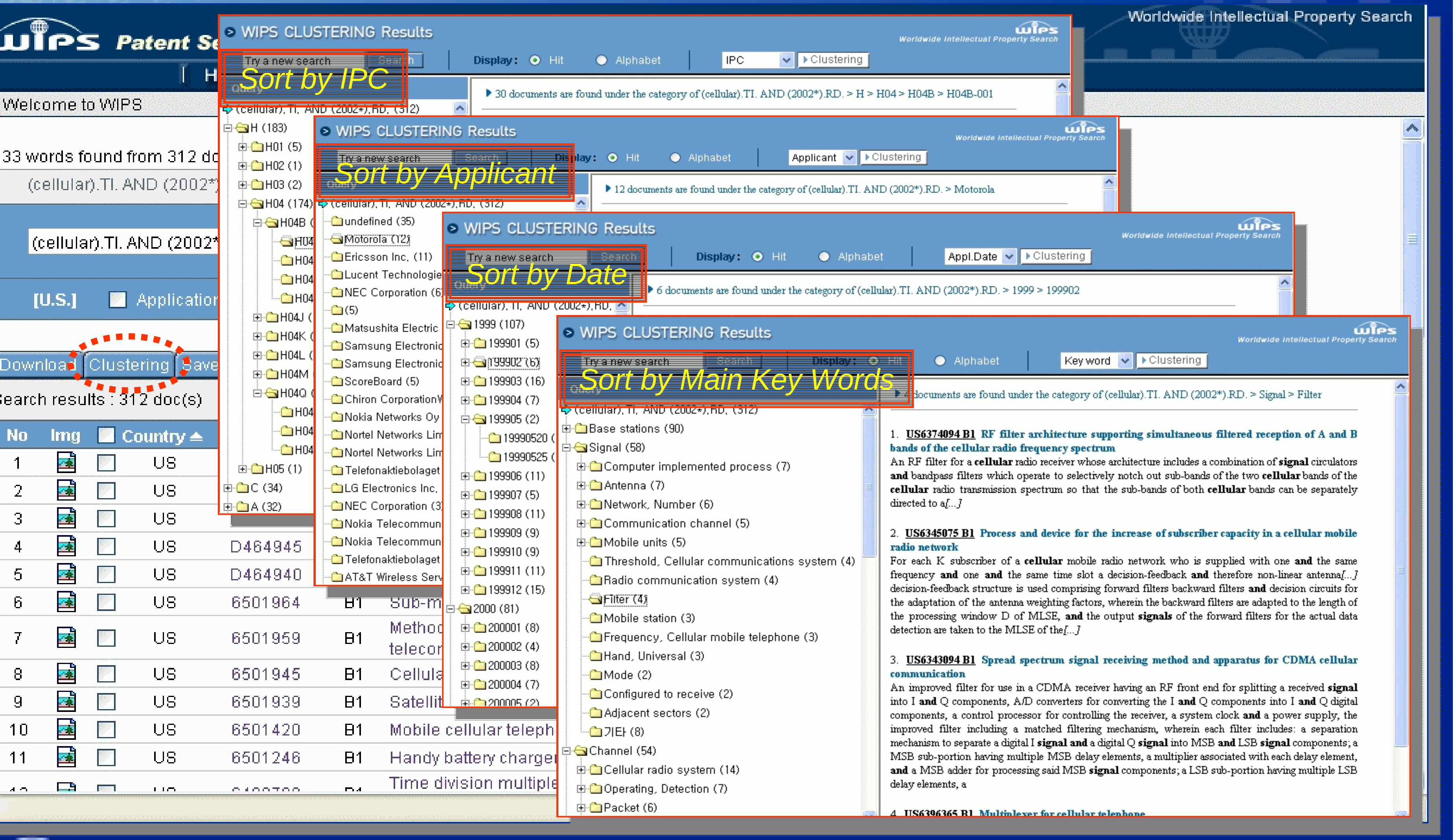
File type

G34

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | Cunt. | Pat. | Appl. | PN. | Title | IPC | Abst. | Claim |
| 2 | US | B1 | 2001-949080 | 6549448 | FeRAM having adjacent memory cell | G11C-011/22 | A FeRAM device includes a first memory c | 1, A FeRAM device having a first memor |
| 3 | US | B1 | 2001-987073 | 6548876 | Semiconductor device of sub-micro | H01L-021/8238 | A semiconductor device includes a semico | 1, A semiconductor device, comprising: |
| 4 | US | B1 | 2000-723222 | 6548870 | Semiconductor device | H01L-029/76 | In the semiconductor device, a first imp | 1, A semiconductor device, comprising: |
| 5 | US | B1 | 2001-987074 | 6548377 | Method for forming a line of semi | H01L-001/326 | A method for forming a line of a semicon | 1, A method for forming a line of a se |
| 6 | US | B1 | 2001-886465 | 6545938 | Buffering circuit in a semiconduc | G11C-008/00 | A buffering circuit of a semiconductor m | 1, A buffering circuit of a semiconduc |
| 7 | US | B1 | 2001-006112 | 6545917 | Circuit for clamping word-line vo | G11C-007/00 | The present invention relates to a circu | 1, A circuit for clamping a word line |
| 8 | US | B1 | 2001-028693 | 6545531 | Power voltage driver circuit for | G05F-001/10 | A power voltage driver circuit includes: | 1, A power voltage driver circuit for |
| 9 | US | B1 | 2001-843944 | 6545529 | High voltage generating circuit | G05F-001/10 | A voltage generating circuit in accordan | 1, A high voltage generating circuit, |
| 10 | US | B1 | 2002-158119 | 6544866 | Semiconductor device fabricated o | H01L-021/46 | A semiconductor device fabricated on a m | 1, A method for fabricating a semicond |

# 10. Clustering


Patent Se
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(cellular).TI. AND (2002*)
(cellular).TI. AND (2002*
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(cellular). TI. AND (2002*).RD. (312)
H (183)
H01 (5)
H02 (1)
H03 (2)
H04 (174)
H04B
H04J
H04K
H04L
H04M
H04Q
H05 (1)
C (34)
A (32)
Applicant
undefined (35)
Motorola (12)
Ericsson Inc. (11)
Lucent Technologie
NEC Corporation (6
(5)
Matsushita Electric
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ScoreBoard (5)
Chiron Corporation
Nokia Networks Oy
Nortel Networks Lim
Nortel Networks Lim
Telefonaktiebolaget
LG Electronics Inc.
NEC Corporation (3
Nokia Telecommun
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Telefonaktiebolaget
AT&T Wireless Serv
Appl.Date
1999 (107)
199901 (5)
199902 (6)
199903 (16)
199904 (7)
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19990520 (
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199906 (11)
199907 (5)
199908 (11)
199909 (9)
199910 (9)
199911 (11)
199912 (15)
2000 (81)
200001 (8)
200002 (4)
200003 (8)
200004 (7)
200005 (2)
Key word
Base stations (90)
Signal (58)
Computer implemented process (7)
Antenna (7)
Network, Number (6)
Communication channel (5)
Mobile units (5)
Threshold, Cellular communications system (4)
Radio communication system (4)
Filter (4)
Mobile station (3)
Frequency, Cellular mobile telephone (3)
Hand, Universal (3)
Mode (2)
Configured to receive (2)
Adjacent sectors (2)
기타 (8)
Channel (54)
Cellular radio system (14)
Operating, Detection (7)
Packet (6)

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Sort by Main Key Words

| No | Img | ☐ | Country ▲ | | | |
|---|---|---|---|---|---|---|
| 1 | | ☐ | US | | | |
| 2 | | ☐ | US | | | |
| 3 | | ☐ | US | | | |
| 4 | | ☐ | US | D464945 | | |
| 5 | | ☐ | US | D464940 | | |
| 6 | | ☐ | US | 6501964 | B1 | Sub-m |
| 7 | | ☐ | US | 6501959 | B1 | Method<br>telecor |
| 8 | | ☐ | US | 6501945 | B1 | Cellula |
| 9 | | ☐ | US | 6501939 | B1 | Satellit |
| 10 | | ☐ | US | 6501420 | B1 | Mobile cellular teleph |
| 11 | | ☐ | US | 6501246 | B1 | Handy battery charger |
| | | | | | | Time division multiple |

▸ 30 documents are found under the category of (cellular).TI. AND (2002*).RD. > H > H04 > H04B > H04B-001

▸ 12 documents are found under the category of (cellular).TI. AND (2002*).RD. > Motorola

▸ 6 documents are found under the category of (cellular).TI. AND (2002*).RD. > 1999 > 199902

▸ 4 documents are found under the category of (cellular).TI. AND (2002*).RD. > Signal > Filter

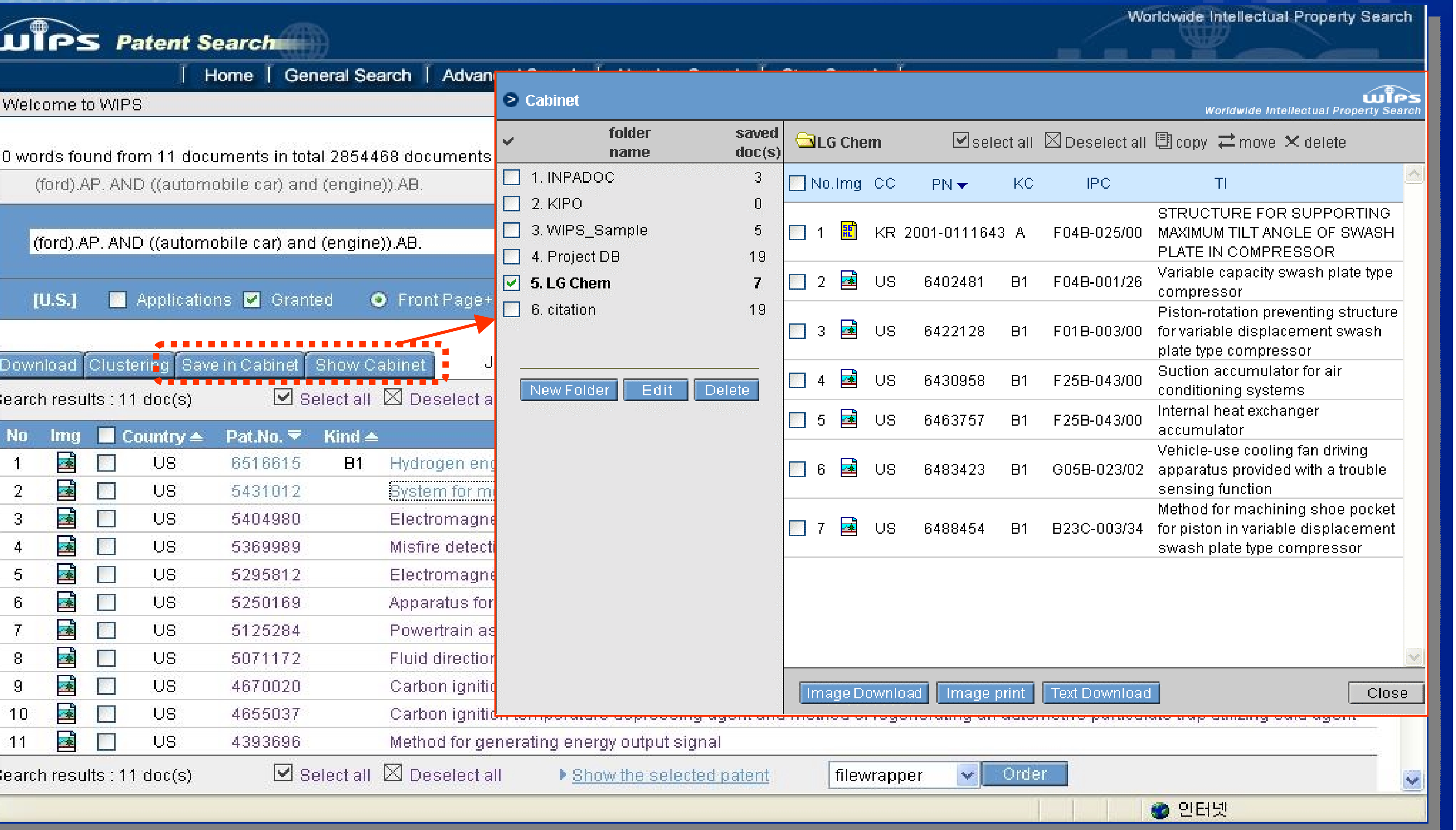
1. **US6374094 B1** **RF filter architecture supporting simultaneous filtered reception of A and B bands of the cellular radio frequency spectrum**
An RF filter for a **cellular** radio receiver whose architecture includes a combination of **signal** circulators **and** bandpass filters which operate to selectively notch out sub-bands of the two **cellular** bands of the **cellular** radio transmission spectrum so that the sub-bands of both **cellular** bands can be separately directed to a*[...]*

2. **US6345075 B1** **Process and device for the increase of subscriber capacity in a cellular mobile radio network**
For each K subscriber of a **cellular** mobile radio network who is supplied with one **and** the same frequency **and** one **and** the same time slot a decision-feedback **and** therefore non-linear antenna*[...]* decision-feedback structure is used comprising forward filters backward filters **and** decision circuits for the adaptation of the antenna weighting factors, wherein the backward filters are adapted to the length of the processing window D of MLSE, **and** the output **signals** of the forward filters for the actual data detection are taken to the MLSE of the*[...]*

3. **US6343094 B1** **Spread spectrum signal receiving method and apparatus for CDMA cellular communication**
An improved filter for use in a CDMA receiver having an RF front end for splitting a received **signal** into I **and** Q components, A/D converters for converting the I **and** Q components into I **and** Q digital components, a control processor for controlling the receiver, a system clock **and** a power supply, the improved filter including a matched filtering mechanism, wherein each filter includes: a separation mechanism to separate a digital I **signal and** a digital Q **signal** into MSB **and** LSB **signal** components; a MSB sub-portion having multiple MSB delay elements, a multiplier associated with each delay element, **and** a MSB adder for processing said MSB **signal** components; a LSB sub-portion having multiple LSB delay elements, a

4. **US6396365 B1** **Multiplexer for cellular telephone**

# 11. Search Results Managing Tool - Cabinet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(ford).AP. AND ((automobile car) and (engine)).AB.

(ford).AP. AND ((automobile car) and (engine)).AB.

[U.S.] ☐ Applications ☑ Granted ● Front Page+

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| No | Img | ☐ Country ▲ | Pat.No. ▼ | Kind ▲ | |
|---|---|---|---|---|---|
| 1 | ☐ | US | 6516615 | B1 | Hydrogen eng |
| 2 | ☐ | US | 5431012 | | System for m |
| 3 | ☐ | US | 5404980 | | Electromagne |
| 4 | ☐ | US | 5369989 | | Misfire detect |
| 5 | ☐ | US | 5295812 | | Electromagne |
| 6 | ☐ | US | 5250169 | | Apparatus for |
| 7 | ☐ | US | 5125284 | | Powertrain as |
| 8 | ☐ | US | 5071172 | | Fluid direction |
| 9 | ☐ | US | 4670020 | | Carbon igniti |
| 10 | ☐ | US | 4655037 | | Carbon ignition temperature depressing agent and method of regenerating an automotive particulate trap utilizing said agent |
| 11 | ☐ | US | 4393696 | | Method for generating energy output signal |

earch results : 11 doc(s) ☑ Select all ☒ Deselect all ▸ Show the selected patent filewrapper Order

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| ☐ | 3. WIPS_Sample | 5 |
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| ☑ | **5. LG Chem** | **7** |
| ☐ | 6. citation | 19 |

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| ☐ No. | Img | CC | PN ▼ | KC | IPC | TI |
|---|---|---|---|---|---|---|
| ☐ 1 | | KR | 2001-0111643 | A | F04B-025/00 | STRUCTURE FOR SUPPORTING MAXIMUM TILT ANGLE OF SWASH PLATE IN COMPRESSOR |
| ☐ 2 | | US | 6402481 | B1 | F04B-001/26 | Variable capacity swash plate type compressor |
| ☐ 3 | | US | 6422128 | B1 | F01B-003/00 | Piston-rotation preventing structure for variable displacement swash plate type compressor |
| ☐ 4 | | US | 6430958 | B1 | F25B-043/00 | Suction accumulator for air conditioning systems |
| ☐ 5 | | US | 6463757 | B1 | F25B-043/00 | Internal heat exchanger accumulator |
| ☐ 6 | | US | 6483423 | B1 | G05B-023/02 | Vehicle-use cooling fan driving apparatus provided with a trouble sensing function |
| ☐ 7 | | US | 6488454 | B1 | B23C-003/34 | Method for machining shoe pocket for piston in variable displacement swash plate type compressor |

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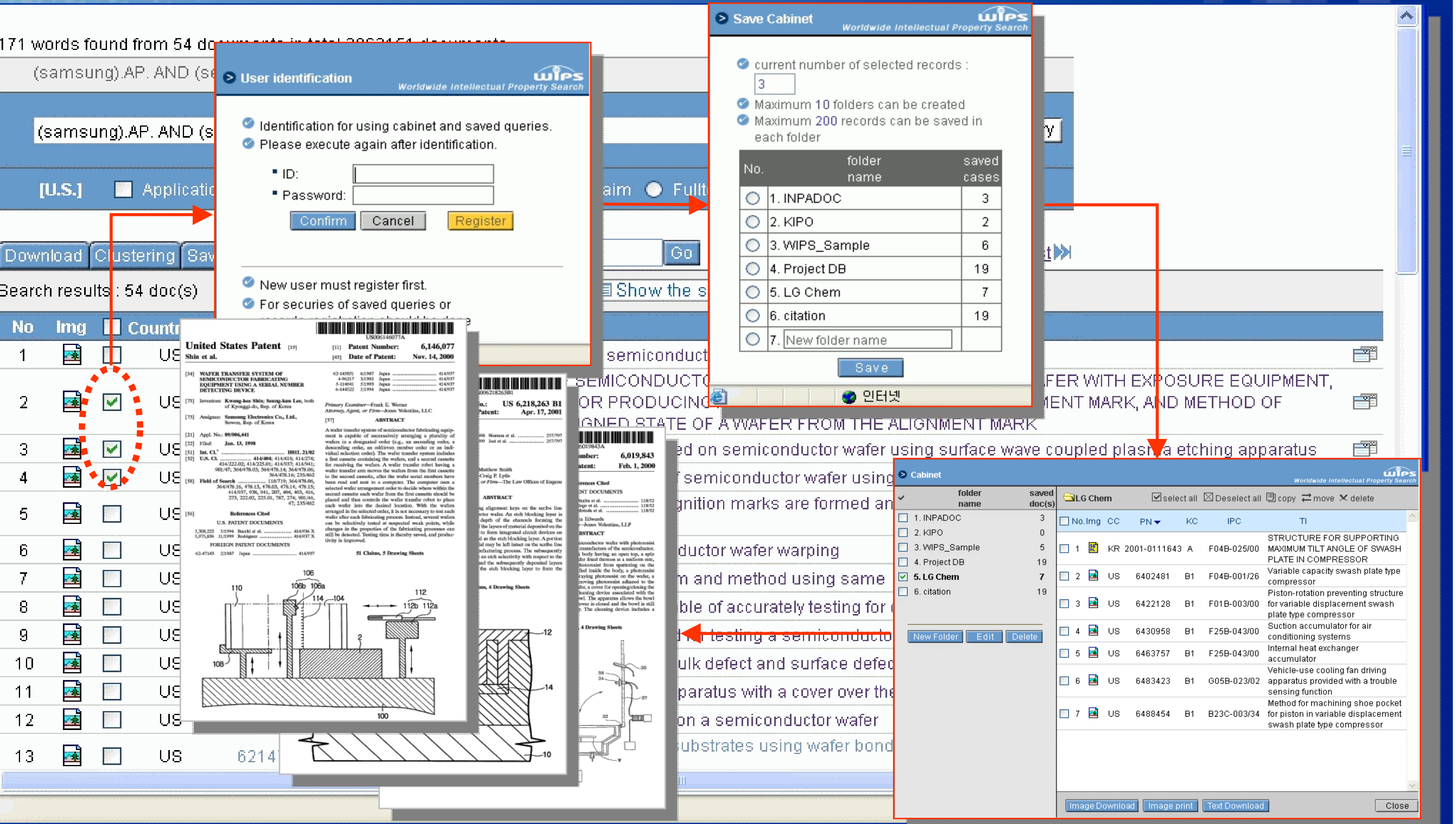

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| ○ | 6. citation | 19 |
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| ☑ | **5. LG Chem** | **7** |
| ☐ | 6. citation | 19 |

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| ☐ | No. | Img | CC | PN | KC | IPC | TI |
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| ☐ | 1 | | KR | 2001-0111643 | A | F04B-025/00 | STRUCTURE FOR SUPPORTING MAXIMUM TILT ANGLE OF SWASH PLATE IN COMPRESSOR |
| ☐ | 2 | | US | 6402481 | B1 | F04B-001/26 | Variable capacity swash plate type compressor |
| ☐ | 3 | | US | 6422128 | B1 | F01B-003/00 | Piston-rotation preventing structure for variable displacement swash plate type compressor |
| ☐ | 4 | | US | 6430958 | B1 | F25B-043/00 | Suction accumulator for air conditioning systems |
| ☐ | 5 | | US | 6463757 | B1 | F25B-043/00 | Internal heat exchanger accumulator |
| ☐ | 6 | | US | 6483423 | B1 | G05B-023/02 | Vehicle-use cooling fan driving apparatus provided with a trouble sensing function |
| ☐ | 7 | | US | 6488454 | B1 | B23C-003/34 | Method for machining shoe pocket for piston in variable displacement swash plate type compressor |

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| 13 | | ☐ | US 6214 |

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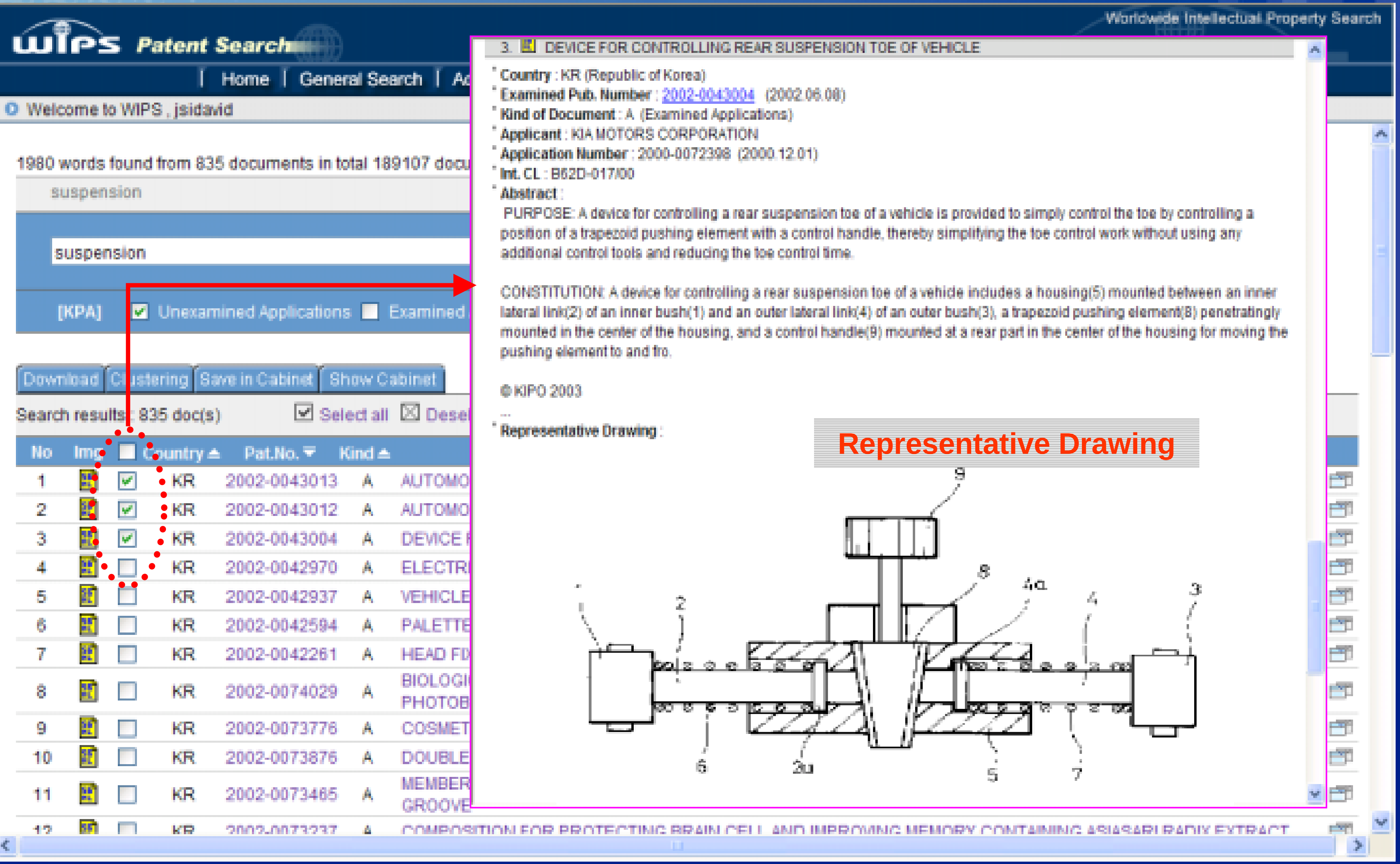
United States Patent [19] — Shin et al. — [11] Patent Number: 6,146,077 — [45] Date of Patent: Nov. 14, 2000

US 6,218,263 B1 — Apr. 17, 2001

6,019,843 — Feb. 1, 2000

# 13. Collective View of Selected Patents



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suspension

[KPA] ☑ Unexamined Applications ☐ Examined

Search results : 835 doc(s)

| No | Img | ☐ | Country | Pat.No. | Kind | |
|---|---|---|---|---|---|---|
| 1 | | ☑ | KR | 2002-0043013 | A | AUTOMO |
| 2 | | ☑ | KR | 2002-0043012 | A | AUTOMO |
| 3 | | ☑ | KR | 2002-0043004 | A | DEVICE F |
| 4 | | ☐ | KR | 2002-0042970 | A | ELECTRI |
| 5 | | ☐ | KR | 2002-0042937 | A | VEHICLE |
| 6 | | ☐ | KR | 2002-0042594 | A | PALETTE |
| 7 | | ☐ | KR | 2002-0042261 | A | HEAD FI |
| 8 | | ☐ | KR | 2002-0074029 | A | BIOLOGI<br>PHOTOB |
| 9 | | ☐ | KR | 2002-0073776 | A | COSMET |
| 10 | | ☐ | KR | 2002-0073876 | A | DOUBLE |
| 11 | | ☐ | KR | 2002-0073465 | A | MEMBER<br>GROOVE |
| 12 | | ☐ | KR | 2002-0073237 | A | COMPOSITION FOR PROTECTING BRAIN CELL AND IMPROVING MEMORY CONTAINING ASIASARI RADIX EXTRACT |

3. DEVICE FOR CONTROLLING REAR SUSPENSION TOE OF VEHICLE

- **Country** : KR (Republic of Korea)
- **Examined Pub. Number** : 2002-0043004 (2002.06.08)
- **Kind of Document** : A (Examined Applications)
- **Applicant** : KIA MOTORS CORPORATION
- **Application Number** : 2000-0072398 (2000.12.01)
- **Int. CL** : B62D-017/00
- **Abstract** :

PURPOSE: A device for controlling a rear suspension toe of a vehicle is provided to simply control the toe by controlling a position of a trapezoid pushing element with a control handle, thereby simplifying the toe control work without using any additional control tools and reducing the toe control time.

CONSTITUTION: A device for controlling a rear suspension toe of a vehicle includes a housing(5) mounted between an inner lateral link(2) of an inner bush(1) and an outer lateral link(4) of an outer bush(3), a trapezoid pushing element(8) penetratingly mounted in the center of the housing, and a control handle(9) mounted at a rear part in the center of the housing for moving the pushing element to and fro.

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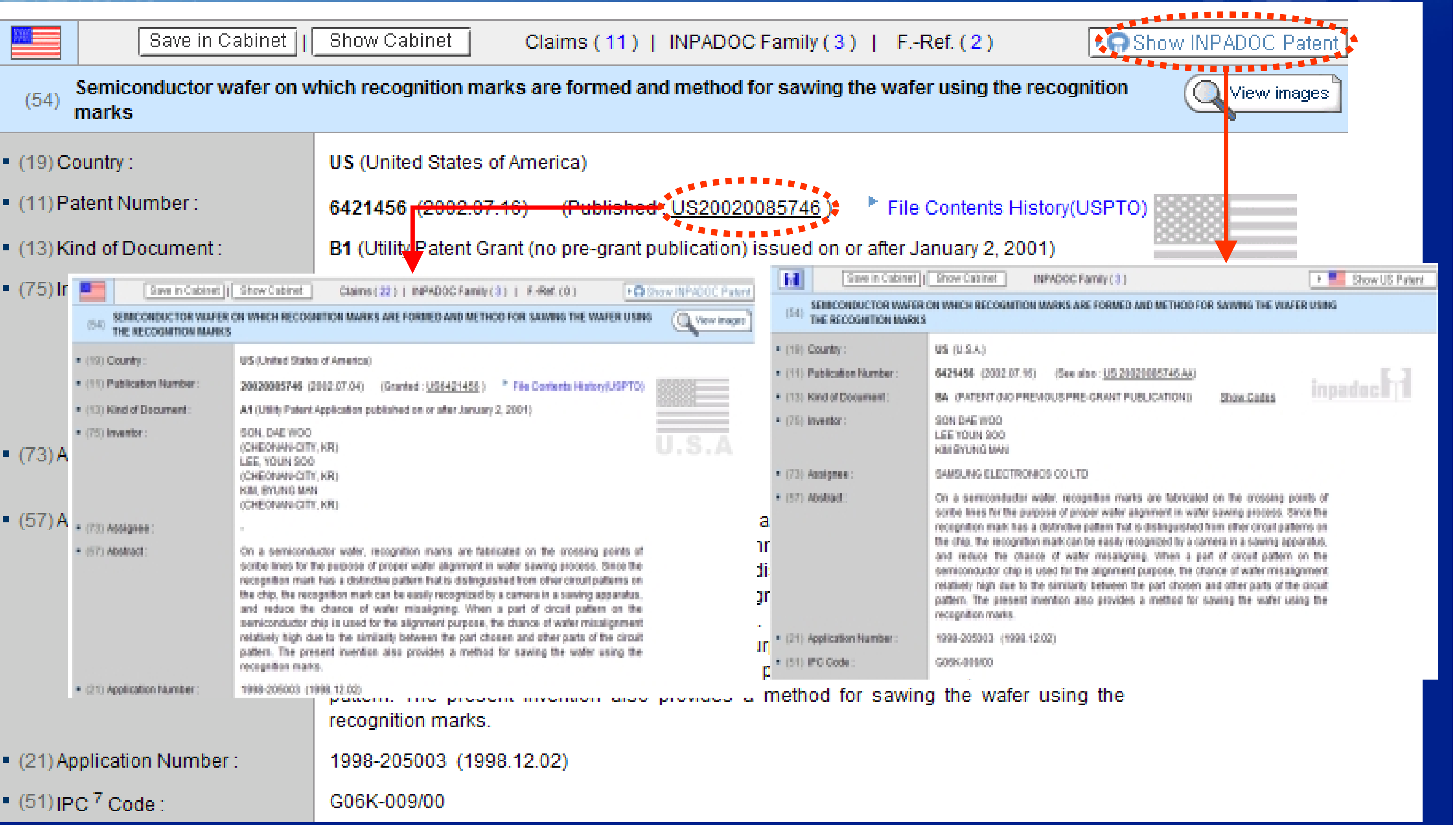
...

- **Representative Drawing** :

# 14. Detailed Info. View (1) - DILS



Save in Cabinet | Show Cabinet  Claims ( 11 ) | INPADOC Family ( 3 ) | F.-Ref. ( 2 )  Show INPADOC Patent

(54) Semiconductor wafer on which recognition marks are formed and method for sawing the wafer using the recognition marks

View images

- (19) Country : US (United States of America)
- (11) Patent Number : 6421456 (2002.07.16) (Published : US20020085746 )  File Contents History(USPTO)
- (13) Kind of Document : B1 (Utility Patent Grant (no pre-grant publication) issued on or after January 2, 2001)
- (75) In
- (73) A
- (57) A

pattern. The present invention also provides a method for sawing the wafer using the recognition marks.

- (21) Application Number : 1998-205003 (1998.12.02)
- (51) IPC $^7$ Code : G06K-009/00

Save in Cabinet | Show Cabinet  Claims ( 22 ) | INPADOC Family ( 3 ) | F.-Ref. ( 0 )  Show INPADOC Patent

(54) SEMICONDUCTOR WAFER ON WHICH RECOGNITION MARKS ARE FORMED AND METHOD FOR SAWING THE WAFER USING THE RECOGNITION MARKS

View images

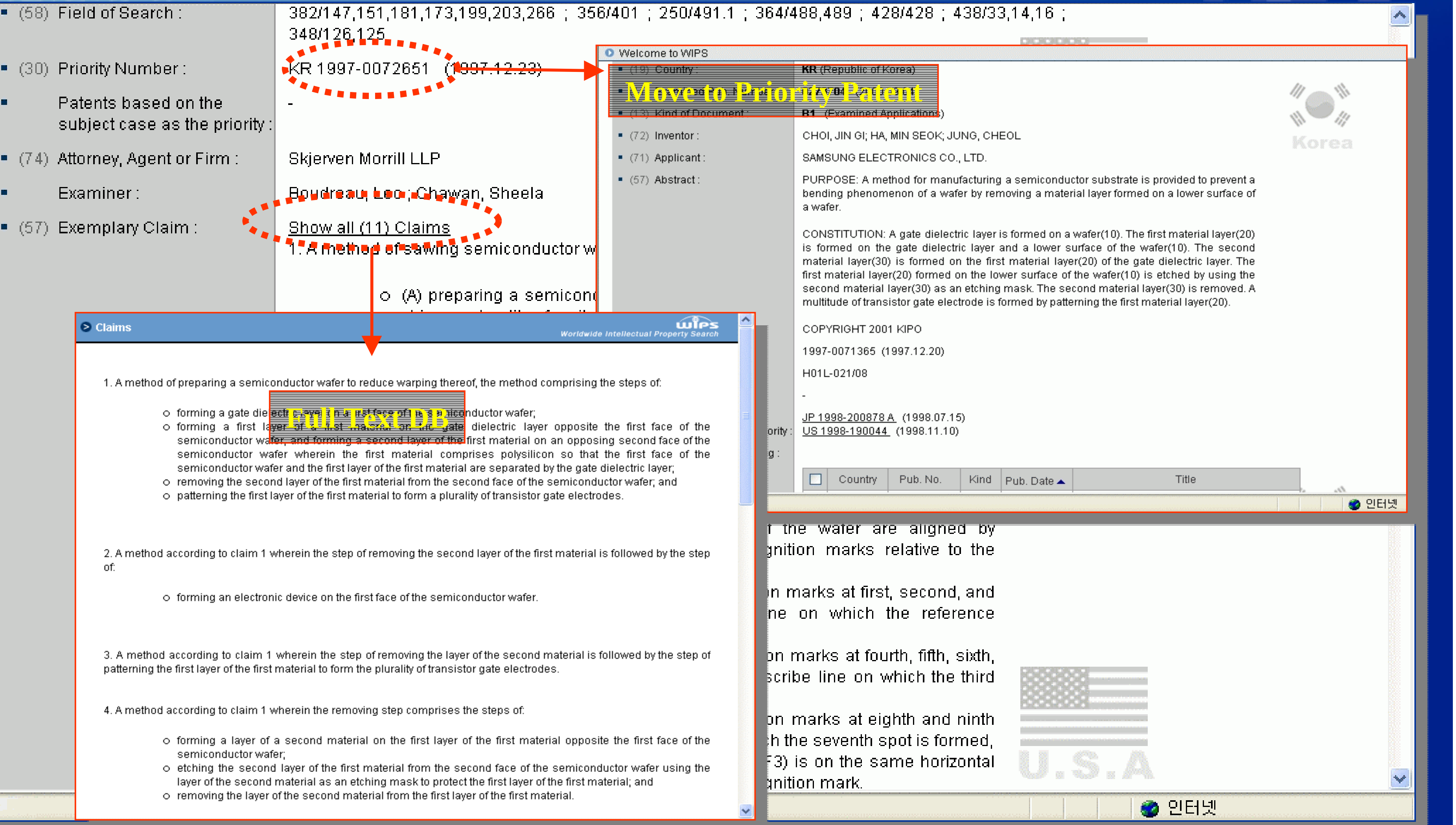
- (19) Country : US (United States of America)
- (11) Publication Number : 20020085746 (2002.07.04) (Granted : US6421456 )  File Contents History(USPTO)
- (13) Kind of Document : A1 (Utility Patent Application published on or after January 2, 2001)
- (75) Inventor : SON, DAE WOO<br>(CHEONAN-CITY, KR)<br>LEE, YOUN SOO<br>(CHEONAN-CITY, KR)<br>KIM, BYUNG MAN<br>(CHEONAN-CITY, KR)
- (73) Assignee : -
- (57) Abstract : On a semiconductor wafer, recognition marks are fabricated on the crossing points of scribe lines for the purpose of proper wafer alignment in wafer sawing process. Since the recognition mark has a distinctive pattern that is distinguished from other circuit patterns on the chip, the recognition mark can be easily recognized by a camera in a sawing apparatus, and reduce the chance of wafer misaligning. When a part of circuit pattern on the semiconductor chip is used for the alignment purpose, the chance of wafer misalignment relatively high due to the similarity between the part chosen and other parts of the circuit pattern. The present invention also provides a method for sawing the wafer using the recognition marks.
- (21) Application Number : 1998-205003 (1998.12.02)

Save in Cabinet | Show Cabinet  INPADOC Family ( 3 )  Show US Patent

(54) SEMICONDUCTOR WAFER ON WHICH RECOGNITION MARKS ARE FORMED AND METHOD FOR SAWING THE WAFER USING THE RECOGNITION MARKS

- (19) Country : US (U.S.A.)
- (11) Publication Number : 6421456 (2002.07.16) (See also : US 20020085746 A1)
- (13) Kind of Document : B1 (PATENT (NO PREVIOUS PRE-GRANT PUBLICATION))  Show Codes
- (75) Inventor : SON DAE WOO<br>LEE YOUN SOO<br>KIM BYUNG MAN
- (73) Assignee : SAMSUNG ELECTRONICS CO LTD
- (57) Abstract : On a semiconductor wafer, recognition marks are fabricated on the crossing points of scribe lines for the purpose of proper wafer alignment in wafer sawing process. Since the recognition mark has a distinctive pattern that is distinguished from other circuit patterns on the chip, the recognition mark can be easily recognized by a camera in a sawing apparatus, and reduce the chance of wafer misaligning. When a part of circuit pattern on the semiconductor chip is used for the alignment purpose, the chance of wafer misalignment relatively high due to the similarity between the part chosen and other parts of the circuit pattern. The present invention also provides a method for sawing the wafer using the recognition marks.
- (21) Application Number : 1998-205003 (1998.12.02)
- (51) IPC Code : G06K-009/00

# 15. Detailed Info. View (2) – Full Information



- (58) Field of Search : 382/147,151,181,173,199,203,266 ; 356/401 ; 250/491.1 ; 364/488,489 ; 428/428 ; 438/33,14,16 ; 348/126,125
- (30) Priority Number : KR 1997-0072651 (1997.12.23)
- Patents based on the subject case as the priority : -
- (74) Attorney, Agent or Firm : Skjerven Morrill LLP
- Examiner : Boudreau, Leo ; Chawan, Sheela
- (57) Exemplary Claim : Show all (11) Claims

1. A method of sawing semiconductor w

○ (A) preparing a semicon

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- (19) Country : **KR** (Republic of Korea)
- (13) Kind of Document : **B1** (Examined Applications)
- (72) Inventor : CHOI, JIN GI; HA, MIN SEOK; JUNG, CHEOL
- (71) Applicant : SAMSUNG ELECTRONICS CO., LTD.
- (57) Abstract :

PURPOSE: A method for manufacturing a semiconductor substrate is provided to prevent a bending phenomenon of a wafer by removing a material layer formed on a lower surface of a wafer.

CONSTITUTION: A gate dielectric layer is formed on a wafer(10). The first material layer(20) is formed on the gate dielectric layer and a lower surface of the wafer(10). The second material layer(30) is formed on the first material layer(20) of the gate dielectric layer. The first material layer(20) formed on the lower surface of the wafer(10) is etched by using the second material layer(30) as an etching mask. The second material layer(30) is removed. A multitude of transistor gate electrode is formed by patterning the first material layer(20).

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1997-0071365 (1997.12.20)

H01L-021/08

-

ority : JP 1998-200878 A (1998.07.15)
US 1998-190044 (1998.11.10)

g :

| ☐ | Country | Pub. No. | Kind | Pub. Date ▲ | Title |
|---|---|---|---|---|---|

Full Text DB

Claims

1. A method of preparing a semiconductor wafer to reduce warping thereof, the method comprising the steps of:

- ○ forming a gate dielectric layer on a first face of the semiconductor wafer;
- ○ forming a first layer of a first material on the gate dielectric layer opposite the first face of the semiconductor wafer, and forming a second layer of the first material on an opposing second face of the semiconductor wafer wherein the first material comprises polysilicon so that the first face of the semiconductor wafer and the first layer of the first material are separated by the gate dielectric layer;
- ○ removing the second layer of the first material from the second face of the semiconductor wafer; and
- ○ patterning the first layer of the first material to form a plurality of transistor gate electrodes.

2. A method according to claim 1 wherein the step of removing the second layer of the first material is followed by the step of:

- ○ forming an electronic device on the first face of the semiconductor wafer.

3. A method according to claim 1 wherein the step of removing the layer of the second material is followed by the step of patterning the first layer of the first material to form the plurality of transistor gate electrodes.

4. A method according to claim 1 wherein the removing step comprises the steps of:

- ○ forming a layer of a second material on the first layer of the first material opposite the first face of the semiconductor wafer;
- ○ etching the second layer of the first material from the second face of the semiconductor wafer using the layer of the second material as an etching mask to protect the first layer of the first material; and
- ○ removing the layer of the second material from the first layer of the first material.

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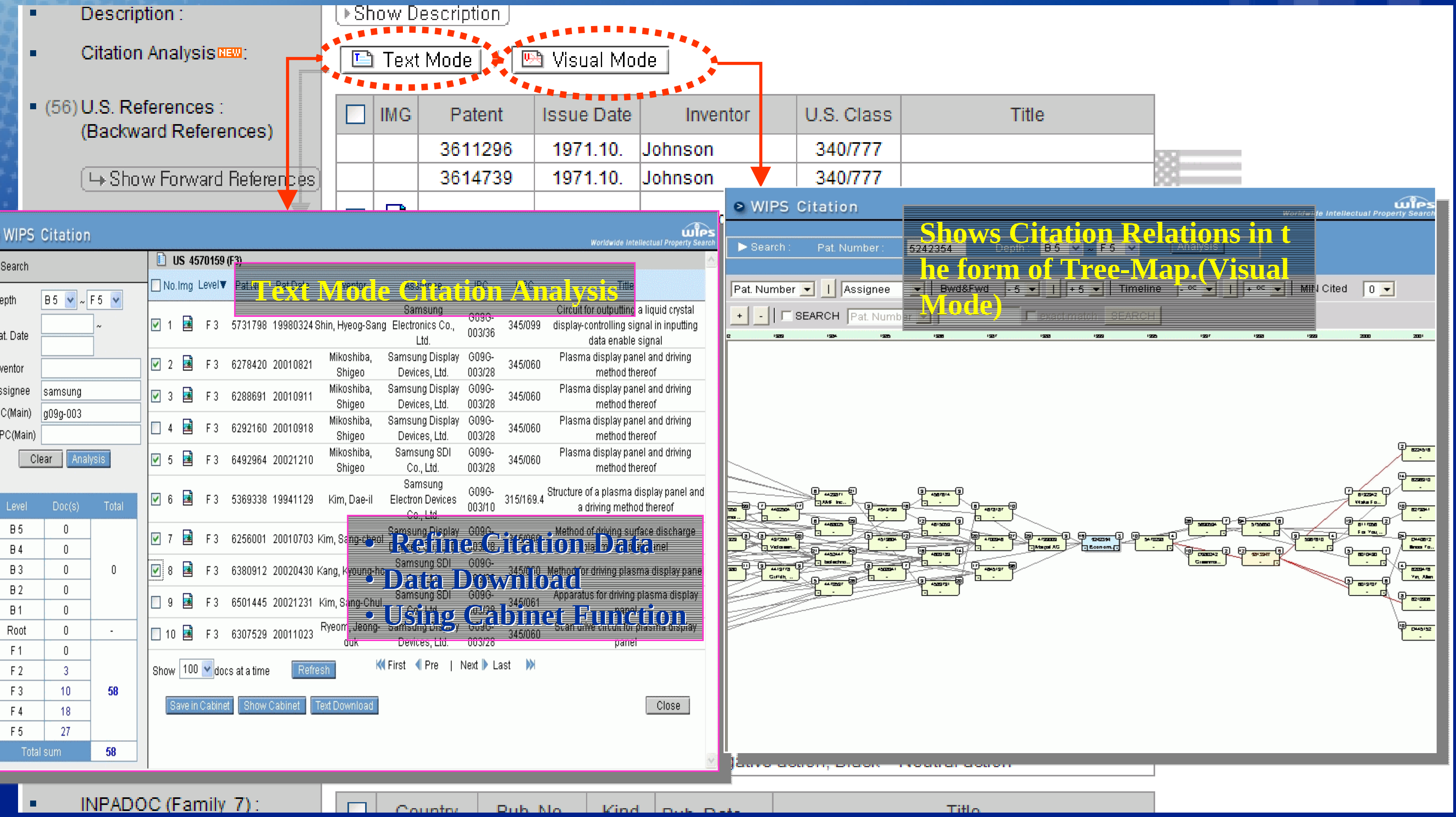
# 16. Detailed Info. View (3) – Citation Analysis



- Description :
- Citation Analysis NEW :
- (56) U.S. References : (Backward References)

Show Description
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| ☐ | IMG | Patent | Issue Date | Inventor | U.S. Class | Title |
|---|---|---|---|---|---|---|
| | | 3611296 | 1971.10. | Johnson | 340/777 | |
| | | 3614739 | 1971.10. | Johnson | 340/777 | |

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US 4570159 (F3)

Search
Depth: B 5 ~ F 5
Pat. Date: ~
Inventor:
Assignee: samsung
IPC(Main): g09g-003
UPC(Main):

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| Level | Doc(s) | Total |
|---|---|---|
| B 5 | 0 | 0 |
| B 4 | 0 | |
| B 3 | 0 | |
| B 2 | 0 | |
| B 1 | 0 | |
| Root | 0 | - |
| F 1 | 0 | 58 |
| F 2 | 3 | |
| F 3 | 10 | |
| F 4 | 18 | |
| F 5 | 27 | |
| Total sum | | 58 |

| ☐ | No. | Img | Level▼ | Pat.No | Pat.Date | Inventor | Assignee | IPC | UPC | Title |
|---|---|---|---|---|---|---|---|---|---|---|
| ☑ | 1 | | F 3 | 5731798 | 19980324 | Shin, Hyeog-Sang | Samsung Electronics Co., Ltd. | G09G-003/36 | 345/099 | Circuit for outputting a liquid crystal display-controlling signal in inputting data enable signal |
| ☑ | 2 | | F 3 | 6278420 | 20010821 | Mikoshiba, Shigeo | Samsung Display Devices, Ltd. | G09G-003/28 | 345/060 | Plasma display panel and driving method thereof |
| ☑ | 3 | | F 3 | 6288691 | 20010911 | Mikoshiba, Shigeo | Samsung Display Devices, Ltd. | G09G-003/28 | 345/060 | Plasma display panel and driving method thereof |
| ☐ | 4 | | F 3 | 6292160 | 20010918 | Mikoshiba, Shigeo | Samsung Display Devices, Ltd. | G09G-003/28 | 345/060 | Plasma display panel and driving method thereof |
| ☑ | 5 | | F 3 | 6492964 | 20021210 | Mikoshiba, Shigeo | Samsung SDI Co., Ltd. | G09G-003/28 | 345/060 | Plasma display panel and driving method thereof |
| ☑ | 6 | | F 3 | 5369338 | 19941129 | Kim, Dae-il | Samsung Electron Devices Co., Ltd. | G09G-003/10 | 315/169.4 | Structure of a plasma display panel and a driving method thereof |
| ☑ | 7 | | F 3 | 6256001 | 20010703 | Kim, Sang-cheol | Samsung Display Devices, Ltd. | G09G-003/28 | 345/060 | Method of driving surface discharge plasma display panel |
| ☑ | 8 | | F 3 | 6380912 | 20020430 | Kang, Kyoung-ho | Samsung SDI | G09G- | 345/060 | Method for driving plasma display panel |
| ☐ | 9 | | F 3 | 6501445 | 20021231 | Kim, Sang-Chul | Samsung SDI Co., Ltd. | G09G-003/28 | 345/061 | Apparatus for driving plasma display panel |
| ☐ | 10 | | F 3 | 6307529 | 20011023 | Ryeom, Jeong-duk | Samsung Display Devices, Ltd. | G09G-003/28 | 345/060 | Scan drive circuit for plasma display panel |

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- INPADOC (Family 7) :

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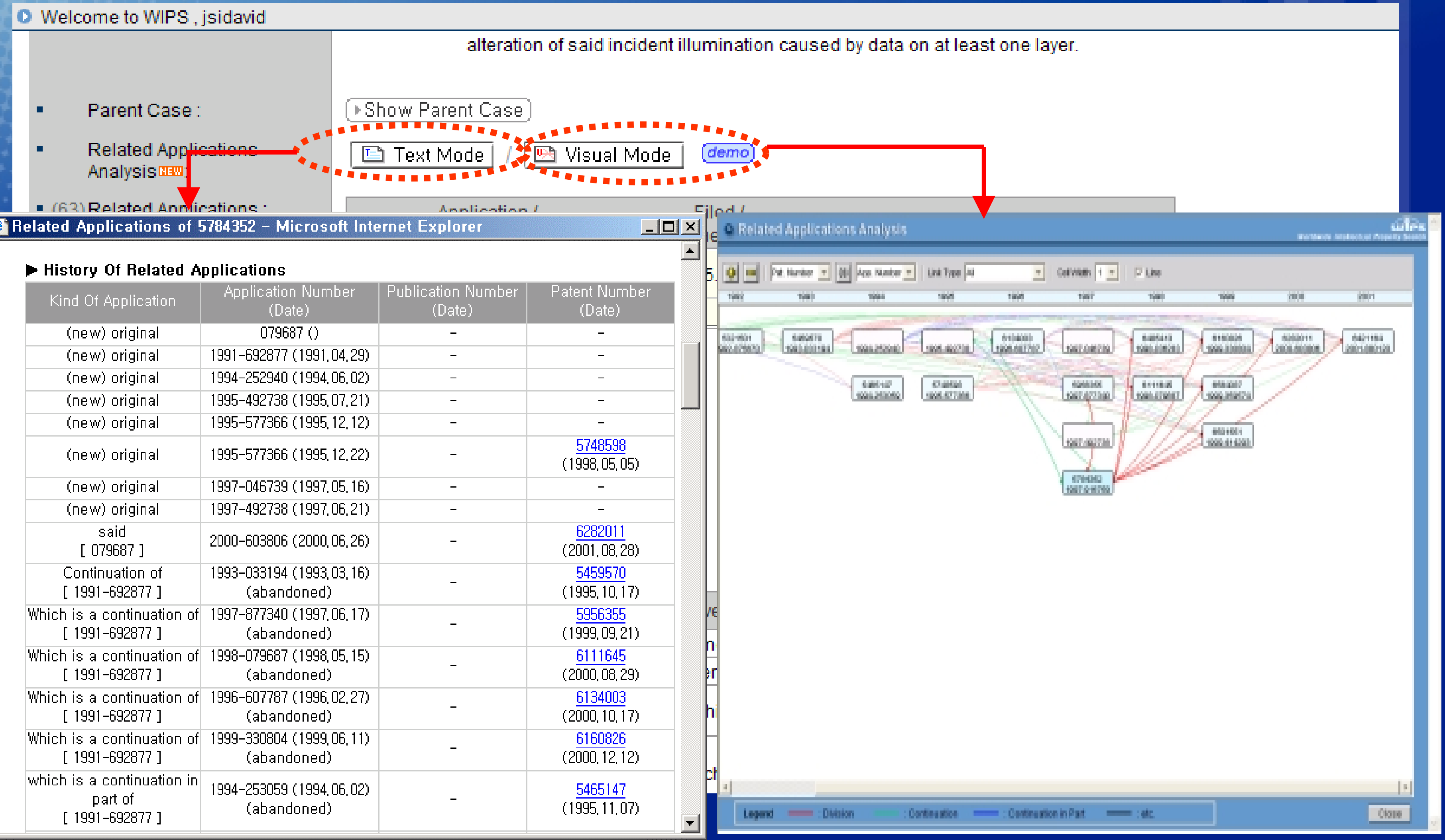
Pub. Date
Title

# 16. Detailed Info. View (4) – Related Application Analysis



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- Parent Case : Show Parent Case
- Related Applications Analysis NEW : Text Mode / Visual Mode demo
- (63) Related Applications :

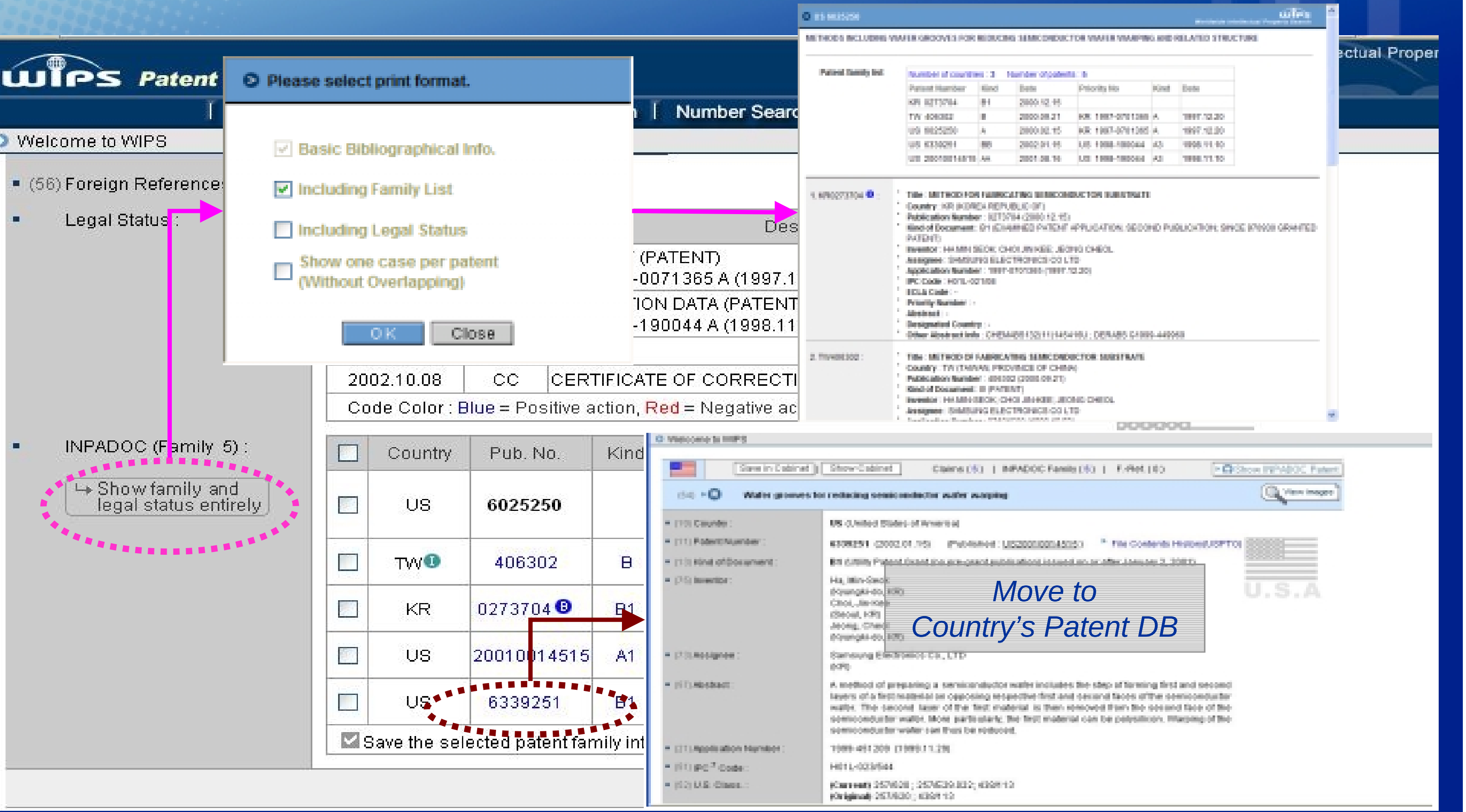
**Related Applications of 5784352 - Microsoft Internet Explorer**

**▶ History Of Related Applications**

| Kind Of Application | Application Number (Date) | Publication Number (Date) | Patent Number (Date) |
|---|---|---|---|
| (new) original | 079687 () | - | - |
| (new) original | 1991-692877 (1991.04.29) | - | - |
| (new) original | 1994-252940 (1994.06.02) | - | - |
| (new) original | 1995-492738 (1995.07.21) | - | - |
| (new) original | 1995-577366 (1995.12.12) | - | - |
| (new) original | 1995-577366 (1995.12.22) | - | 5748598<br>(1998.05.05) |
| (new) original | 1997-046739 (1997.05.16) | - | - |
| (new) original | 1997-492738 (1997.06.21) | - | - |
| said<br>[ 079687 ] | 2000-603806 (2000.06.26) | - | 6282011<br>(2001.08.28) |
| Continuation of<br>[ 1991-692877 ] | 1993-033194 (1993.03.16)<br>(abandoned) | - | 5459570<br>(1995.10.17) |
| Which is a continuation of<br>[ 1991-692877 ] | 1997-877340 (1997.06.17)<br>(abandoned) | - | 5956355<br>(1999.09.21) |
| Which is a continuation of<br>[ 1991-692877 ] | 1998-079687 (1998.05.15)<br>(abandoned) | - | 6111645<br>(2000.08.29) |
| Which is a continuation of<br>[ 1991-692877 ] | 1996-607787 (1996.02.27)<br>(abandoned) | - | 6134003<br>(2000.10.17) |
| Which is a continuation of<br>[ 1991-692877 ] | 1999-330804 (1999.06.11)<br>(abandoned) | - | 6160826<br>(2000.12.12) |
| which is a continuation in part of<br>[ 1991-692877 ] | 1994-253059 (1994.06.02)<br>(abandoned) | - | 5465147<br>(1995.11.07) |

**Related Applications Analysis**

# 17. Detailed Info. View (5) – Family/Legal Info.



- (56) Foreign References :
- Legal Status :
- INPADOC (Family 5) :

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☑ Basic Bibliographical Info.
☑ Including Family List
☐ Including Legal Status
☐ Show one case per patent (Without Overlapping)

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-190044 A (1998.11

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| ☐ | Country | Pub. No. | Kind |
|---|---|---|---|
| ☐ | US | **6025250** | |
| ☐ | TW | 406302 | B |
| ☐ | KR | 0273704 | B1 |
| ☐ | US | 20010014515 | A1 |
| ☐ | US | 6339251 | B1 |

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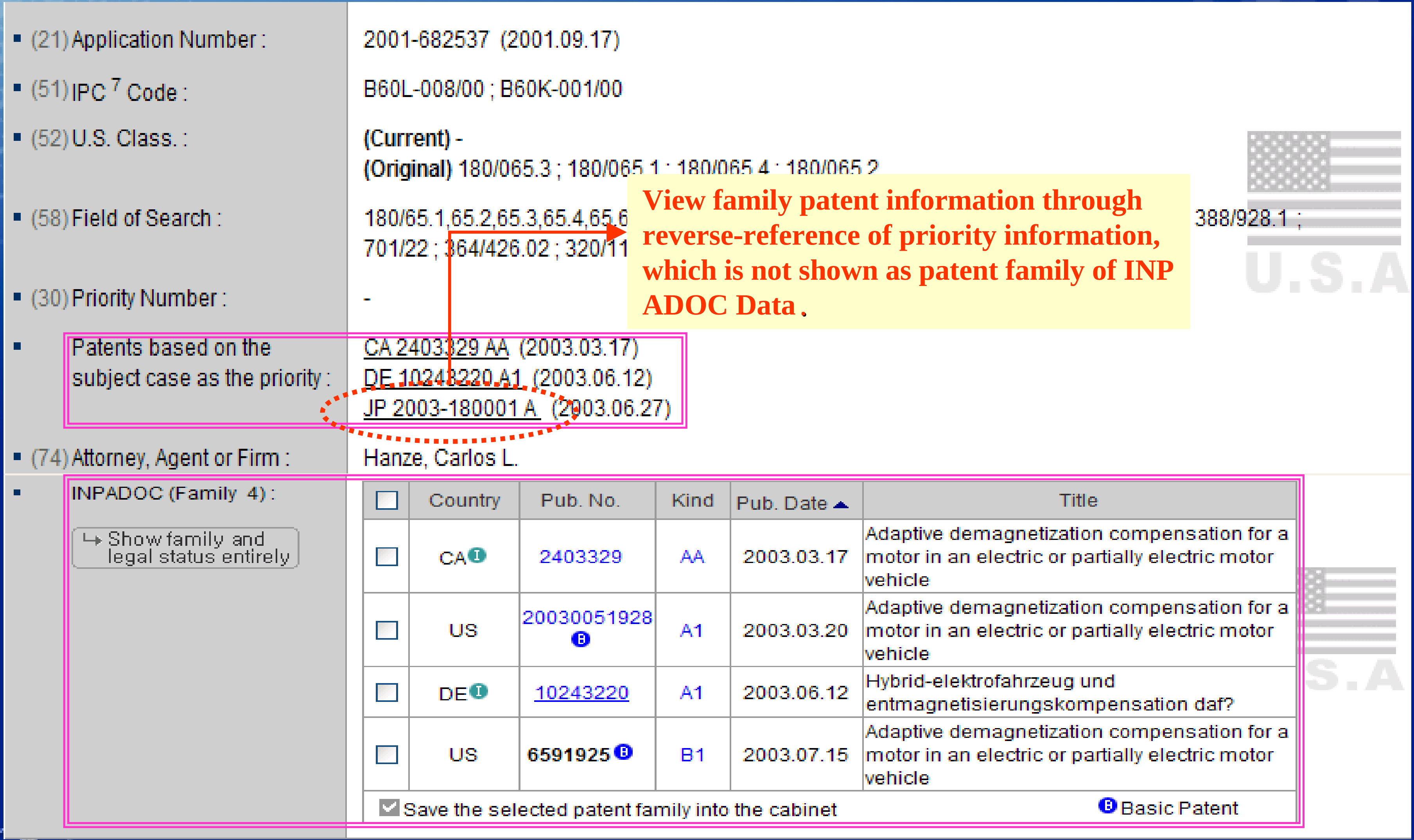
# 18. Detailed Info. View (6) – WIPS Family



- (21) Application Number : 2001-682537 (2001.09.17)
- (51) IPC $^7$ Code : B60L-008/00 ; B60K-001/00
- (52) U.S. Class. : (Current) -<br>(Original) 180/065.3 ; 180/065.1 ; 180/065.4 ; 180/065.2
- (58) Field of Search : 180/65.1,65.2,65.3,65.4,65.6 388/928.1 ;<br>701/22 ; 364/426.02 ; 320/11
- (30) Priority Number : -
- Patents based on the subject case as the priority : CA 2403329 AA (2003.03.17)<br>DE 10243220 A1 (2003.06.12)<br>JP 2003-180001 A (2003.06.27)
- (74) Attorney, Agent or Firm : Hanze, Carlos L.
- INPADOC (Family 4) :

↳ Show family and legal status entirely

| ☐ | Country | Pub. No. | Kind | Pub. Date ▲ | Title |
|---|---|---|---|---|---|
| ☐ | CA | 2403329 | AA | 2003.03.17 | Adaptive demagnetization compensation for a motor in an electric or partially electric motor vehicle |
| ☐ | US | 20030051928 Ⓑ | A1 | 2003.03.20 | Adaptive demagnetization compensation for a motor in an electric or partially electric motor vehicle |
| ☐ | DE | 10243220 | A1 | 2003.06.12 | Hybrid-elektrofahrzeug und entmagnetisierungskompensation daf? |
| ☐ | US | **6591925** Ⓑ | B1 | 2003.07.15 | Adaptive demagnetization compensation for a motor in an electric or partially electric motor vehicle |

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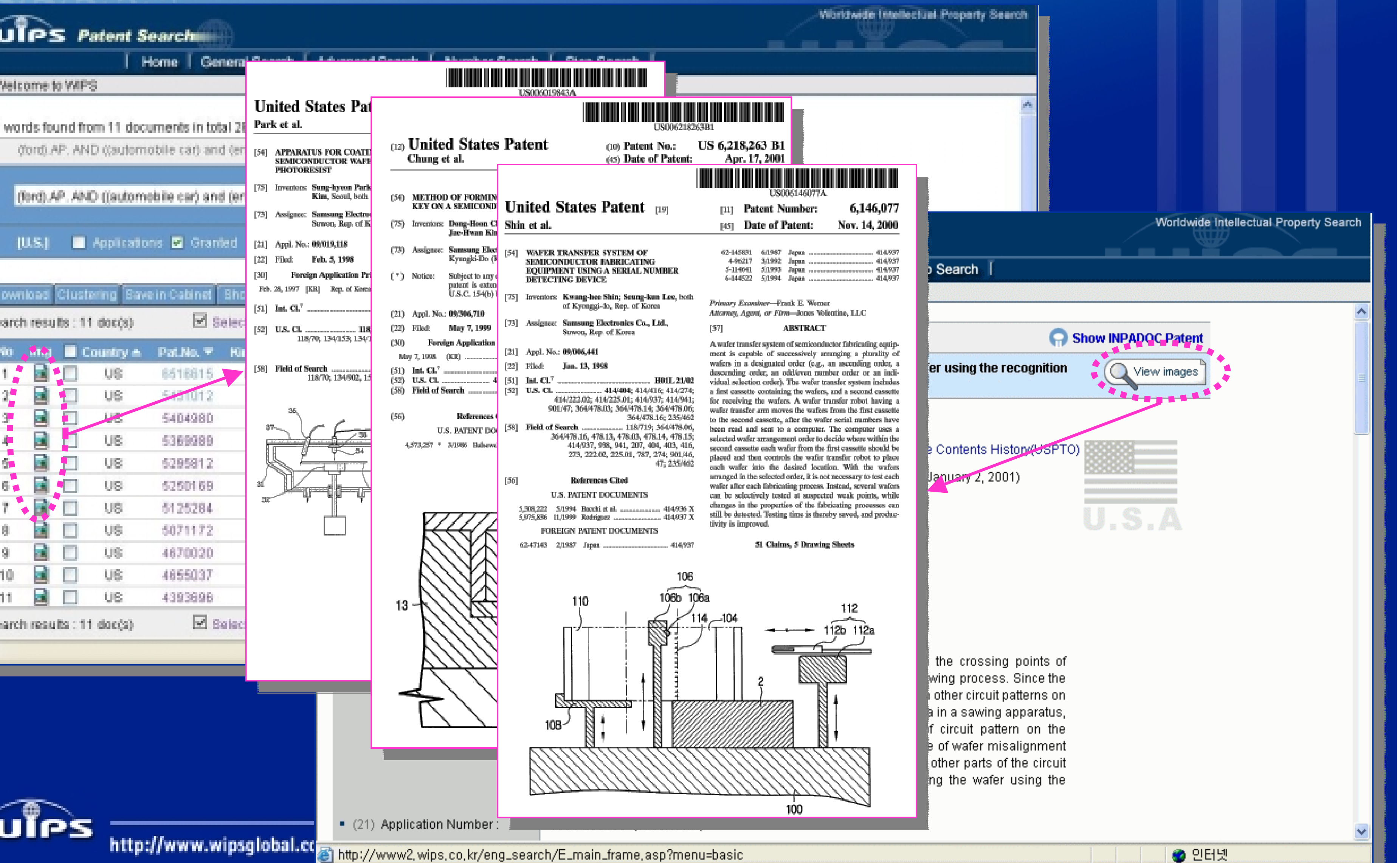
View family patent information through reverse-reference of priority information, which is not shown as patent family of INPADOC Data.

# 19. Full Image View



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arch results : 11 doc(s) ☑ Selec

| No | Img | ☐ | Country | Pat.No. | Ki |
|---|---|---|---|---|---|
| 1 | ▨ | ☐ | US | 6516815 | |
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| 3 | ▨ | ☐ | US | 5404980 | |
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| 5 | ▨ | ☐ | US | 5295812 | |
| 6 | ▨ | ☐ | US | 5250169 | |
| 7 | ▨ | ☐ | US | 5125284 | |
| 8 | ▨ | ☐ | US | 5071172 | |
| 9 | ▨ | ☐ | US | 4870020 | |
| 10 | ▨ | ☐ | US | 4855037 | |
| 11 | ▨ | ☐ | US | 4393696 | |

arch results : 11 doc(s) ☑ Selec

US006019843A

United States Pat
Park et al.

[54] APPARATUS FOR COATI SEMICONDUCTOR WAFE PHOTORESIST

[75] Inventors: Sung-hyeon Park Kim, Seoul, both

[73] Assignee: Samsung Electro Suwon, Rep. of K

[21] Appl. No.: 09/019,118

[22] Filed: Feb. 5, 1998

[30] Foreign Application Pri

Feb. 28, 1997 [KR] Rep. of Korea

[51] Int. Cl.$^7$ ..........

[52] U.S. Cl. .......... 118 118/70; 134/153; 134/1

[58] Field of Search .......... 118/70; 134/902, 15

US006218263B1

(12) United States Patent
Chung et al.

(10) Patent No.: US 6,218,263 B1
(45) Date of Patent: Apr. 17, 2001

(54) METHOD OF FORMIN KEY ON A SEMICOND

(75) Inventors: Dong-Hoon C Jae-Hwan Ki

(73) Assignee: Samsung Elec Kyungki-Do (

(*) Notice: Subject to any patent is exten U.S.C. 154(b)

(21) Appl. No.: 09/306,710

(22) Filed: May 7, 1999

(30) Foreign Application

May 7, 1998 (KR) ..........

(51) Int. Cl.$^7$ ..........

(52) U.S. Cl. .......... 4

(58) Field of Search ..........

(56) References

U.S. PATENT DO

4,573,257 * 3/1986 Habsewa

US006146077A

United States Patent [19]
Shin et al.

[11] Patent Number: 6,146,077
[45] Date of Patent: Nov. 14, 2000

[54] WAFER TRANSFER SYSTEM OF SEMICONDUCTOR FABRICATING EQUIPMENT USING A SERIAL NUMBER DETECTING DEVICE

[75] Inventors: Kwang-hee Shin; Seung-kun Lee, both of Kyonggi-do, Rep. of Korea

[73] Assignee: Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

[21] Appl. No.: 09/006,441

[22] Filed: Jan. 13, 1998

[51] Int. Cl.$^7$ .......... H01L 21/02

[52] U.S. Cl. .......... 414/404; 414/416; 414/274; 414/222.02; 414/225.01; 414/937; 414/941; 901/47; 364/478.03; 364/478.14; 364/478.06; 364/478.16; 235/462

[58] Field of Search .......... 118/719; 364/478.06, 364/478.16, 478.13, 478.03, 478.14, 478.15; 414/937, 938, 941, 207, 404, 403, 416, 273, 222.02, 225.01, 787, 274; 901/46, 47; 235/462

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5-114041 5/1993 Japan .......... 414/937
6-144522 5/1994 Japan .......... 414/937

*Primary Examiner*—Frank E. Werner
*Attorney, Agent, or Firm*—Jones Volentine, LLC

[57] ABSTRACT

A wafer transfer system of semiconductor fabricating equipment is capable of successively arranging a plurality of wafers in a designated order (e.g., an ascending order, a descending order, an odd/even number order or an individual selection order). The wafer transfer system includes a first cassette containing the wafers, and a second cassette for receiving the wafers. A wafer transfer robot having a wafer transfer arm moves the wafers from the first cassette to the second cassette, after the wafer serial numbers have been read and sent to a computer. The computer uses a selected wafer arrangement order to decide where within the second cassette each wafer from the first cassette should be placed and then controls the wafer transfer robot to place each wafer into the desired location. With the wafers arranged in the selected order, it is not necessary to test each wafer after each fabricating process. Instead, several wafers can be selectively tested at suspected weak points, while changes in the properties of the fabricating processes can still be detected. Testing time is thereby saved, and productivity is improved.

51 Claims, 5 Drawing Sheets

er using the recognition

e Contents History(USPTO)

January 2, 2001)

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wing process. Since the
other circuit patterns on
a in a sawing apparatus,
f circuit pattern on the
e of wafer misalignment
other parts of the circuit
ng the wafer using the

▪ (21) Application Number :

http://www.wipsglobal.co

http://www2.wips.co.kr/eng_search/E_main_frame.asp?menu=basic

인터넷

# 1. USPTO(www.uspto.gov)

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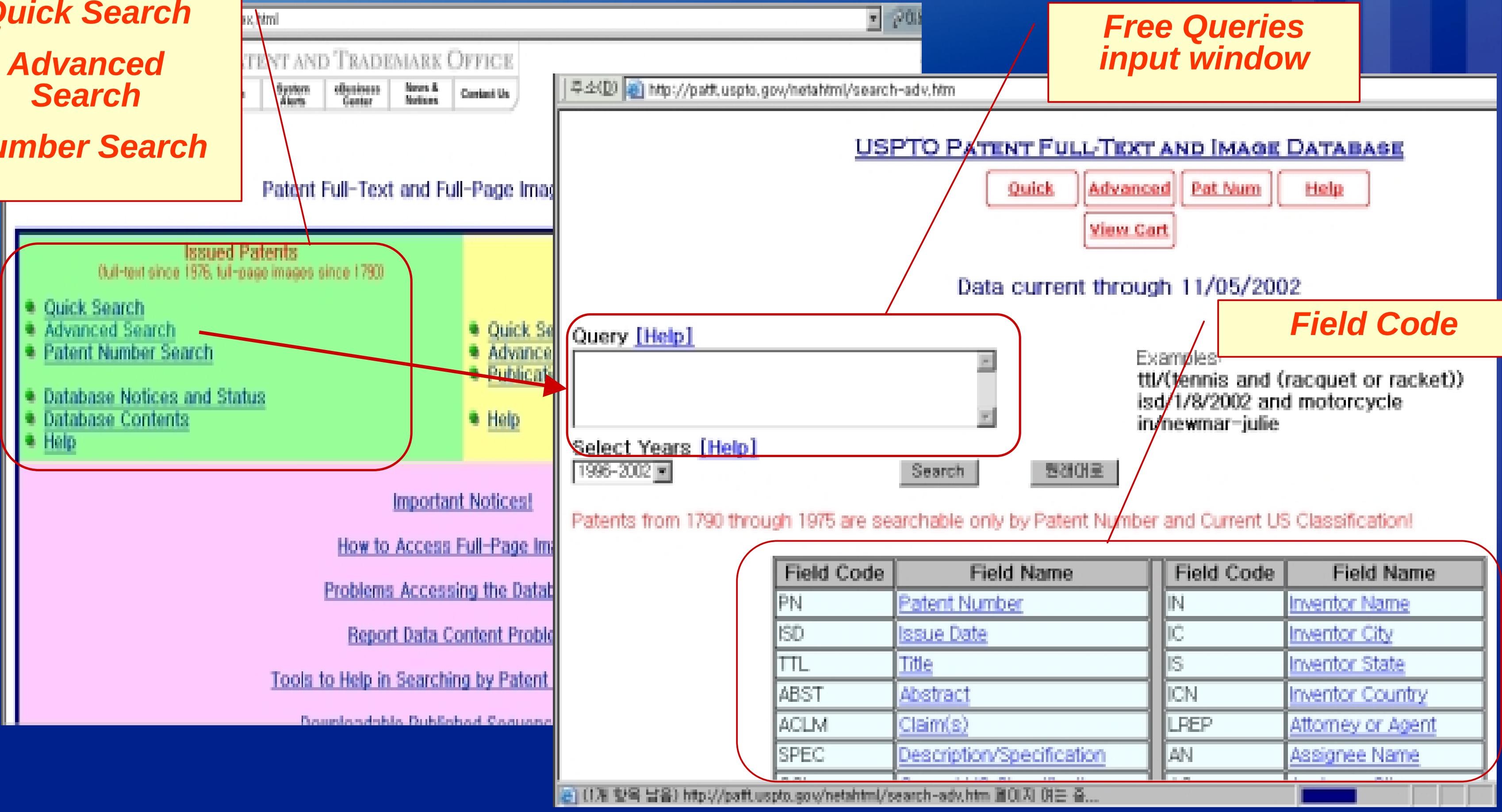

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Examples:
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|---|---|---|---|
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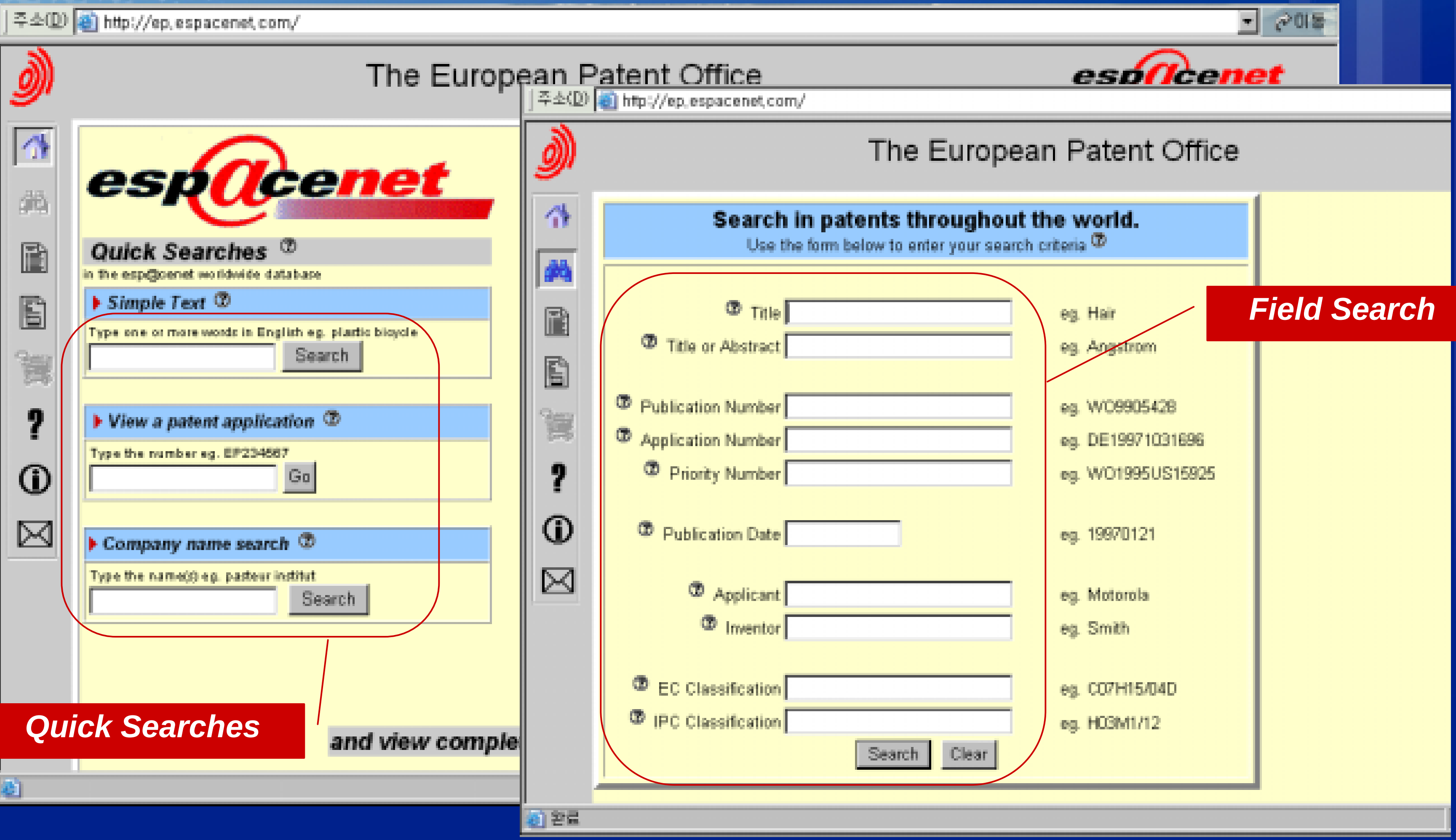
| ISD | Issue Date | IC | Inventor City |
| TTL | Title | IS | Inventor State |
| ABST | Abstract | ICN | Inventor Country |
| ACLM | Claim(s) | LREP | Attorney or Agent |
| SPEC | Description/Specification | AN | Assignee Name |

# 2. Espacenet (http://ep.espacenet.com)



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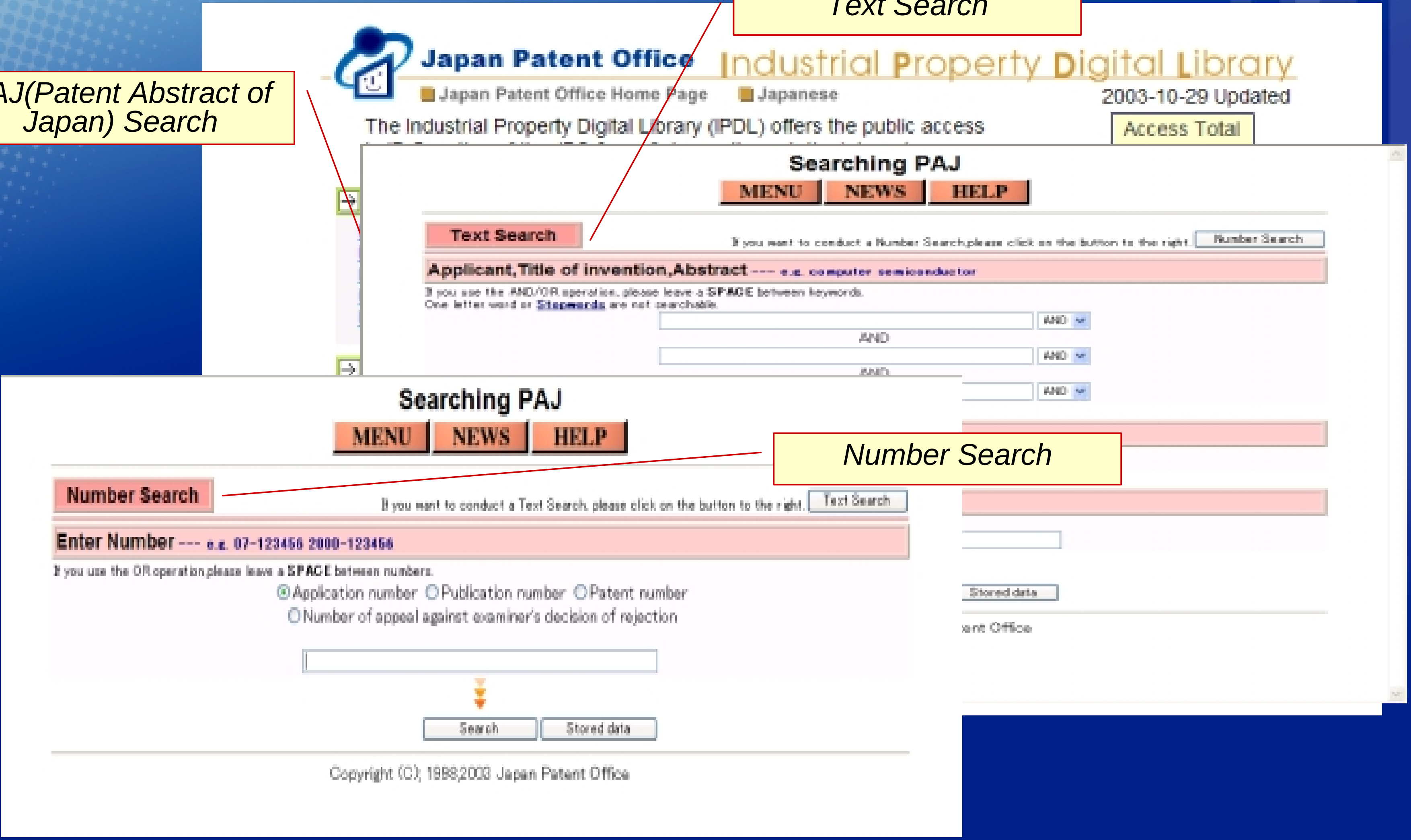
# 3. IPDL (http://www.ipdl.jpo.go.jp)



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