

**UNITED STATES
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A detailed technical drawing of a mechanical assembly, likely a piston or engine component, serves as the background. The drawing is rendered in a light gray line-art style, showing various parts, surfaces, and dimensions. Key numerical callouts include 80, 84, 86, 82, 24, 30, 34, 32, 52, 50, and 54. The drawing is oriented horizontally and occupies the entire background of the slide.

How to conduct a preliminary U.S. patent search: A step by step strategy

Patent and
Trademark Resource
Center Program

UNITED STATES
PATENT AND TRADEMARK OFFICE



Disclaimer

References to particular products, patents, trademarks, service marks, services, companies and/or organizations in this presentation are for illustrative and educational purposes only and do not constitute or imply endorsement by the U.S. government, the U.S. Department of Commerce, the U.S. Patent and Trademark Office, or any other federal agency.

Topics

- Benefits of conducting a thorough patent search
- Patentability
- Prior art
- Cooperative Patent Classification (CPC)
- Patent search strategy steps

Search benefits for inventors

- Make a preliminary determination that your proposed invention is novel.
- Provide an Information Disclosure Statement of relevant documents in a patent applications as required.
- Prepare to discuss your ideas with a registered patent attorney or patent agent.

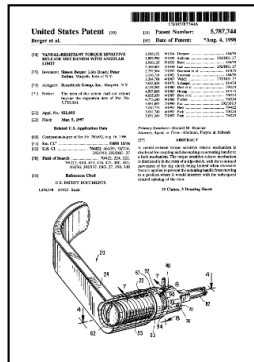


Types of patents

Utility

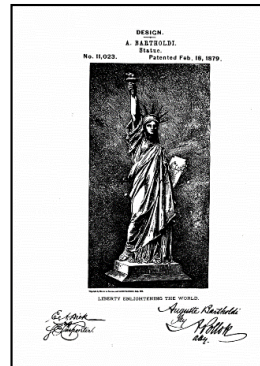
Protects how an invention works, functions, or is made for 20 years from filing date:

- Process
- Machine
- Article of manufacture
- Composition of matter



Design

Protects the way a product or article of manufacture looks (the appearance) for 15 years from the date of grant.



Plant

Protects newly invented strains of asexually reproducing flowering plants, fruit trees, and other hybrid plants for 20 years from filing date.



Patentability

Inventions that may be patented:

- new
- useful
- non-obvious
- accompanied by a written description disclosing how to make and use the invention.

How do you know if an invention is new and non-obvious?

Prior art

Prior art consists of information that describes an invention and is disclosed to the public including:

- U.S. patents and published patent applications
- Foreign patents and published patent applications
- Journal and magazine articles
- Books, manuals, and catalogs
- Websites and databases
- Conference proceedings
- Scientific papers
- Among other disclosures...



Preliminary U.S. patent search

A preliminary U.S. patent search begins with a keyword search of granted U.S. patents and published applications (prior art). It is conducted to determine patentability of an invention.

Keyword search pitfalls

Vague or inconsistent terminology:

Toy and Process of Use (Patent US 2,415,012)

Obsolete names and terms:

"LP"... "hi-fi"... "laser disc"... "floppy disc"

Different meanings in different fields:

"mouse" the animal v. computer "mouse"

Synonyms:

Rodent extermination device
(US patent 5,185,953)

To avoid the pitfalls of keyword searching, and to conduct a more thorough preliminary patent search, a keyword search should be supplemented with a classification search.



Search example

An improvement in umbrella design



Brainstorm terms describing your invention

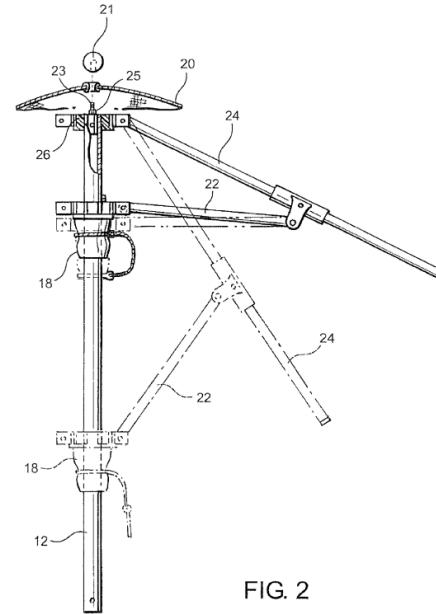
STEP 1

Description of the invention

1. What is the **purpose** of the invention? Is it a utilitarian device or an ornamental design?
2. Is the invention a **process** – a way of making something or performing a function – or is it a product?
3. What is the invention **made of**? What is the physical composition or structure of the invention?
4. How is the invention **used**?
5. What are **keywords** and technical terms that describe the nature of the invention?

Answering the questions

1. ...an umbrella that has a new rib design to eliminate the umbrella collapsing or inverting due to high winds
2. ...a product
3. ...framework with ribs, stretchers and a main frame, securing rings, mounting brackets, joint connectors, fabric connectors, fabric, linkage bar
4. ...used for protection against the elements
5. ...in addition to "umbrella,"; parasol, sunshade, support assembly or apparatus, windproof, wind-resistant



Conduct a keyword search using Patent
Public Search

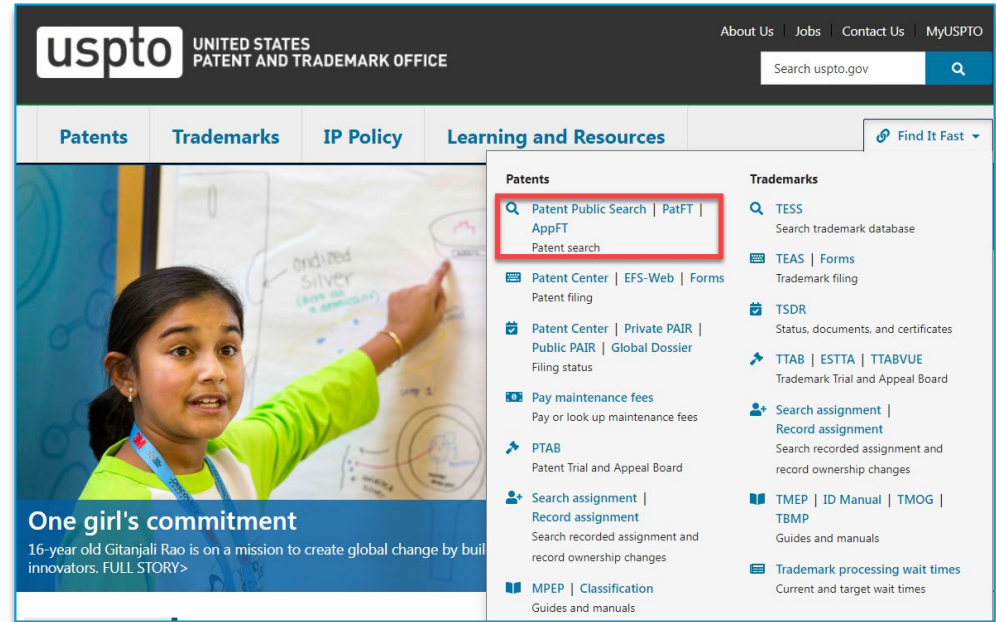
STEP 2

Access Patent Public Search database

The USPTO home page (www.uspto.gov) has a “Find It Fast” menu.

The “Patents” tab opens a menu of frequently used patent resources.

Select the “Patent Public Search” link near the top of the menu.



Patent Public Search database

The image displays the USPTO Patent Public Search database interface, showing search results and a document viewer.

Search Interface:

- Search Query:** umbrella AND ((wind ADJ resistant) OR windproof)
- Pos:** 49
- Default Operator:** OR
- Highlights:** Single Color
- Options:** Show Errors, Plurals, British Equivalents
- Databases:** Select all, US-PGPUB, USPAT, USOCR

Search Results:

Highlight: resistant wind winds umbrellas windproof resists windproofs

L1: 58 results found. Currently displaying all results. Filtered by Family ID (49 families).

Select	+	Res...	X	1	2	3	4	5	Document ID	Date Publish...
<input type="checkbox"/>		1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20200100549 A1	2020-04-02
<input type="checkbox"/>		2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20200060366 A1	2020-02-27
<input type="checkbox"/>	+1	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20190218814 A1	2019-07-18
<input checked="" type="checkbox"/>		4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20190216188 A1	2019-07-18
<input type="checkbox"/>		5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20180368543 A1	2018-12-27
<input type="checkbox"/>		6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20180128005 A1	2018-05-10

Document Viewer:

Document Viewer x

Page 1 of 24

Doc 4

Barcode: US 20190216188A1

(19) **United States**

(12) **Patent Application Publication**

(10) Pub. No.: US 2019/0216188 A1

(43) Pub. Date: Jul. 18, 2019

(54) **FOLDABLE UMBRELLA WITH DYNAMIC RIB STRUCTURE**

(71) Applicant: HEDGEHOG PRODUCTS INC., Kitchener (CA)

(72) Inventors: Kevin Paul TRUONG, Mississauga (CA); Cahay HO, St. Albert (CA)

(21) Appl. No.: 16/327,373

(22) PCT Filed: Aug. 21, 2017

(86) PCT No.: PCT/CA2017/050989

§ 371(c)(1),
(2) Date: Feb. 22, 2019

Publication Classification

(51) Int. Cl. A45B 25/22 (2006.01); A45B 25/06 (2006.01); A45B 19/10 (2006.01)

(52) U.S. CL. CPC: A45B 25/22 (2013.01); A45B 20/9004 (2013.01); A45B 19/10 (2013.01); A45B 25/06 (2013.01)

(57) **ABSTRACT**

The disclosure is directed to an umbrella including a canopy having a set of canopy portions; and a frame portion comprising a shaft portion; a sliding collar assembly coupled to the shaft portion and sliding along the shaft portion; and a set of ribs, each of the independent ribs attached to one of the set of canopy portions and to the sliding collar assembly, where each of the set of ribs move independently of each other when a high wind force is experienced by one of the canopy portions.

Related U.S. Application Data

(60) Provisional application No. 62/378,302, filed on Aug. 23, 2016.

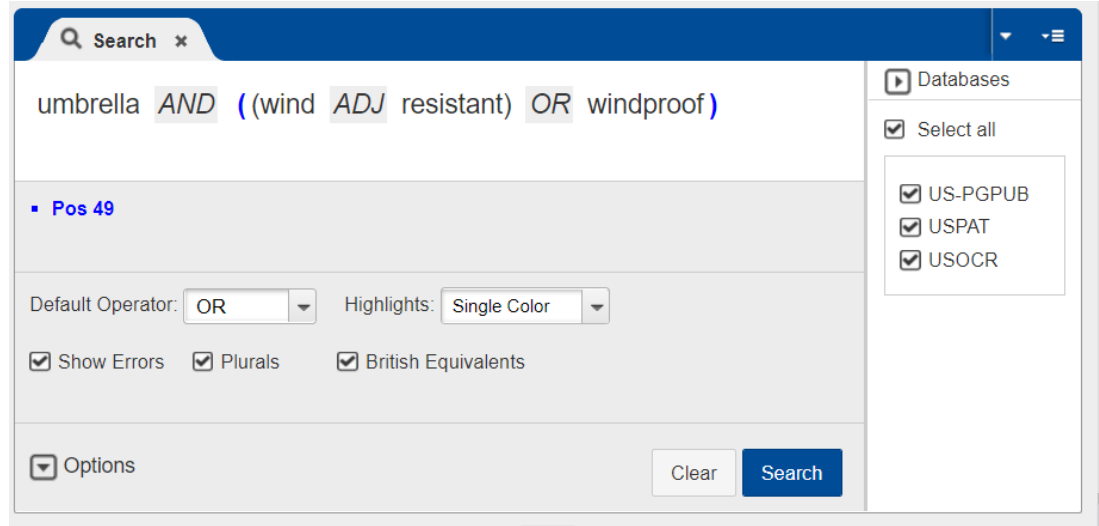
Figure 24: A schematic diagram of a foldable umbrella with a dynamic rib structure. The diagram shows a shaft (24) with a sliding collar assembly (53) and a set of ribs (36) attached to the shaft. The ribs are shown in a folded position, with one rib (64) extended. The diagram also shows a canopy portion (60) and a frame portion (64).

Hints for keyword searching

- Group (using "OR") together synonyms;
- Consider the use of technical engineering language rather than common everyday words, e.g., (car or automobile or auto or "land motor vehicle");
- Use truncation symbols to get singular and plural versions of a word (airbag\$);
- Use quotes to group search phrases where words are adjacent ("image viewer").
- *Just remember the inherent limitations of keyword searching.*

Enter a keyword search statement

In the Search panel, enter your search statement using relevant keywords identified in Step 1.



The screenshot displays the USPTO Search panel interface. At the top, there is a search bar with the text "umbrella AND ((wind ADJ resistant) OR windproof)". Below the search bar, there is a section labeled "Pos 49". Underneath, there are two dropdown menus: "Default Operator" set to "OR" and "Highlights" set to "Single Color". Below these are three checkboxes: "Show Errors", "Plurals", and "British Equivalents", all of which are checked. At the bottom left, there is a section labeled "Options" with a dropdown arrow. At the bottom right, there are two buttons: "Clear" and "Search". On the right side of the panel, there is a sidebar with a "Databases" section. It includes a "Select all" checkbox and three checked checkboxes: "US-PGPUB", "USPAT", and "USOCR".

Review the search results

As you select each document in the Search Results panel, it will appear in the Document Viewer panel.

If a document appears relevant, click on the corresponding box in the tag columns.

A check mark in Tag column 1 indicates that that document 4 has been tagged.

The screenshot displays the USPTO search results interface. The top panel, 'Search', shows a search query: 'umbrella AND ((wind ADJ resistant) OR windproof)'. Below the query, there are options for 'Default Operator' (OR), 'Highlights' (Single Color), and checkboxes for 'Show Errors', 'Plurals', and 'British Equivalents'. A 'Search' button is visible. The bottom panel, 'Search Results', shows a table of search results. The table has columns for 'Select', 'Res...', 'X', and numbered columns 1 through 5, followed by 'Document ID' and 'Date Publish...'. The table is filtered by 'Family ID (49 families)'. The first row shows results for 'US 20200100549 A1' dated '2020-04-02'. The second row shows results for 'US 20200060366 A1' dated '2020-02-27'. The third row shows results for 'US 20190218814 A1' dated '2019-07-18'. The fourth row shows results for 'US 20190216188 A1' dated '2019-07-18'. The fifth row shows results for 'US 20180368543 A1' dated '2018-12-27'. The sixth row shows results for 'US 20180128005 A1' dated '2018-05-10'. A check mark is visible in the 'X' column for the fourth row, indicating that document 4 has been tagged. The right panel, 'Document Viewer', shows the details of the selected document, 'United States Patent Application Publication (10) Pub. No.: US 2019/0216188 A1 TRUONG et al. (45) Pub. Date: Jul. 18, 2019'. It includes a barcode, a list of references, and a technical drawing of a foldable umbrella with dynamic rib structure.

Select	Res...	X	1	2	3	4	5	Document ID	Date Publish...
<input type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20200100549 A1	2020-04-02
<input type="checkbox"/>	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20200060366 A1	2020-02-27
<input type="checkbox"/>	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20190218814 A1	2019-07-18
<input checked="" type="checkbox"/>	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20190216188 A1	2019-07-18
<input type="checkbox"/>	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20180368543 A1	2018-12-27
<input type="checkbox"/>	6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20180128005 A1	2018-05-10

Toggle full-text view to display view

Document Viewer x

Highlight: umbrella windproof

Light Windproof Umbrella

DOCUMENT ID	DATE PUBLISHED
US 8607808 B1	2013-12-17

INVENTOR INFORMATION

NAME	CITY	STATE	ZIP CODE	COUNTRY
You; Ching-Chuan	Taipei	N/A	N/A	TW

APPLICATION NO
13/537083

DATE FILED
2012-06-29

US CLASS CURRENT:
135/29, 135/25.33, 135/27, 135/32

CPC CURRENT

TYPE	CPC	DATE
CPCI	A 45 B 25/22	2013-01-01
CPCA	A 45 B 2019/001	2013-01-01

Abstract

A light windproof umbrella is provided with a center post including a top ferrule, an upper grommet, an intermediate sliding ring, and a sliding runner under the sliding ring; ribs each having one end pivotally secured to the grommet and the other end pivotally secured to the auxiliary joint; a lower canopy; and an upper canopy in a partial covering relationship to the lower canopy.



Document Viewer x

Page 1 of 11

(12) **United States Patent**
You

(10) Patent No.: **US 8,607,808 B1**
(45) Date of Patent: **Dec. 17, 2013**

(54) **LIGHT WINDPROOF UMBRELLA**

(76) Inventor: **Ching-Chuan You, Taipei (TW)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/537,083**

(22) Filed: **Jun. 29, 2012**

(51) Int. Cl. **A45B 25/22** (2006.01)

(52) U.S. CL. **135/29, 135/25.33, 135/27, 135/32**

(58) Field of Classification Search
USPC 135/15.1, 27, 29-32, 33.2, 33.7, 25.33
See application file for complete search history.

(56) References Cited
U.S. PATENT DOCUMENTS
1,369,996 A * 1/1921 Washfield 135/27
1,743,043 A * 1/1930 McLean 135/27
2,522,645 A * 9/1950 Senna 135/27
5,372,155 A * 12/1994 You 135/29
6,167,894 B1 * 1/2001 Lin 135/15.1
6,216,712 B1 * 4/2001 Lin et al. 135/31

* cited by examiner

Primary Examiner — Winnie Yip

(57) **ABSTRACT**
A light windproof umbrella is provided with a center post including a top ferrule, an upper grommet, an intermediate sliding ring, and a sliding runner under the sliding ring; ribs each having one end pivotally secured to the grommet and the other end being open; main joints each formed at a portion of the rib proximate to the other end of the rib; auxiliary joints each formed at a portion of the rib between the main joint and the grommet; stretchers each having one end pivotally secured to the sliding ring and the other end pivotally secured to the rib; struts each having one end pivotally secured to the auxiliary joint and the other end pivotally secured to the auxiliary joint; a lower canopy; and an upper canopy in a partial covering relationship to the lower canopy.

1 Claim, 7 Drawing Sheets

Review front page information

Patent number

Date of patent

(10) **Patent No.:** **US 10,743,627 B2**
(45) **Date of Patent:** ***Aug. 18, 2020**

Title

Applicant

Inventor

Assignee

(54) **UMBRELLA HAVING AN ANTI-INVERSION MECHANISM**

(71) Applicant: **Shedrain Corporation**, Portland, OR (US)

(72) Inventors: **David Haythornthwaite**, Fujian Province (CN); **Andrew Haythornthwaite**, Fujian Province (CN)

(73) Assignee: **SHEDRAIN CORPORATION**, Portland, OR (US)

Review front page, continued

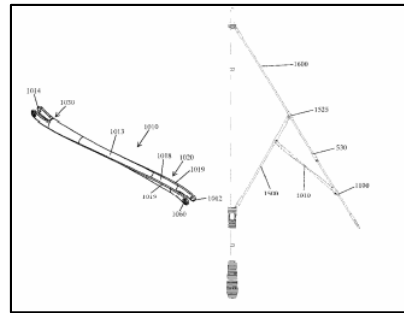
Abstract

(57)

ABSTRACT

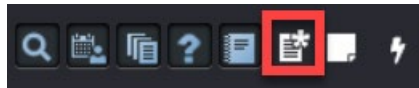
An umbrella has a plurality of ribs attached to a runner by main struts. The umbrella has an anti-inversion mechanism formed of a plurality of anti-inversion struts. Each anti-inversion strut is pivotally coupled to one respective main strut and is pivotally connected to a floating joint member that is freely movable along a length of one respective rib. The anti-inversion mechanism also includes a stop that is fixedly attached to the rib and restricts the degree of travel of the floating joint member along the rib and is positioned to prevent the respective rib from inverting in response to an applied force.

Representative drawing



Accessing tagged documents

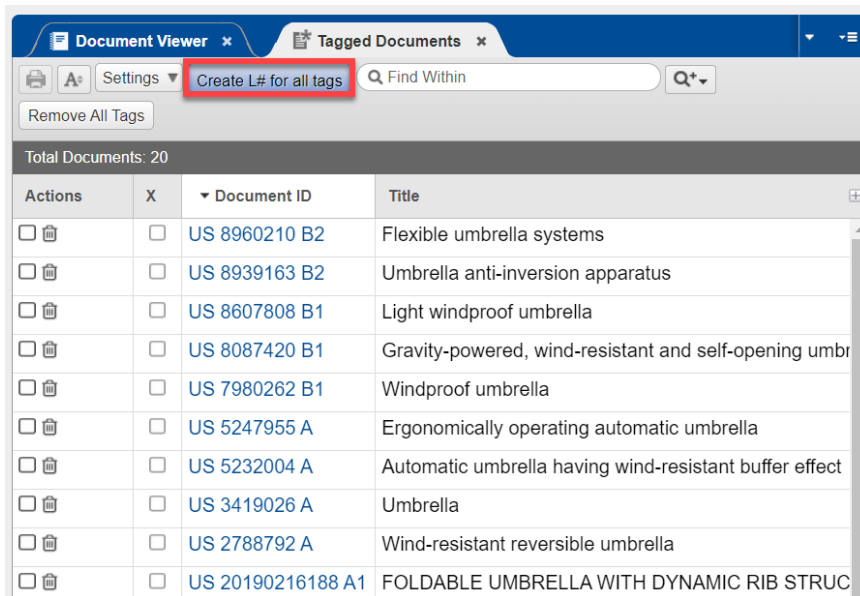
- Having tagged all of the documents of interest, view the list in the Tagged Documents panel.
- If using the Quick Search form, you will need to open up the Tagged Documents panel by selecting it in the Gadgets toolbar.
- If using the Advanced Search form, the Tagged Documents panel is open by default.



Gadget toolbar—Tagged Documents icon highlighted in red

Tagged documents panel

By clicking on the "Create L set number for all tags" button, you can create a separate L set number of the tagged documents.

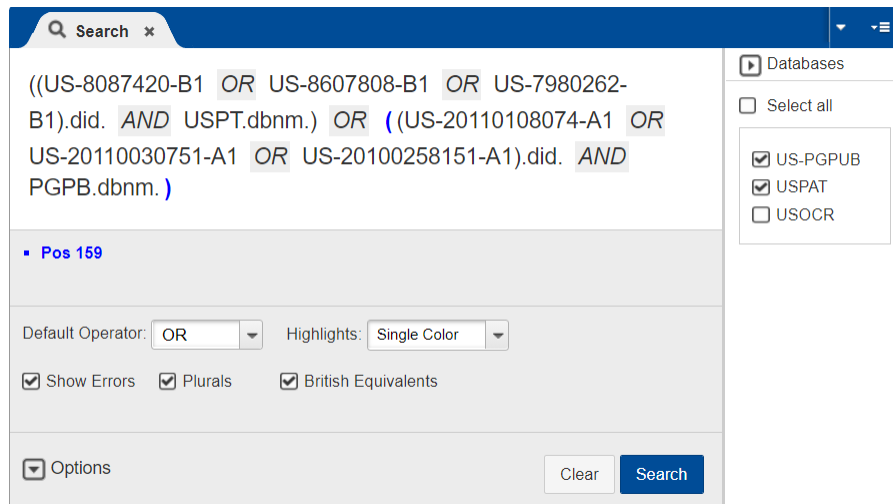


The screenshot shows a web application interface with two tabs: 'Document Viewer' and 'Tagged Documents'. The 'Tagged Documents' tab is active. In the toolbar, there is a button labeled 'Create L# for all tags' which is highlighted with a red rectangle. Other buttons in the toolbar include 'Remove All Tags' and a search bar labeled 'Find Within'. Below the toolbar, it says 'Total Documents: 20'. A table follows with the following columns: 'Actions', 'X', 'Document ID', and 'Title'.

Actions	X	Document ID	Title
<input type="checkbox"/>	<input type="checkbox"/>	US 8960210 B2	Flexible umbrella systems
<input type="checkbox"/>	<input type="checkbox"/>	US 8939163 B2	Umbrella anti-inversion apparatus
<input type="checkbox"/>	<input type="checkbox"/>	US 8607808 B1	Light windproof umbrella
<input type="checkbox"/>	<input type="checkbox"/>	US 8087420 B1	Gravity-powered, wind-resistant and self-opening umbrella
<input type="checkbox"/>	<input type="checkbox"/>	US 7980262 B1	Windproof umbrella
<input type="checkbox"/>	<input type="checkbox"/>	US 5247955 A	Ergonomically operating automatic umbrella
<input type="checkbox"/>	<input type="checkbox"/>	US 5232004 A	Automatic umbrella having wind-resistant buffer effect
<input type="checkbox"/>	<input type="checkbox"/>	US 3419026 A	Umbrella
<input type="checkbox"/>	<input type="checkbox"/>	US 2788792 A	Wind-resistant reversible umbrella
<input type="checkbox"/>	<input type="checkbox"/>	US 20190216188 A1	FOLDABLE UMBRELLA WITH DYNAMIC RIB STRUCTURE

Creating an L# set of tagged documents

- The Search panel will automatically populate the documents you selected in your search statement.
- Select the Search button, and an L set number of the selected documents will be created.



The screenshot displays the USPTO search interface. The search query is: `((US-8087420-B1 OR US-8607808-B1 OR US-7980262-B1).did. AND USPT.dbnm.) OR ((US-20110108074-A1 OR US-20110030751-A1 OR US-20100258151-A1).did. AND PGPB.dbnm.)`. Below the query, it indicates "Pos 159". The interface includes a "Default Operator" dropdown set to "OR" and a "Highlights" dropdown set to "Single Color". There are three checked checkboxes: "Show Errors", "Plurals", and "British Equivalents". An "Options" checkbox is also present. On the right, the "Databases" panel shows "Select all" and three checked options: "US-PGPUB", "USPAT", and "USOCR". At the bottom right, there are "Clear" and "Search" buttons.

Conduct an in-depth review of the
selected documents

STEP 3

Conduct in-depth review

- With this newly created L set number of selected documents, you can more carefully review those documents you have flagged/selected.
- Those patents you find irrelevant to your invention, you can discard.
- But those patents you find similar to your own invention will warrant even closer examination.



Review the tagged documents

- You can drag the Tagged Documents view to a panel facing the Document Viewer for a side by side display.
- As you review each document in detail, you can select ones you want to keep using the Actions column choice of a check box.

The image shows two side-by-side windows from the USPTO's document review interface. The left window, titled 'Tagged Documents', displays a list of 20 documents. The 'Actions' column on the left of this list contains checkboxes, with the one for document US 7980262 B1 checked. The 'Document ID' and 'Title' columns are visible. The right window, titled 'Document Viewer', shows the full text of the selected patent, US 7,980,262 B1, dated July 19, 2011. The document title is 'WINDPROOF UMBRELLA'. The viewer includes a search bar, a table of contents, and a detailed abstract describing a windproof umbrella with a center post, a lower sliding runner, and a main joint. Below the text, there are two technical drawings of the umbrella structure.

Tagged Documents Window:

Actions	X	Document ID	Title
<input checked="" type="checkbox"/>		US 8960210 B2	Flexible umbrella systems
<input type="checkbox"/>		US 8939163 B2	Umbrella anti-inversion apparatus
<input checked="" type="checkbox"/>		US 8607808 B1	Light windproof umbrella
<input type="checkbox"/>		US 8087420 B1	Gravity-powered, wind-resistant and self-opening umbrella
<input checked="" type="checkbox"/>		US 7980262 B1	Windproof umbrella
<input type="checkbox"/>		US 5247955 A	Ergonomically operating automatic umbrella
<input type="checkbox"/>		US 5232004 A	Automatic umbrella having wind-resistant buffer effect
<input type="checkbox"/>		US 3419026 A	Umbrella
<input type="checkbox"/>		US 2788792 A	Wind-resistant reversible umbrella
<input type="checkbox"/>		US 20190216188 A1	FOLDABLE UMBRELLA WITH DYNAMIC RIB STRUCTURE
<input type="checkbox"/>		US 20180128005 A1	WIND-RESISTANT PORTABLE SHADE SHELTER
<input type="checkbox"/>		US 20160227894 A1	UMBRELLA HAVING AN ANTI-INVERSION MECHANISM
<input type="checkbox"/>		US 20150129005 A1	Umbrella
<input type="checkbox"/>		US 20120240969 A1	Umbrella Folding Upward and Inside Out
<input type="checkbox"/>		US 20120222713 A1	FOLDABLE POCKET UMBRELLA
<input type="checkbox"/>		US 20110108074 A1	Windproof umbrella
<input type="checkbox"/>		US 20110030751 A1	Windproof Sunshade

Document Viewer Window:

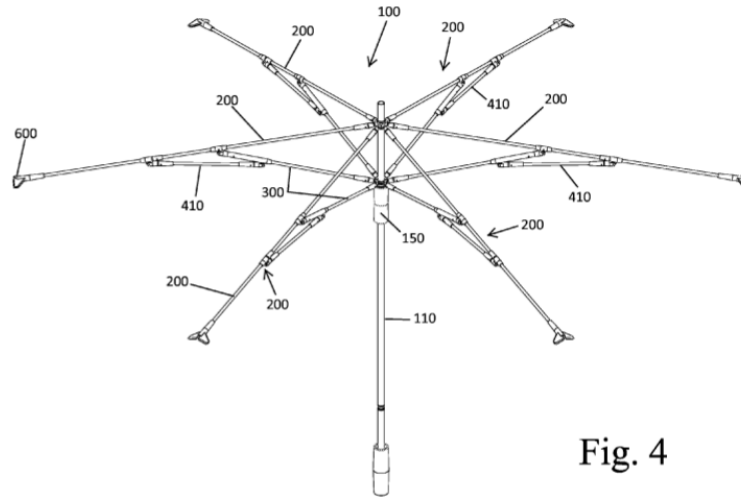
United States Patent
You (12) Patent No.: **US 7,980,262 B1**
(45) Date of Patent: **Jul. 19, 2011**

WINDPROOF UMBRELLA
Inventor: **Ching-Chuan Yen, Taipei (TW)**

ABSTRACT
A windproof umbrella includes a center post (10) including an upper grommet (11), an intermediate fixed ring (12), and a lower sliding runner (13). The ribs (20) each having one end (21) pivotally secured to the grommet (11) and the open other end (22), main joints (51) each formed at a portion of the ribs (20), stretchers (30) each having one end (31) pivotally secured to the ring (12) and the other end (32) movably secured to the main joint (51), auxiliary joints (61) each formed at a portion of the stretchers (30) and struts (40) each having one end (41) pivotally secured to the runner (13) and the other end (42) movably secured to the auxiliary joint (61), a lower canopy (70) secured in covering relation on the ribs (20), and an upper canopy (80) having a peripheral edge positioned over a portion of the lower canopy (70).

5 Claims, 6 Drawing Sheets

Review drawing sheet(s)



Review specification

May include:

- Field of invention
- Background
- Summary
- Brief description of the drawings
- Detailed description of the preferred embodiments.



Review claims

- Provide legal boundaries of intellectual property.
- Define the invention and what aspects are legally enforceable.
- Located at the end of the patent document.

What is claimed is:

1. An umbrella comprising:

an elongated shaft having a first end and an opposite second end;

a runner slidably disposed about the elongated shaft and movable along a length of the shaft; and

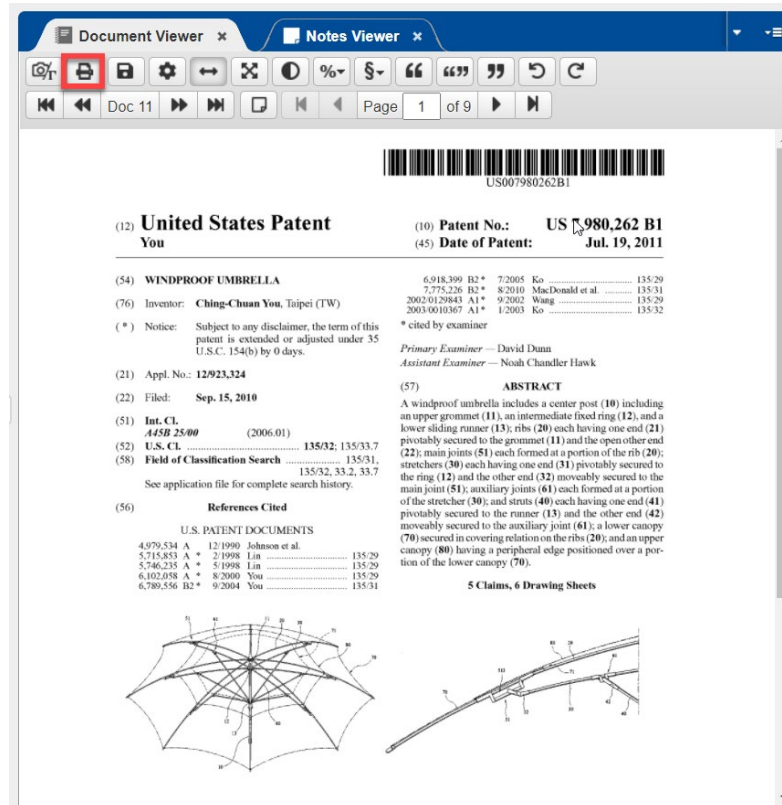
a plurality of ribs that are attached to the runner by a plurality of main struts that move between open and closed positions in which in the open position, the ribs are in an open, extended position and in the closed position, the ribs are in a closed, collapsed position;

an anti-inversion mechanism comprising a plurality of anti-inversion struts, wherein each anti-inversion strut is pivotally coupled to one respective main strut and is also pivotally connected to one respective;

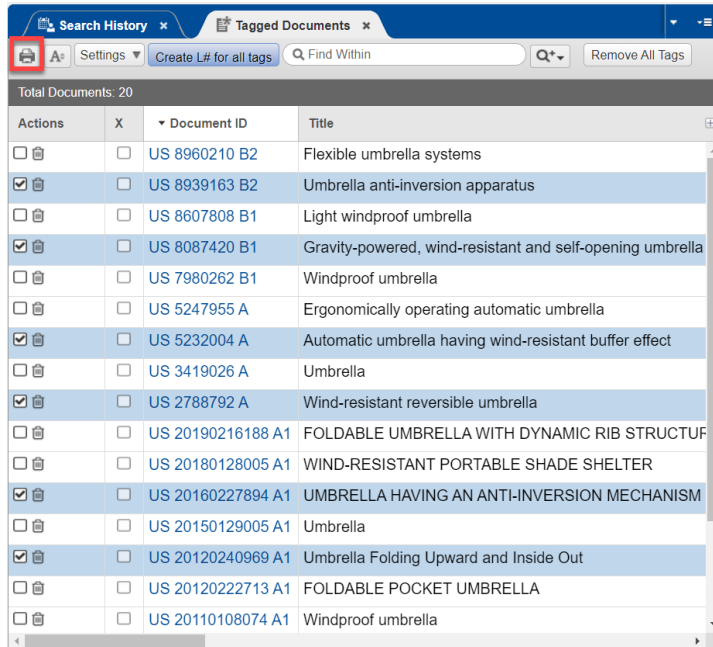
wherein the anti-inversion strut has a first end portion including a U-shaped first section defined by a first floor and a pair first side walls, wherein the U-shaped first section is open only in a first direction, and a second end portion including a U-shaped second section defined by a second floor and a pair of second side

Printing individual documents

In Document Viewer panel, select the print icon to print all pages of a document.



Printing a list of documents



List of Selected Tagged Documents

#	Doc ID	Date Published	Title	Image Pages
1	US-20110030751-A1	2011-02-10	Windproof Sunshade	6
2	US-8939163-B2	2015-01-27	Umbrella anti-inversion apparatus	9
3	US-8087420-B1	2012-01-03	Gravity-powered, wind-resistant and self-opening umbrella system	11
4	US-5232004-A	1993-08-03	Automatic umbrella having wind-resistant buffer effect	10
5	US-2788792-A	1957-04-16	Wind-resistant reversible umbrella	5
6	US-20180128005-A1	2018-05-10	WIND-RESISTANT PORTABLE SHADE SHELTER	46
7	US-20160227894-A1	2016-08-11	UMBRELLA HAVING AN ANTI-INVERSION MECHANISM	24
8	US-20120240969-A1	2012-09-27	Umbrella Folding Upward and Inside Out	36

Select the print icon (in red above) in the Tagged Documents panel once you have selected one or more documents.

Expand the search to patent publications
with relevant CPC classifications

STEP 4

Classification

- In general, a classification system is an arrangement of hierarchical categories used to organize “things” by their characteristics and relationships.
- Classification systems are very useful for sorting and searching large collections of information.
- Patent examiners are required to study a patent application and apply the appropriate Cooperative Patent Classification(s), so that searchers can retrieve other patent documents with similar inventions to the one disclosed in that application.

U.S. Patent Classification and Cooperative Patent Classification

- In 2013, Cooperative Patent Classification (CPC), co-developed with the European Patent Office (EPO), replaced U.S. Patent Classification (USPC) for the classification of U.S. utility patents.
- USPC remains in use for U.S. design patents and plant patents.

What this means for searchers

- Compare the most relevant patents and published applications you found.
- Copy the CPC classifications. Are some common to many or all documents in your search results?
- You find that the CPC classification **A45 B25/22** shows up frequently. Look it up in the CPC classification schema using the Classification Resources page:
<https://www.uspto.gov/web/patents/classification/>.

Use the Classification Symbol Lookup tool

Enter
Classification
Symbol:
"A45 B25/22"

Classification Symbol Lookup

Select Classification System:

☒ CPC

☐ USPC

Enter Classification symbol:

A45 B25/22

Select Content:

Scheme

Definitions

CPC to IPC Concordance

Select output format:

☒ HTML










☐ PDF

Clear

Submit

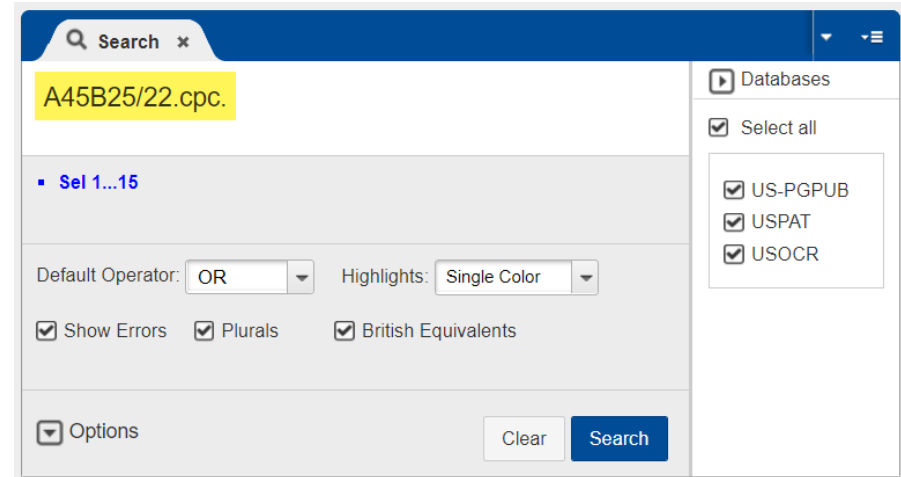
Scan the scheme

- A45B 25/22 seems to be the best match for our invention.
- You can scan the scheme for class-subclass A45B up and down the page to see if there are additional relevant classifications for a wind-resistant design for an umbrella.
- Click on the “D” icon to review a definition for that classification title.

		A45B 25/16	. Automatic openers, e.g. frames with spring mechanisms {(A45B 25/143 takes precedence)}
		A45B 25/165	. . {with fluid or electric actuators}
		A45B 25/18	. Covers (detachable A45B 15/00); Means for fastening same
		A45B 2025/183	. . {Covers with filtering or screening means for avoiding undesired radiation}
		A45B 2025/186	. . {Umbrellas with two or more covers}
		A45B 25/20	. . Windows in covers
		A45B 25/22	. Devices for increasing the resistance of umbrellas to wind
		A45B 25/24	. Protective coverings for umbrellas when closed

Retrieve documents using the CPC classification(s) identified

- Enter a search query with the CPC classification(s) you found most relevant.
- Eliminate the space in the middle of the CPC classification in your search statement.
- Use the field label .cpc.



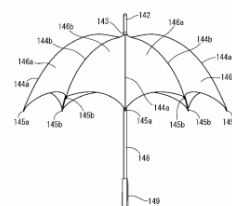
The screenshot shows the USPTO search interface. The search query 'A45B25/22.cpc.' is entered in the search bar. Below the search bar, there are options for 'Default Operator' (set to 'OR') and 'Highlights' (set to 'Single Color'). There are also checkboxes for 'Show Errors', 'Plurals', and 'British Equivalents'. On the right side, there is a 'Databases' section with checkboxes for 'Select all', 'US-PGPUB', 'USPAT', and 'USOCR'. At the bottom, there is an 'Options' checkbox, a 'Clear' button, and a 'Search' button.

Review cited references

STEP 5

Cited (backward) references

The front page of a patent will have a section of cited references provided by the applicant and/or the patent examiner (latter indicated by an asterisk).

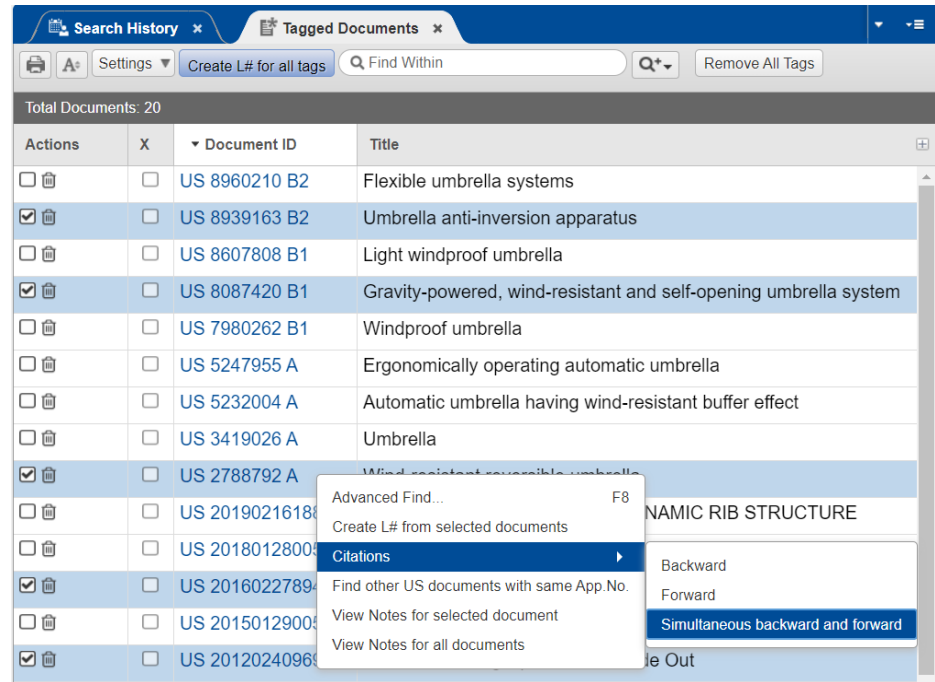
(12) United States Patent		(10) Patent No.: US 9,027,580 B2
Di Cesare		(45) Date of Patent: May 12, 2015
(54) RIB STRUCTURE OF UMBRELLAS		
(76) Inventor: John David Di Cesare, Saitama (JP)		
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 468 days.		
(21) Appl. No.: 13/066,208		
(22) Filed: Nov. 29, 2011		
(65) Prior Publication Data US 2012/0298159 A1 Nov. 29, 2012		
(50) Foreign Application Priority Data Dec. 2, 2010 (JP) 2010-007884		
(51) Int. Cl. A45B 11/00 (2006.01) A45B 25/02 (2006.01) A45B 25/18 (2006.01) A45B 25/06 (2006.01) A45B 25/10 (2006.01) A45B 25/22 (2006.01)		
(52) U.S. Cl. CPC A45B 11/00 (2013.01); A45B 25/02 (2013.01); A45B 25/06 (2013.01); A45B 25/10 (2013.01); A45B 25/18 (2013.01); A45B 25/22 (2013.01); A45B 201/0005 (2013.01)		
(58) Field of Classification Search CPC .. A45B 23/00; A45B 201/0005; A45B 17/00; USPC A45B 11/00 See application file for complete search history.		
(56) References Cited U.S. PATENT DOCUMENTS 2,654,380 A * 10/1953 Eichenbaum 135:33.2 2,767,476 A * 5/1955 Clemens 135:20.1		
		(10) Patent No.: US 9,027,580 B2 (45) Date of Patent: May 12, 2015
		2,948,280 A * 8/1960 Owczynek 135:20.1 3,942,055 A * 7/1962 Todorovic 135:20.1 4,474,200 A * 10/1984 Kato 135:26 5,305,221 A * 4/1994 Gao 135:20.1 D503,036 S * 3/2005 Di Cesare 135:5 7,356,330 B2 * 4/2008 Lucicando et al. 135:20.1 7,401,618 B2 * 7/2008 Caldwell 135:33.7 7,610,025 B2 * 11/2009 Parris 135:20.1 7,665,476 B2 * 2/2010 Lucicando et al. 135:20.1 2006/070044 A1 * 4/2006 Schaefer 135:20.1 2006/090781 A1 * 5/2006 Lucicando et al. 135:20.1 2008/0060793 A1 * 3/2008 Ma 135:28 2008/0149152 A1 * 6/2008 Huang 135:20.1 2008/0163911 A1 * 7/2008 Lucicando et al. 135:20.1 2009/0126769 A1 * 5/2009 Hoogendoorn 135:98 2009/0308419 A1 * 12/2009 Yoo 135:20.1 2011/0108074 A1 * 5/2011 Yoo 135:20.1 2012/0111381 A1 * 5/2012 Sotloff 135:20.1
		FOREIGN PATENT DOCUMENTS EP 2460432 A2 * 6/2012 WO WO/2005/03042 A1 * 3/2005 * cited by examiner
		Primary Examiner — David R Dunn Assistant Examiner — Danielle Jackson (74) Attorney, Agent, or Firm — Lucas & Mercanti, LLP
		(57) ABSTRACT In order to provide a rib structure of an umbrella, which has superior appearance without receiving unnecessary structural pressure and can contribute to the development of the industry by motivating consumers to buy, this invention features the rib structure of an umbrella which is formed with rib multiple ribs wherein the length of specific ribs is different from the length of other specific ribs, cloth is stretched onto the above mentioned ribs thereby changing form of the umbrella and when the above mentioned cloth is put between the above mentioned ribs and adjacent ribs, the cloth does not expand and contract in the direction of the length of said ribs, but is expandable and contractible in any direction with the exception of the direction of the length of said ribs.
		11 Claims, 31 Drawing Sheets
		

Forward references

- If a patent or published patent application after its publication date is cited in a newer U.S. patent publication, it also may be highly relevant.
- Patent Public Search can run a search of both the backward and forward citations (if any) of U.S. patent documents results (but not foreign patent documents cited).

Simultaneous backward and forward citation searching

- In Tagged Documents panel select any documents in the Actions column.
- Right click inside any selected document.
- A pop-up allows the user to create a Citations search for Backward, Forward citations or both simultaneously.



Broadening your search

STEP 6


Broadening your search

Having completed what you believe to be a thorough search of preliminary U.S. patents and U.S. published patent applications in which you did not find patent publications that disclosed what you hope to protect in your own patent application...

You have options to broaden your search – based on available time, money and resources.

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Non-patent literature searching

- Inventions can be publicly disclosed in a variety of non-patent publications, too, such as:

Books / Journal Articles / Websites / Technical Catalogs / Conference Proceedings

- Depending on the databases available for public use at your PTRC, a PTRC library staff member can show how to search these for non-patent literature also.

REVIEW

The 6 step patent search strategy

1. Brainstorm **terms** describing your invention.
2. Conduct a **keyword search** using Patent Public Search. Initially select patents based on front-page information.
3. Conduct an in-depth **review of the selected documents.**
4. Expand the search to publications with relevant **CPC classifications.**

The 6 step patent search strategy, cont.

5. Review **cited references**.
6. Broaden your search with **foreign patents, non-patent literature and/or a patent professional's search**.

