Patent Searching

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Emeritus Librarian
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Before We Get Started

- On one side of the 3 x 5 notecard, please write 3 things that you hope to learn about patent searching & the Marriott Library
- Please put a number 1 in top right corner
Gigabot 3D Printer & Courtyard

http://campusguides.lib.utah.edu/matsci
RADAR Framework

Questions to ask about sources as you evaluate it for quality and usefulness

- Rationale?
- Authority?
- Date?
- Accuracy?
- Relevance?
Materials Collection

• Touch materials before buying them. Located in the Marriott Library Knowledge Commons, Level 2
What’s New & Should Be Used

- ASTM Compass
- Springer Experiments
- PitchBook
- (Standards) TechStreet

- Embase
- Anatomy.TV
- Factiva
PROTO SPACE
Monday - Friday
9:00AM - 6:00PM
2751
Automated Retrieval Center (ARC)

Interlibrary Loan
http://www.lib.utah.edu/services/interlibrary-loan.php
General Collection

• Most books circulate for 120 days; games and DVDs for 14 days.
• Can find materials on shelf or “Request an item”
• Requested items (books, games, DVDs, and printed journals) are picked up at Level 1 entrance.
• If we do not have book, you can either Suggest a Purchase or do Interlibrary Loan
Level 1 Construction

- Collection of books have been shifted
- All tables and chairs have been moved up to Level 3
- Compact Shelving will be installed.
- Empty shelves will be filled with books from Level 2
Compact Shelving
Research Databases

• Database is a collection of records. Each record is comprised of searchable fields.
  – Contacts on your phone; telephone book
• We subscribe to hundreds of databases ranging from music to videos to subject-specific databases
Select Database by Type

- Swank (movies)
- Naxos (music)
You Will Learn

• Analyze the parts of a patent
• Use Google with caution
• Search USPTO.gov with confidence
• Search by Classification
  – CPC
• Search by Citation
  – Patent/App number OR Referenced by
**Patents, Trademarks and Copyright: Current & Archived Presentations**

<table>
<thead>
<tr>
<th>Home</th>
<th>&quot;How do I do a patent search?&quot;</th>
<th>USPTO Publications and Patent Search Tools</th>
<th>Web Resources:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Selected Patent Resources (Print &amp; Online) via the Marriott Library</td>
<td>USPTO Trademark Resources</td>
<td>Current &amp; Archived Presentations</td>
</tr>
</tbody>
</table>

**Current Presentations**

- [B2B 2017](#)
- Biodesign 2/22/2018
- Biodesign Fall 2018 (Long)
- Biodesign Fall 2018 (Short)
- Patent Searching 2018
  - RATS January 2018
- Patent Searching and Public Information Resources
  - RATS December 2017 Training
- Patent Searching (RATS Fall 2018)
- USU Library 10/17/18
- Biodesign 2019
  - First 71 slides for class. Additional slides on Espacenet, Google Patents, additional help, USPC

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[1]: https://campusguides.lib.utah.edu/patents
What is Intellectual Property (IP)?!

Property rights for intellectual creations that have been put into fixed, tangible format
Four types of Intellectual Property

- **Patents** – protects new inventions
- **Trademarks** – anything that identifies the source of a product or service offered in commerce
- **Copyrights** – protect the *specific expression of an idea* in text, music, choreography, graphic arts
- **Trade Secrets** – any secret formula, process, or business method that offers a commercial advantage to the holder
Do a Google search for:
US5306060A
What is it All About

• When was the idea first filed?
• Is there a summary of the invention?
• Does this patent have a literature review?
• What comprises the scope of the invention?

Favorite phrases
“a pair of resiliently yieldable portions that progressively approach each other toward…”
“frustoconical shape”
“incapable of springably retaining the enlarged neck portion”
“an arcuately extending inner edge”
So What?

Who uses Paktech? Everyone.
US9872733B2

• When was the idea first filed?
• Is there a summary of the invention?
• Does this patent have a literature review?
• What comprises the scope of the invention?
So What?

Most Recent Financing Status (as of 28-Jan-2019)
The company was acquired by Medtronic (NYS: MDT) for $1.7 billion on December 19, 2018. The Mazor team and product portfolio's full integration into Medtronic will maximize its impact globally through Medtronic's channels, advance its systems' leadership position in the marketplace and drive the realization of our vision to heal through innovation.

PitchBook

Coverage: current Access: University of Utah Purchased By: University of Utah

Maximum Users: unlimited

PitchBook allows you to search private equity and venture capital deals by various criteria. PitchBook also contains information on mergers and acquisitions. Use PitchBook to establish benchmarks, find real-time data on deals and gather information on investors. This database requires individuals to create a personal account which expires annually. Create your personal account while on campus using your uNID, for example, u0000000@utah.edu email address. The PitchBook database is view only and for students enrolled at the University of Utah. Students, faculty, and staff requiring data downloads should contact Alfred Mowdood - alfred.mowdood@utah.edu / 801-585-7125 requesting an appointment.
# Factiva

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<th>Rank</th>
<th>Company Name</th>
<th>Sales USD m</th>
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<tr>
<td>1</td>
<td>Medtronic Plc</td>
<td>29,953.00</td>
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<tr>
<td>2</td>
<td>Thermo Fisher Scientific, Inc.</td>
<td>24,358.00</td>
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<tr>
<td>3</td>
<td>Royal Philips NV</td>
<td>20,784.79</td>
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<td>4</td>
<td>Danaher Corp.</td>
<td>19,893.00</td>
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<td>5</td>
<td>Becton, Dickinson &amp; Co.</td>
<td>15,983.00</td>
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<td>6</td>
<td>Siemens Healthineers AG</td>
<td>14,438.86</td>
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<td>7</td>
<td>Stryker Corp.</td>
<td>13,601.00</td>
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<tr>
<td>8</td>
<td>Henry Schein, Inc.</td>
<td>12,461.54</td>
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<td>9</td>
<td>Baxter International, Inc.</td>
<td>11,127.00</td>
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<tr>
<td>10</td>
<td>Boston Scientific Corp.</td>
<td>9,823.00</td>
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</table>

Source: FactSet Research Systems Inc., Factiva

Note: Based on publicly traded company data.
IBISWorld Industry Research

IBISWorld Industry Report 62211
Hospitals in the US

Industry at a Glance

Key Statistics
Snapshot

Revenue
$1.1tr

Profit
$89.9bn

IBISWorld Industry Report 33451b
Medical Device Manufacturing in the US

Key Statistics
Snapshot

Revenue
$39.2bn

Profit
$783.2m

Market Share

- Medtronic PLC 41.2%
- General Electric Company 19.4%
- Abbott Laboratories 10.1%

Revenue vs. employment
IP & the US Economy

Strong IPR protection and enforcement are essential to creating jobs and promoting economic prosperity; opening new markets for U.S. goods and services; and fostering investment in innovation and development.

IP-INTENSIVE INDUSTRIES ACCOUNT FOR...

- 38% of GDP
- 52% of merchandise exports
- 27.9 million jobs
- 46% wage premiums

IP Crime’s Annual Cost to the U.S. Economy

- $180 Billion from theft of trade secrets
- $18 Billion from pirated U.S. software
- $29 Billion in displaced legitimate sales due to counterfeit and pirated goods
Map 1. IP-Intensive Industries' Share of Covered Employment by State, 2014


“Intellectual Property and the U.S. Economy”
- A Joint Publication of the USPTO and Dept. Of Commerce

• 2012

• 2016 Update
Center for Technology & Venture Commercialization (TVC)
Bench 2 Bedside (B2B)
### Results of Search in US Patent Collection db for:

IN/bamberg AND IS/UT: 9 patents.

Hits 1 through 9 out of 9

<table>
<thead>
<tr>
<th>PAT. NO.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 9,810,549 T</td>
<td>Systems, methods, and apparatus for calibration of and three-dimensional tracking of intermittent motion with an inertial measurement unit</td>
</tr>
<tr>
<td>2 9,591,993 T</td>
<td>Method and system for analyzing gait and providing real-time feedback on gait asymmetry</td>
</tr>
<tr>
<td>3 9,127,947 T</td>
<td>State estimator for rejecting noise and tracking and updating bias in inertial sensors and associated methods</td>
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<tr>
<td>4 8,375,784 T</td>
<td>Method and system for measuring energy expenditure and foot incline in individuals</td>
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<tr>
<td>5 8,316,989 T</td>
<td>Universal belay device</td>
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<tr>
<td>6 8,016,254 T</td>
<td>Piezoelectric actuated gimbal</td>
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<tr>
<td>7 7,921,716 T</td>
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<tr>
<td>8 7,757,812 T</td>
<td>Universal belay device</td>
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<tr>
<td>9 7,688,448 T</td>
<td>Through-container optical evaluation system</td>
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<td>Title</td>
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<td>1 9,970,977</td>
<td>Systems and methods for implementing S/SSTDR measurements</td>
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<td>2 9,476,932</td>
<td>Systems and methods for implementing S/SSTDR measurements</td>
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<tr>
<td>3 8,395,468</td>
<td>High field strength magentic field generation system and associated methods</td>
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<tr>
<td>4 8,279,122</td>
<td>Mobile communications systems and methods relating to polarization-agile antennas</td>
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<tr>
<td>5 8,269,497</td>
<td>Enhanced fill-factor NMR coils and associated methods</td>
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<tr>
<td>6 8,154,455</td>
<td>Mobile communications systems and methods relating to polarization-agile antennas</td>
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<tr>
<td>7 7,634,012</td>
<td>Multi-carrier spread spectrum using non-linear modification of sub-carrier bands</td>
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<tr>
<td>8 7,622,931</td>
<td>Non-contact reflectometry system and method</td>
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<td>9 7,548,071</td>
<td>Reflectometry test system using a sliding pseudo-noise reference</td>
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<tr>
<td>10 7,495,450</td>
<td>Device and method for detecting anomalies in a wire and related sensing methods</td>
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<td>11 7,282,922</td>
<td>Wire network mapping method and apparatus using impulse responses</td>
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<td>12 7,271,596</td>
<td>Method and system for testing a signal path having an operational signal</td>
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<td>13 7,250,772</td>
<td>Method and apparatus for characterizing a signal path carrying an operational signal</td>
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<tr>
<td>14 7,215,126</td>
<td>Apparatus and method for testing a signal path from an injection point</td>
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<tr>
<td>15 7,165,200</td>
<td>System and method for characterizing a signal path using a sub-chip sampler</td>
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<tr>
<td>16 7,069,163</td>
<td>Digital spread spectrum methods and apparatus for testing aircraft wiring</td>
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<td>10,041,910</td>
<td>Method and system with oppositely-facing ultrasonic transducers for determining tissue pathology</td>
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<td>9,631,239</td>
<td>Method of classifying a breast cancer intrinsic subtype</td>
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<td>9,546,403</td>
<td>Substrate for methylated DNA testing</td>
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<td>9,181,588</td>
<td>Methods of treating breast cancer with taxane therapy</td>
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<td>9,066,963</td>
<td>Methods of treating breast cancer with anthracycline therapy</td>
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<td>Compounds and methods of use thereof for assaying lysophospholipase D activity</td>
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<td>8,423,152</td>
<td>Apparatus and method for selectively heating a deposit in fatty tissue in a body</td>
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<td>8,246,543</td>
<td>Imaging method utilizing attenuation and speed parameters in inverse scattering techniques</td>
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<td>7,973,018</td>
<td>Cell cycle arrest and apoptosis</td>
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<td>7,841,982</td>
<td>Apparatus and method for imaging objects with wavefields</td>
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<td>7,771,360</td>
<td>Breast scanning system</td>
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<td>7,684,846</td>
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<td>Compounds and methods of use thereof for assaying lysophospholipase D activity</td>
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<tr>
<td>6,797,521</td>
<td>Fluorescent cobalamins and uses thereof</td>
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<td>6,582,899</td>
<td>Methods for identifying agents that cause a lethal phenotype, and agents thereof</td>
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<td>6,150,514</td>
<td>14 Kilobase deletion in the promoter region of BRCA1 in a breast cancer family</td>
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<td>Chromosome 13-linked breast cancer susceptibility gene</td>
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<td>6,033,857</td>
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<td>6,030,832</td>
<td>Carboxy-terminal BRCA1 interacting protein</td>
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<td>5,998,136</td>
<td>Selection systems and methods for identifying genes and gene products involved in cell proliferation</td>
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<td>5,989,815</td>
<td>Methods for detecting predisposition to cancer at the MTS gene</td>
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<td>5,837,492</td>
<td>Chromosome 13-linked breast cancer susceptibility gene</td>
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<td>5,753,441</td>
<td>170-linked breast and ovarian cancer susceptibility gene</td>
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<td>5,747,282</td>
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<td>5,709,999</td>
<td>Linked breast and ovarian cancer susceptibility gene</td>
</tr>
</tbody>
</table>

Query [Help]
ACLM/(gene$ and (breast or BRCA$)) AND AC/"salt lake"
Full text is not available for this patent. Click on "Images" button above to view full patent.

United States Patent 2,301,710

Issue Date: November 10, 1942

Current U.S. Class: 435/2; 206/438; 206/828; 210/514; 215/383; 422/41; 422/44; 604/403

Current CPC Class: A61J 1/05 (20130101); Y10S 206/828 (20130101)

Current International Class: A61J 1/00 (20060101)
PATENTS

(Are not always marketable.. !)
What is a patent?

A patent is a property right granted by the United States (U.S.) to the original inventor(s) for a limited time in exchange for public disclosure of invention.

Gives the inventor the [negative!] right “to exclude others from making, using, offering for sale, or selling” or importing the invention in the U.S.

Article I, Section 8, Clause 8 of the United States Constitution, known as the ‘Copyright Clause’
Three types of patents

- **Utility Patents** – Granted for a process; machine or manufacture; composition of matter; or an improvement thereof. Utility patents have sequential numbers.

- **Design Patents** – Protects the new, ornamental design (i.e. “outward appearance”) for an article of manufacture. Design patent numbers are preceded by the letter “D.”

- **Plant Patents** – granted on any distinct and new variety of an asexually reproduced plant. Plant patent numbers are preceded by “PP.”
How long does patent protection last?

- Utility patent – 20 years from the non-provisional patent filing date
- Design patent – 14 years from issue date
- Plant patent – 20 years from filing date

Once these terms expire, the invention is now ‘public domain,’ and may be made, used or sold by anyone without licensing!
“Why do a patent search myself when I can have a patent attorney to do it for me?!”

- Develop a better understanding of the *prior art* and *state-of-the-art* of your inventions
  - Published patent applications often precede journal articles!
- Confirm the novelty of your invention, save your research time and dollars by “not re-inventing the wheel”
- Identify companies or other inventors for marketing and collaboration, and your chief competitors
- *Freedom to Operate* – identify the patent ‘footprint’ of competitors, and find available ‘spaces’ for new areas of research

*US and international patent databases combine commercial interests with the ‘state-of-the-art’ in specific technologies!*
Definitions of Patent Terms

**Prior art**: the processes, devices, and modes of achieving the end of an alleged invention that were known or knowable by reasonable diligence before and at its date —used chiefly in patent law. (Merriam-Webster Online)

*Also in the Manual of Patent Examining Procedure (MPEP)*
[https://www.uspto.gov/web/offices/pac/mpep/mpep-0900.html](https://www.uspto.gov/web/offices/pac/mpep/mpep-0900.html)

[https://www.uspto.gov/web/offices/pac/mpep/s2121.html](https://www.uspto.gov/web/offices/pac/mpep/s2121.html)

**Novelty**: “In order for an invention to be patentable, it must be new as defined in the patent law (35 U.S.C. Section 102). This novelty requirement states that an invention cannot be patented if certain public disclosures of the invention have been made.
Utility or Useful: [A] claimed invention must be useful or have a utility that is specific, substantial and credible."

(35 U.S.C. Section 101)

https://www.uspto.gov/web/offices/pac/mpep/s2104.html
https://www.uspto.gov/web/offices/pac/mpep/s2107.html#d0e198469

PHOSITA: Person having ordinary skill in the art

Non-obvious: "the claimed invention as a whole would [not] have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains."

Provisional application: “by itself, cannot mature into a U. S. patent. For a patent to issue benefitting from the earlier filing date of a provisional application, a corresponding nonprovisional application must be filed in the USPTO within 12 months of the provisional application filing date”

(USPTO, 2015 Guide to Filing a Provisional Application for Patent, p. 1)

Non-provisional: (plant or utility) “is examined by a patent examiner and may be issued a patent if all the requirements for patentability are met. Each year the USPTO receives more than 500,000 patent applications. Most of the applications filed with the USPTO are nonprovisional applications for utility patents”

7-Step U.S. Patent Search Strategy Guide

U.S. Patent Search Assistance at a PTRC
Patent and Trademark Resource Center (PTRC) library staff are available to
provide training on U.S. patent search processes and research tools including
PubWEST, PubEAST and the USPTO website’s PatFT and AppFT patent
publication databases. For the PTRC nearest you, check
www.uspto.gov/ptrc. For legal questions, contact an attorney or agent
registered to practice before the USPTO. A listing is available at

U.S. Patent Prior Art Search vs. Comprehensive Prior Art Search
This guide provides a 7-step strategy for searching U.S. patents and
published patent applications to locate and evaluate relevant prior art, any
previous publication that discloses an invention and would preclude issuance.
A comprehensive prior art search would also include foreign patent
publications and non-patent literature (newspapers, magazines, dissertations,
conference proceedings, and websites). PTRC staff can also provide training
on how to locate these additional resources.

Search Preparation and Documentation
Plan on spending a few hours learning the search process and additional
hours for searching and evaluating results. The length of search time depends
on the complexity of the invention. Careful recording of the search process
(databases used, date and time of search, classes searched, and
patents/published patent applications retrieved) is important.
• Idea
• Provisional application (12 months, “patent pending”)
• Non-provisional application (After 18 months, application published)
• Pendency (Time between application & granting)

• Granted Patent
Favorite Patent Search Tools

• United States Patent & Trademark Office
  http://uspto.gov

• Esp@cenet
  http://worldwide.espacenet.com/

• Lens.org  https://www.lens.org/lens/

• Dimensions.ai

• Patent Scout  (Innography used by TVC)

• PATENTSCOPE (WIPO)
  https://patentscope.wipo.int/search/en/search.jsf
Parts of a Patent (Drawings)

Patent from 1980

Another patent from 1978
PERITONEAL DIALYSIS CATHETER

Inventors: Willem J. Kolff; Thomas R. Kessler, both of Salt Lake City, Utah

Assignee: University of Utah, Salt Lake City, Utah

Filed: Aug. 26, 1977

Int. Cl.: A61M 5/00; A61M 25/00

U.S. Cl.: 131/213 A; 128/348


References Cited

United States Patent
Kolff et al.

3,915,171 10/1975 Sheeley
3,991,756 11/1976 Snyder
3,915,171 10/1975 Sheeley
3,991,756 11/1976 Snyder

Primary Examiner—Stephen C. Pellegrino
Attorney, Agent, or Firm—C. W. Martin

ABSTRACT

An implantable catheter for subcutaneous placement defining a tubular member which carries an enlarged, hollow, needle-pierceable member on one end thereof. The enlarged hollow member is implanted under the skin. The catheter defines a pair of angled turns, each of the angled turns occupying a plane which defines approximately a 90 degree angle to the plane of the other angle. This permits the enlarged portion of the catheter to be horizontally positioned subcutaneously, relative to an erect patient, while the end of the tubular catheter extends to its desired location in the peritoneal cavity.

6 Claims, 6 Drawing Figures

Sorenson

United States Patent

54
COMBINATION NEEDLE COVER AND VENIPUNCTURE DEVICE TRAY AND METHOD OF USING SAME

Inventor: James L. Sorenson, Salt Lake City, Utah

Assignee: Sorenson Research Co., Inc., Salt Lake City, Utah

Filed: Jul. 26, 1976

Int. Cl.: B65D 73/00; B65D 75/62; B65D 13/02

U.S. Cl.: 206/649; 206/646


References Cited

U.S. PATENT DOCUMENTS
2,822,538 1958 McDonald, Jr. et al. 206/469 X
3,005,691 1959 Rusch, et al. 206/364
3,074,580 1963 Reich et al. 206/469 X
3,072,538 1963 Lengley 206/469 X
3,472,269 1969 Heister 206/469 X
3,697,908 1972 Heister 206/469 X
3,704,730 1973 Creutz 206/470 X

FOREIGN PATENT DOCUMENTS
1,474,882 2/1967 France

Primary Examiner—Steven L. Lipman
Attorney, Agent, or Firm—H. Ross Workman; J. Winslow Young

ABSTRACT

A venipuncture device package which when opened serves as a combination needle cover and venipuncture device tray from which a venipuncture device may be withdrawn or inserted with one hand without having to apply any force to the package. In one preferred embodiment, a blister cover made of transparent plastic is configured to form a venipuncture device tray which is separately joined to a strip of paper backing to form the package. The tray is constructed so as to facilitate angular deformation of the tray into a hand-displaceable needle cover once the strip of paper has been partially peeled away to expose the handle of the venipuncture device while maintaining the needle of the venipuncture device enclosed within the package. In other presently preferred embodiments, the tray is constructed so that it may be broken open at a predetermined location so as to form a hand-displaceable needle cover having the handle of the venipuncture device exposed while maintaining the needle of the venipuncture device enclosed within the package. The method of using the preferred embodiments is also disclosed.

5 Claims, 8 Drawing Figures
USPTO Web Databases

http://www.uspto.gov/patents/process/search/index.jsp

• Two files to search: PatFT and AppFT
• Best when relevant patents are known, but may also search by keywords, company names, or known inventors
• As soon as relevant patents are found, determine the best Cooperative Patent Classification (CPC) number(s) or U.S. Classification (USPC) for your technology and re-do search by classification number.
  – CPC replaced the USPC system in 2015.
Pros & Cons

USPTO Website
- Most authoritative listing of U.S. patents;
- Technologies defined by subject experts;
- Links to *USPTO Classification and Definitions Manuals*;
- Almost all patents back to 1790 are available for viewing;
- Links to earlier ‘prior art’ and later ‘referred by’ patents;
- PDF copies for download and display;
- Response time can be slower.

Esp@cenet
- More than 100+ million patents and applications from 95+ countries!
- Patents from all countries grouped into and searchable by patent ‘families;’
- Machine translation (Google) between English and 30 other languages!
- PDF copies for download
- Links to USPTO Classification and Definition Manuals
- Results may be exported to .xls files
- Coverage not as complete for US patents;
- Response time can be slower
Pros & Cons

Google Patent

- Fast!
- Links to Esp@cenet database;
- Links to earlier ‘prior art (‘citations’)’ and later ‘referenced by’ patents;
- PDF copies for download and display;
- Links to USPTO Classification and Definitions Manuals;
- Searching through OCR for keywords goes back further than USPTO;
- Uses Google search algorithm;
- Unknown numbers of patents missing;
- Less authoritative;
- Privacy!
- More results to look through!
- Feature linking to Google Scholar not as useful
Try This Yourself

Scenario One
U STUDENTS WIN $75K FOR BACTERIA-KILLING CATHETER

By Lassonde Staff  May 21, 2014
The students created a startup company, Veritas Medical LLC, to develop the LIGHT LINE Catheter™, using high-intensity narrow spectrum light, which is known to kill bacteria without any harmful effects to human cells. They have already filed a utility patent on their technology and will complete laboratory testing later this year followed by clinical trials beginning next year.

“This competition was a huge validation for what we have created,” said Rhodes, who received a master’s in bioengineering from the U this spring. “We have come a long way since starting this project three years ago, and we hope to finish clinical trials by 2015 and begin selling our product by 2016.”
2 Ways to Begin @uspto.gov

*Hits 1 through 41 out of 41*

<table>
<thead>
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<th>PAT. NO.</th>
<th>Title</th>
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<td><strong>Bioactive coatings</strong></td>
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<td>2 10,064,909</td>
<td><strong>Compositions and methods for chronic use of a weight-gaining compound</strong></td>
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<tr>
<td>3 9,931,067</td>
<td><strong>Device and method for determining analyte levels</strong></td>
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<tr>
<td>4 9,808,647</td>
<td><strong>Methods and apparatus to inactivate infectious agents on a catheter residing in a body cavity</strong></td>
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<tr>
<td>5 9,764,160</td>
<td><strong>Reducing absorption of radiation by healthy cells from an external radiation source</strong></td>
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<td>6 9,700,591</td>
<td><strong>Compositions and methods for chronic use of a weight-gaining compound</strong></td>
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<tr>
<td>8 8,923,947</td>
<td><strong>Device and method for determining analyte levels</strong></td>
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Look at #4
United States Patent

Rhodes, et al.

Methods and apparatus to inactivate infectious agents on a catheter residing in a body cavity

Abstract

Methods and apparatus for the inactivation of infectious agents in, on or around a catheter residing in a patient's body cavity. The method comprises transmitting non-ultraviolet sterilizing electromagnetic radiation (EMR) substantially axially along an optical element in the catheter body. Through delivery of the sterilizing EMR to particular areas of highest infection, the present disclosure is able to inactivate the major sources of infection in catheters.

Inventors: Rhodes; Nathaniel L. R. (Salt Lake City, UT), Bracken; Adam E. (Salt Lake City, UT), de la Presa; Martin (Salt Lake City, UT), Poursaid; Ahrash E. (Sandy, UT), Coil; Ryan R. (Salt Lake City, UT), Barneck; Mitchell (Clearfield, UT), Allen; James Preston (Salt Lake City, UT)

Applicant: Veritas Medical, L.L.C. Salt Lake City UT US

Assignee: Veritas Medical, L.L.C. (Salt Lake City, UT)

Family ID: 49292878

Appl. No.: 13/801,750

Filed: March 13, 2013
United States Patent
Rhodes et al.

METHODS AND APPARATUS TO INACTIVATE INFECTIOUS AGENTS ON A CATHETER RESIDING IN A BODY CAVITY

Applicant: Veritas Medical, L.L.C., Salt Lake City, UT (US); Adam E. Bracken, Salt Lake City, UT (US); Martin de la Presa, Salt Lake City, UT (US); Ahresh E. Pourvand, Sandy, UT (US); Ryan R. Coll, Salt Lake City, UT (US); Mitchell Burnock, Clearfield, UT (US); James Preston Allen, Salt Lake City, UT (US)

Assignee: Veritas Medical, L.L.C., Salt Lake City, UT (US)

Patent No.: US 9,808,647 B2
Date of Patent: Nov. 7, 2017

U.S. Cl.
CPC ............. A61N 5/0623 (2013.01); A61L 2/084 (2013.01); A61M 25/0069 (2013.01);

Field of Classification Search
CPC = A61N 5/061; A61N 5/062; A61N 5/063; A61N 13/06; A61B 18/22; A61B 18/04; A61B 18/201; A61B 2012/2015; A61B 2018/222; A61B 2018/222; A61L 11/06; A61L 2084; A61L 2085;

References Cited
U.S. PATENT DOCUMENTS
4,512,762 A 4/1985 Sprouse

(Continued)
Every granted patent is classed into a specific letter/number grouping. The CPC class provides a definition, hierarchy, and other relevant classifications. A bolded class identifies the class most important aspects of the invention.
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Scenario Two
Try On Your Own

Using the CPC Classification
Patent Searching by CPC

8973946

(12) United States Patent
Carr

(84) References Cited
U.S. PATENT DOCUMENTS:

D422,070 S+ * 12/19/11 Vaugnan
1,961,099 A* 5/1934 Dicconson
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3,562,782 A* 1/1971 Franck
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4,316,620 A* 7/1982 Spiller
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4,700,975 A* 10/1987 Elenman et al.
5,000,277 A* 7/1992 Spiller
5,035,265 S* 7/2000 Pierce

(54) Multifunction Ski Pole
(62) Related U.S. Application Data

(51) Int. Cl.
A65C 11/24 (2006.01)
B67B 7/16 (2006.01)
B25C 11/27 (2006.01)
B25C 13/02 (2006.01)
B25C 15/02 (2006.01)
B25C 15/08 (2006.01)
B25C 15/09 (2006.01)

(58) Field of Classification Search
CPC ... A65C 11/22; A65C 11/24; A65C 11/228; B67B 7/16

9549802

(12) United States Patent
Bercovich et al.

(84) References Cited
U.S. PATENT DOCUMENTS:

5,603,085 A* 2/1997 Staton, Jr.
5,689,719 A* 2/1998 Staton

(54) Female Urinary Incontinence Device
(62) Related U.S. Application Data

(51) Int. Cl.
A61F 2300 (2006.01)
A61F 608 (2006.01)

(55) Abstract
A device is provided for applying pressure on a vaginal wall of a female subject, said device being configured for insertion into a vaginal cavity of the female subject. The device includes a first deformable element, a second deformable element and a transmission element. The first deformable element has a resting state and at least one deformed state and is configured for undergoing deformation in response to an inner body pressure. When the resting state, the first deformable element is configured to anchor the device inside the vaginal cavity. The second deformable element has a resting state and at least one deformed state, and is configured for undergoing deformation to apply a second pressure on the vaginal wall, such second pressure being operable to narrow a portion of the female subject. The transmission element has a first end connected to the first deformable element and a second end connected to the second deformable element, and is configured for converting the deformation of the first deformable element to a deformation of the second deformable element, and for returning the first and second deformable elements to their respective resting states.

29 Claims, 25 Drawing Sheets
CPC Sections

A - HUMAN NECESSITIES
B - PERFORMING OPERATIONS; TRANSPORTING
C - CHEMISTRY; METALLURGY
D - TEXTILES; PAPER
E - FIXED CONSTRUCTIONS
F - MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
G - PHYSICS
H - ELECTRICITY
Y - GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL

Current U.S. Class:
Current CPC Class: B82Y 15/00 (20130101); G01N 33/48721 (20130101); C12Q 1/6827 (20130101); 27/44704 (20130101); C12Q 1/6869 (20130101); C12Q 1/6827 (20130101); C12Q 2525/101 (20130101); C12Q 2525/101 (20130101)

Current International Class: G01N 27/327 (20060101); B82Y 15/00 (20110101); G01N 27/447 (20060101); G01N 33/487 (20
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A63C 11/222

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- USPC

Enter Classification symbol:  
A61F 2/005

Select Content:  
- Scheme
- Definitions
- CPC to IPC Concordance

Select output format:  
- HTML
- PDF

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CPC Classification

- **CPC Classification**
  - **A63C 10/26**
    - (Pads as foot or binding supports, e.g. pads made of foam)
  - **A63C 11/40**
    - Accessories for skiing or snowboarding (fittings on vehicles for carrying skis B66R 9/12)
  - **A63C 11/50**
    - (Seats formed of skis or of accessories for skis)
  - **A63C 11/52**
    - (Straps formed of skis or of accessories for skis)
  - **A63C 11/53**
    - (Signalling devices, e.g. acoustic or visual (A63C 11/225 takes precedence; means for indicating the location of accidentally snow-buried persons A63B 29/02))
  - **A63C 11/54**
    - (Anti-theft devices for skis or ski equipment (A63C 11/03 takes precedence))
  - **A63C 11/09**
    - (on the ski or pait)
  - **A63C 11/06**
    - (Portable locking means)
  - **A63C 11/07**
    - (Lockable ski racks, cupboards or the like)
  - **A63C 11/08**
    - (for carrying devices)
  - **A63C 11/09**
    - (for carrying devices)
  - **A63C 11/20**
    - (Devices for stretching, clamping or pressing skis or snowboards for transportation or storage)
  - **A63C 11/21**
    - (Devices for binding skis in pairs, e.g. straps, clips (A63C 11/22 takes precedence))
  - **A63C 11/22**
    - (with magnets)
  - **A63C 11/23**
    - (Carrying-devices)
  - **A63C 11/24**
    - (for skis or ski-sticks)
  - **A63C 11/26**
    - (on wheels)
  - **A63C 11/27**
    - (Protectors for skis, e.g. containers on the roof of cars)
  - **A63C 11/28**
    - (Storage in cupboards or skiracks, e.g. with clamping devices)
  - **A63C 11/34**
    - (for treating skis or snowboards)
  - **A63C 11/46**
    - (Edge-sharpeners)
  - **A63C 11/48**
    - (Apparatus for waxing or dewaxing (ski waxers C09G 3/00))
  - **A63C 11/10**
    - (Apparatus for towing skis (ski-lifts B66B 11/00))
  - **A63C 11/12**
    - (Apparatus for hooking the heel part of the boot to the ski)
  - **A63C 11/14**
    - (Apparatus for repairing damaged skis or snowboards)
  - **A63C 11/16**
    - (Special devices on boots for fastening skis thereto (A63G 502 takes precedence))
  - **A63C 11/18**
    - (Devices for removing snow from skis, snowboards, boots or bindings)
  - **A63C 11/20**
    - (Snow protectors on skis or snowboards)
  - **A63C 11/22**
    - (Ski-sticks)
  - **A63C 11/23**
    - (telescopic, e.g. for varying the length or for damping shocks)
  - **A63C 11/24**
    - (Ski-stick handles or hand-straps)
  - **A63C 11/24**
    - (associated with timing devices)
  - **A63C 11/25**
    - (with signalling devices, e.g. acoustic or visual (means for indicating the location of accidentally snow-buried persons A63B 29/02))

- **D A61F 2/00**
  - Filters; Devices providing patency to tubular structures; Prostheses; Accessories
  - **D A61F 2/0018**
    - (for constraining the luminal support slings for the urethra)
  - **D A61F 2/0031**
    - (placido deep in the body opening (including blood vessels by internal devices A61B 17/12022))
  - **D A61F 2/0027**
    - (placido deep in the body opening (including blood vessels by internal devices A61B 17/12022))
  - **D A61F 2/0045**
    - (Support slings)
  - **D A61F 2/005**
    - (with pressure applied to urethra by an element placed in the vagina)
  - **D A61F 2/0054**
    - (with pressure applied to urethra by an element placed around the penis, e.g. penile clamps)
  - **D A61F 2/0059**
    - (Implantable or alloplastic implants (A61F 2/10 - A61F 2/16, A61F 2/22 take precedence))
  - **D A61F 2/0063**
    - (Implantable repair or support slings, e.g. hernia meshes)
  - **A61F 20200008**
    - (having a special mesh pattern)
  - **A61F 20200072**
    - (Delivery tools therefor)
Searching USPTO

- Use no spaces
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CPC/a63c11/222: 156 patents.
Hits 1 through 50 out of 156

Screen shot from 1/16/2018; as of 2/19/2019 161 patents

(1 of 157)

9,867,436
January 16, 2018

Patent added to CPC/a63c11/222

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Results of Search in US Patent Collection db for:
CPC/a61f2/005: 144 patents.
Hits 1 through 50 out of 144

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THE PATENT
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  – At present esp@cenet® holds data on more than 100 million patents from over 90 countries. Most include an English-language abstract. Coverage from 1836 (US) forward (varies by country).
  – JPO published abstracts in English from October 1976 forward.
  – Updated weekly.
Granted U.S. patent number for our original ‘stretchable electronics’ patent application.

‘Search’ button further down at bottom of screen.
1 result found in the Worldwide database for: us8217381 as the publication number

1. CONTROLLED BUCKLING STRUCTURES IN SEMICONDUCTOR INTERCONNECTS AND NANOMEMBRANES FOR SMART ELECTRONICS

Inventor:

Applicant:
ROGERS JOHN A, MEITL MATTHEW, (+16)

CPC:
H01L21/02422, H01L21/02628, H01L21/8258 (+11)

IPC:
H01L21/00, H01L29/84, H05K1/00

Publication info:
US 2008157235 (A1) 2008-07-03
US 8217381 (B2) 2012-07-10
CONTROLLED BUCKLING STRUCTURES IN SEMICONDUCTOR INTERCONNECTS AND NANOMEMBRANES FOR STRETCHABLE ELECTRONICS

Inventor(s): ROGERS JOHN A [US]; MEITL MATTHEW [US]; SUN YUGANG [US]; KO HEUNG CHO [US]; CARLSON ANDREW MOOK [US]; CHOI WON MOOK [US]; STOYKOVICIH MARK [US]; JIANG HANQING [US]; HUANG YONG [US]; HUANG YONGGANG [US]; NIZZO RALPH G [US]; LEI ZHENGTAO [CN]; MENARD ETIENNE [CA]; KHANG DAHL-YOUNG [CN]; KANG SEONG JUN [CN]; AHN JONG HYU [CN]; HOON-SIK [CN]; THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

Applicant(s): ROGERS JOHN A; MEITL MATTHEW; SUN YUGANG; KO HEUNG CHO; CARLSON ANDREW MOOK; STOYKOVICIH MARK; JIANG HANQING; HUANG YONG [CN]; HUANG YONGGANG; NIZZO RALPH G; LEI ZHENGTAO; MENARD ETIENNE; KHANG DAHL-YOUNG; KANG SEONG JUN; AHN JONG HYU; HOON-SIK; THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

Classification: - international: H01L21/00; H01L29/84; H05K1/00
- cooperative: H01L21/02422; H01L21/02628; H01L21/8258; H01L27/12; H01L29/0657; H05K1/00; H05K294/12041; H01L2924/13091; H05K2201/0133; H05K2201/09045; H05K3/20 → more

Application number: US20070851182 20070906

In an aspect, the present invention provides stretchable, and optionally printable, components such as semiconductors and electronic circuits capable of providing good performance when stretched, compressed, flexed or otherwise deformed, and related methods of making or tuning such stretchable components. Stretchable semiconductors and electronic circuits preferred for some applications are flexible, in addition to being stretchable, and thus are capable of significant elongation, flexing, bending or other deformation along one or more axes. Further, stretchable semiconductors and electronic circuits of the present invention are adapted to a wide range of device configurations to allow for the creation of advanced devices with improved properties.
As of 1/22/2018, 105 applications
In an aspect, the present invention provides stretchable, and optionally printable, components such as semiconductors and electronic circuits capable of providing good performance when stretched, compressed, flexed or otherwise deformed, and related methods of making or tuning such stretchable components. Stretchable semiconductors and electronic circuits preferred for some applications are flexible, in addition to being stretchable, and thus are capable of significant elongation, flexing, bending or other deformation along one or more axes. Further, stretchable semiconductors and electronic circuits of the present invention are adapted to a wide range of device configurations to effectively use stretchable materials in such applications.
CONTROLLED BUCKLING STRUCTURES IN SEMICONDUCTOR INTERCONNECTS AND NANOMEMBRANES FOR STRETCHABLE ELECTRONICS

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Legal status of US2008157235 (A1) 2008-07-03; US8217381 (B2) 2012-07-10:

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<td>NEW OWNER</td>
<td>THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOI</td>
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FURTHER INFORMATION: ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: ROGERS, JOHN A.; MEITL, MATTHEW; SUN, YUANG; AND OTHERS; REEL/FRAME:020691/0972; SIGNING DATES FROM 20071106 TO 20080220

| Event date | 2008/03/24 |
| Event code | AS |
| Code Expl. | ASSIGNMENT |
| NEW OWNER | THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOI |

FURTHER INFORMATION: ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: ROGERS, JOHN A.; MEITL, MATTHEW; SUN, YUANG; AND OTHERS; SIGNING DATES FROM 20071106 TO 20080220; REEL/FRAME:020691/0972

| Event date | 2012/03/22 |
| Event code | AS |
Can export lists of patents to spreadsheet files for easier sorting, analysis and marketing!

66 patents in Apr 2016, 81 in Nov 2016, 122 on 1/22/2018
CONTROLLED BUCKLING STRUCTURES IN SEMICONDUCTOR INTERCONNECTS AND NANOMEMBRANES FOR STRETCHABLE ELECTRONICS

Classification:
- international: H01L21/00; H01L29/84; H05K1/00
- European: H01L21/8258; H05K1/02J6

Abstract of US2008157235 (A1)

Translate this text

In an aspect, the present invention provides stretchable, and optionally printable, components such as semiconductors and electronic circuits capable of providing good performance when stretched, compressed, flexed or otherwise deformed.
CONTROLLED BUCKLING STRUCTURES IN SEMICONDUCTOR INTERCONNECTS AND NANOMEMBRANES FOR STRETCHABLE ELECTRONICS

APPLICANT
Rogers et al.

INVENTORS
John A. Rogers, Champaign, IL (US); Matthew Meif, Raleigh, NC (US); Yungang Sun, Naperville, IL (US); Heung Cho Ko, Urbana, IL (US); Andrew Carlson, Urbana, IL (US); Won Suk Choi, Champaign, IL (US); Mark Stokeyovich, Dover, NH (US); Hanguing Jiang, Urbana, IL (US); Yonggang Huang, Glencoe, IL (US)

CORRESPONDENCE ADDRESS
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4875 PEARL EAST CIRCLE, SUITE 200
BOULDER, CO 80301

APPL. NO.: 11/851,182
FILED: Sep. 6, 2007

PUBL. NO.: US 2008/0157235 A1
PUBL. DATE: Jul. 3, 2008

ABSTRACT
In an aspect, the present invention provides stretchable, and stretchable and repairable conducting, non-conducting, and combined conducting and non-conducting nanoscale thin films, nanosheet, and nanofibrous layers.
CPC/a63c11/222

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Patent search

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CPC/A61f2/005

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4. Looking at the patent landscape teaches innovative thinking within a given technology!

We can trace the development of a given technology and how inventors have innovated within that technology by looking at the ‘prior art’ and ‘cited by’ links on the front page of granted U.S. patents.
This is the granted patent for our 2008 ‘Controlled Buckling..’ published application. Let’s scroll down to the ‘References Cited’ section.
## Related U.S. Patent Documents

<table>
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**Current U.S. Class:** 257/9; 257/40; 257/619; 439/67

**Current CPC Class:**
- H01L 21/02628 (20130101)
- H01L 27/12 (20130101)
- H01L 21/8258 (20130101)
- H01L 21/02422 (20130101)
- H05K 1/0283 (20130101)
- H01L 29/0657 (20130101)
- H05K 2201/09045 (20130101)
- H01L 2924/12041 (20130101)
- H05K 2203/0271 (20130101)
- H05K 2201/0133 (20130101)
- H05K 3/20 (20130101)
- H01L 2924/13091 (20130101)
- H01L 2924/00 (20130101)

**Current International Class:** H01L 29/72 (20060101)

**Field of Search:** 257/9, 40, 619; 439/67

**References Cited** [Referenced By]
More recent patents that refer back to this patent granted in 2012 as part of their ‘prior art.’

Prior Art – or earlier inventions that show earlier steps in the development of this technology.
These 67 more recent granted patents all refer back to US8217381 as part of the ‘Prior Art,’ or earlier line of development, for their invention. We could do the same search in the AppFT file using the patent number ‘8217381’ in ‘All fields’ to find 23 published applications that also refer back to this one granted patent. Screen shot from January 2018

<table>
<thead>
<tr>
<th>PAT. NO.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 9,846,829</td>
<td>Conformal electronics integrated with apparel</td>
</tr>
<tr>
<td>2 9,844,145</td>
<td>Strain isolation structures for stretchable electronics</td>
</tr>
<tr>
<td>3 9,833,190</td>
<td>Methods of detecting parameters of a lumen</td>
</tr>
<tr>
<td>4 9,825,229</td>
<td>Purification of carbon nanotubes via selective heating</td>
</tr>
</tbody>
</table>
Using Google Patents
Entering a US patent or published application number with the prefix ‘US’ in any Google search box will pull up the US patent document with that number. Or, you may start by going to Google Patents at www.google.com/patents.
Patent US8217381 - Controlled buckling structures in ...

www.google.com/patents/US8217381

US 8217381 B2 - Controlled Buckling Structures In ...
Jul 10, 2012 - In an aspect, the present invention provides stretchable, and optionally printable, components such as semiconductors and electronic circuits ...

IMGRID as a tool for wildlife planning [Computer-assisted ...
agris.fao.org/agris-search/search.do?recordID=US8217381
by S Davis - 1980
IMGRID as a tool for wildlife planning [Computer-assisted data-handling tools, resource planning; USA]. rdf logo. Davis, S.

US8217381 | AGRIS RECORDS
agris.fao.org/aos/records/US8217381

Nanomembrane structures patents | Patentfish.com
www.patentfish.com/nanomembrane-structures
Besides the sheer speed of Google Patent searches, there is a ‘Prior Art’ button that is only available in Google, plus a link to the Espacenet database.
Try This Yourself

• Searching by US Classification System
CPC is the new Cooperative Patent Classification (CPC) System, to which the USPTO has converted completely starting January 2015.
But we’re going to use the US Classification System, and U.S. Class 174, subclass 254, which we got from the ‘US Cl.’ field on the face of the patent.

'Schedule' means 'Outline.'
We’re now within Class 174, at line number 254. Note that line numbers are not necessarily in numeric order!
‘Contracting’ all the main lines except 68.1, which contains the one- and two-dot indentations including subclass 254.
Click on the line itself to generate a visual hierarchy for this subclass, and then go to ‘Definitions’ for each level of the outline.
Click here for a thorough ‘Definition’ of these three levels.
Convertible shape (e.g., flexible) or circuit (e.g., breadboard):
This subclass is indented under subclass 250. Subject matter wherein the structure is either easily bent without breaking or has means of easily change its conductor circuit configuration.

   (1) Note. Terms that are somewhat synonymous with "breadboard" are "prototype" and "universal board".

SEE OR SEARCH CLASS:

361, Electricity: Electrical Systems and Devices, subclass 398 for flexible printed circuits which include plural, diverse electrical devices.

With particular substrate or support structure:
This subclass is indented under subclass 250. Subject matter including a material means distinguished by significant construction or configuration which provides a supporting surface for other materials, especially materials used as printed-circuits patterns.

With particular material:
This subclass is indented under subclass 250. Subject matter wherein at least a part of the circuit board structure is composed of one or more specific substances.

Conducting (e.g., ink):
This subclass is indented under subclass 256. Subject matter wherein at least a part of the circuit board is composed of a conducting material.

(1) Note. The conducting material may be for soldered feed through connections where the composition of the solder is nominal.

Insulating:
This subclass is indented under subclass 256. Subject matter including a material on or through which essentially no electrical current flow.

Adhesive/bonding:
This subclass is indented under subclass 256. Subject matter including a material which causes parts of the structure to stick, bind, or fasten together.

SEE OR SEARCH THIS CLASS, SUBCLASS:

263, for soldered feed through connections where the composition of the solder is nominal.

SEE OR SEARCH CLASS:
Going back to the ‘Schedule,’ or Outline, if we click on the ‘P’ icon we get a list of all Granted Patents in class 174, subclass 254.
Slide updated in November 2015. Remember, USPC no longer being updated. Examiners are still searching these classes (see slides 104-105).

All Granted Patents since 1790 that have a classification in 174/254 (the oldest was granted in 1926!).

- Feb 2010 – 992 patents;
- Feb 2011 – 1059 patents;
- Feb 2012 – 1140 patents;
- Aug 2013 – 1306 patents;
- Sept 2014 – 1413 patents;
- Nov 2015 – 1478 patents.

Note the increasing rate of change until Sept 2014! After this date the rate of patents issuing in this technology per year is slowing down.
If we go back and click on the blue icon ‘A’ in the Classification Schedule, we generate a list of all applications published since 2001 with a classification in 174/254.
All published applications from 2001 to Sept 2014 that have a classification in 174/254. Some of these published applications will also show up as Granted Patents, but the text of the granted patent will most likely be different from the published application.

Feb 2008 – 151 published applications;
Feb 2010 – 301 published applications (two year interval);
Feb 2011 – 413 published applications;
Feb 2012 – 532 published applications;
Aug 2013 – 663 published applications;
Sept 2014 – 773 published applications;
Nov 2015 – 878 published applications.
Jan 2018 - 965 published applications.

Once again, note the increasing rate of change until Aug 2013! By Sept 2014 number of published applications in this technology per year is slowing down.

Slide updated to November 2015.