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BIOTECH BREAKTHROUGHS: HOW PATENTS FUEL WOMEN'S SUCCESS IN ENTREPRENEURSHIP?



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Examples of Successful Women in Biotech Patenting



https://en.wikipedia.org/wiki/Jennifer_Doudna



https://en.wikipedia.org/wiki/Emmanuelle_Charpentier

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Jennifer Doudna (left) and Emmanuelle Charpentier (right), who pioneered CRISPR gene-editing technology, hold numerous patents in biotechnology. Their work demonstrates how intellectual property can lead to transformative impacts in science and industry.



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Goals of the Seminar

1. Increase Awareness of Intellectual Property (IP) in Biotechnology.
2. Empower Women Entrepreneurs.
3. Promote Innovation and Business Growth.
4. Foster Networking and Collaboration.

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For women in STEM, focused in biotechnology, understanding the patent system is essential for several reasons:

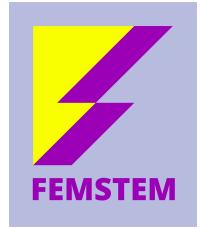


- **Securing Innovation**
- **Entrepreneurial Empowerment**
- **Overcoming Gender Gaps**
- **Relevance to STEM Careers**

This topic educates women students in STEM about the technical and legal aspects of patents and also inspires them to use this knowledge to innovate and lead in the biotechnology industry.



What is Intellectual property IP?



A product of intellectual activity (the result of spiritual creation and mental work) with a *commercial* value.



- **patents**
- **designs**
- **copyright**
- **trademarks**
- **trade secrets**

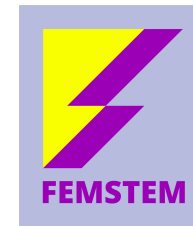
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One product - many IP rights



Multi-channel pipette



https://www.sigmaaldrich.com/LT/en/product/aldrich/br703720?utm_source=google&utm_medium=cpc&utm_campaign=8674394830&utm_content=82303610370&gad_source=1&gclid=CjwKCAjw9p24BhB_EiwA8ID5Bm3ruA04t_L09eE4Wsh22ZuRa4v2edvP8hajTQ0p1tzfo4hdEBmqDBoC1dMQAvD_BwE

Trade marks

- BRAND®
- Product Transferpette®“ S-12
- Eppendorf
- Product Xplorer Plus 300

Copyright

- Instructional Manuals
- User manuals
- Promotional materials

Patents and utility models

- Mechanical Improvements
- Fluid Control Systems
- Automation or Digital Integration
- Material Innovations
- Multiplexing Mechanism

Designs

- Form of overall pipette
- Arrangement and shape of pipette

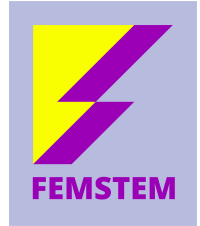
Trade secrets



- Some technical know-how kept "in-house" and not published



What is a Patent?

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(19)  (11)  EP 1 535 121 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent: **25.08.2010 Bulletin 2010/34**

(21) Application number: **03728962.6**

(22) Date of filing: **16.05.2003**

(51) Int Cl.: **G05B 19/02 (2006.01) G05B 19/00 (2006.01)**

(86) International application number: **PCT/US2003/015459**

(87) International publication number: **WO 2003/100553 (04.12.2003 Gazette 2003/49)**

(54) **SYSTEM AND METHOD FOR AUTOMATICALLY SETTING UP A UNIVERSAL REMOTE CONTROL**
SYSTEM UND VERFAHREN ZUM AUTOMATISCHEN EINRICHTEN EINER UNIVERSELLEN FERNBEDIENUNG
SYSTEME ET PROCEDE PERMETTANT DE REGLER AUTOMATIQUEMENT UNE TELECOMMANDE UNIVERSELLE

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

(30) Priority: **20.05.2002 US 151635**

(43) Date of publication of application: **01.06.2005 Bulletin 2005/22**

(73) Proprietor: **UNIVERSAL ELECTRONICS, INC. Cypress, CA 90630-4841 (US)**

(72) Inventors:
• **HAYES, Patrick, H. Mission Viejo, CA 92691 (US)**
• **CONWAY, JR., James, N. Laguna Beach, CA 92651 (US)**

• **LILLENES, Robert, P. Cypress, California 90630-4841 (US)**
• **ARLING, Paul, D. Irvine, CA 92620 (US)**

(74) Representative: **Stephen, Robert John Olswang LLP 90 High Holborn London WC1V 6XX (GB)**

(56) References cited:
EP-A- 1 198 009 EP-A2- 0 780 990
WO-A-00/17738 WO-A 01/89150
WO-A-01/69567 US-A- 5 410 326
US-A- 5 646 608 US-A- 5 742 730
US-A- 6 104 334

EP 1 535 121 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

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A legal right which grants the holder

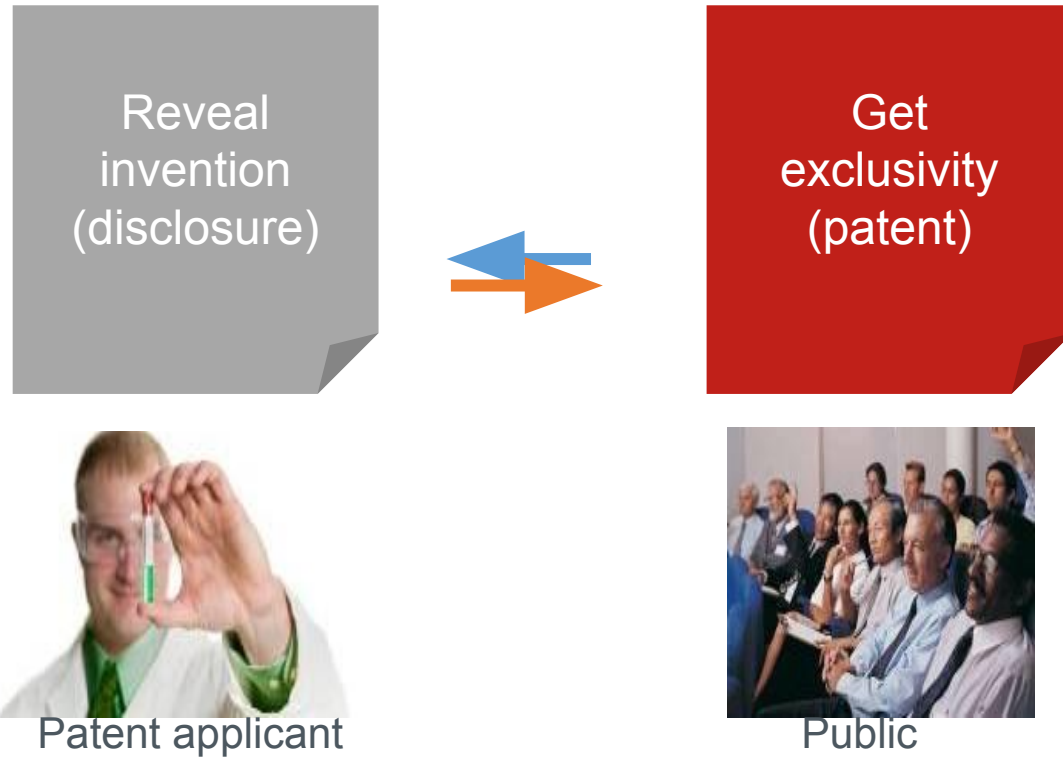
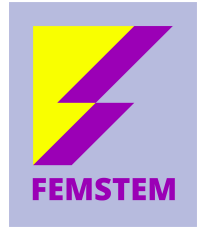
- the exclusive right to prevent others from making, using or offering for sale, selling or importing a product that infringes his/her patent without his authorisation
- in countries for which the patent was granted
- for a limited time (up to 20 years).

Patents are granted in nearly every country in the world!



Patents as a social contract

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In return for protection, the holder has to disclose the invention (patent) to the public.

In biotechnology, patents are crucial for safeguarding innovations such as genetically modified organisms, biopharmaceuticals, diagnostic tools, and bioengineering processes.

https://stock.adobe.com/images/Scientist-with-test-tube/12842275?as_content=tineye_match&clickref=1101IA5WzDN6&mv=affiliate&mv2=pz&as_camptype=domain&as_channel=affiliate&as_source=partnerize&as_campaign=tineye

<http://www.mediabakery.com/DVP0007140-Business-Executives-in-a-Conference-Room-Asking.html>



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For women entrepreneurs in biotechnology, patents are crucial for several reasons:

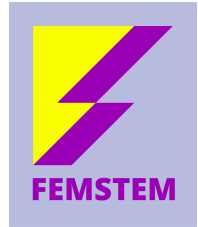


- 1. Securing Intellectual Property (IP):** Patents ensure that women entrepreneurs *can protect their innovations from being copied by competitors*. This is crucial in biotechnology, where the development of new products or processes involves significant time and financial investment.
- 2. Market Exclusivity and Competitive Advantage:** With a patent, a biotech *entrepreneur can maintain a competitive edge by having the sole right to exploit the invention commercially*. This can lead to exclusive market positions, especially important for niche or breakthrough innovations.
- 3. Attracting Investors and Funding:** Patents are valuable assets that can attract investment. Venture capitalists and other investors often view patents as a sign of credibility, increasing confidence in the potential profitability of the company. *Patents demonstrate that the entrepreneur has something unique and potentially lucrative*.
- 4. Monetization:** Patents can be licensed or sold, providing a potential revenue stream. This is especially beneficial in biotechnology, where scaling production or commercialization can be costly. *Women entrepreneurs can partner with larger companies through licensing deals*, enabling them to benefit from their inventions without shouldering all the operational risks.
- 5. Fostering Innovation and Reputation:** Holding *patents can enhance the reputation of women entrepreneurs as innovators and leaders in the biotech field*. This recognition can open doors to collaboration, awards, and further business opportunities.



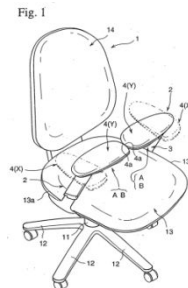
What exactly can be patented?

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Patents protect inventions which solve technical problems:

- chemical substances, pharmaceuticals
- processes, methods, uses
- products, devices, systems



For an invention to be patented, it must usually be

- ✓ new to the world (i.e. not available to the public anywhere in the world)
- ✓ inventive (i.e. not an "obvious" solution), and
- ✓ susceptible of **industrial application**

In most countries, *patents are not granted for business methods or rules of games as such, or for methods of treatment, diagnostics and surgery on the human or animal body.*



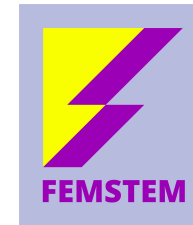
Challenges in Biotechnology Patenting



- **Complexity:** Biotech patents often involve complex biological processes, genetic material, or organisms, which can be more challenging to describe in patent applications. Ensuring that your patent covers all potential uses of your invention can be difficult but crucial.
- **Ethical and Legal Considerations:** There may be regulatory and ethical considerations, especially for patents involving genetic manipulation, human tissue, or environmental impact.
- **Cost:** Patenting can be expensive, particularly if you seek protection in multiple countries. It is important to factor in the costs of patent filing, legal fees, and maintenance fees.



What do patent documents look like?



Date of publication

Date of filing

Applicant

Abstract

(19) **Europäisches Patentamt**
European Patent Office
Office européen des brevets

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication: 06.04.2005 Bulletin 2005/14 (51) Int. Cl. 7: A47G 19/22, C02F 1/00

(21) Application number: 04256130.8

(22) Date of filing: 04.10.2004

(64) Designated Contracting States: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR	(72) Inventor: Scott, Michael James Isle of Man IMS 5PH (GB)
Designated Extension States: AL HR LT LV MK	(74) Representative: Samuels, Adrian James Frank B. Dehn & Co., 179 Queen Victoria Street London EC4V 4EL (GB)

(30) Priority: 03.10.2003 GB 0323237
27.02.2004 GB 0404293

(71) Applicant: **STRIX LIMITED**
Ronaldsway, Isle of Man IM5 2RG (GB)

Designated Contracting States: DE FR IT

(11) EP 1 520 497 A2

Water Storage Apparatus

(57) A water treatment and storage vessel has a reservoir 50 for untreated water and filter means 51 in fluid communication with the reservoir 50. A main vessel portion 2 is provided for receiving and storing treated water which comprises a Peltier-effect device 25 for removing heat from treated water therein, thereby cooling the water.

Application number

Technical class

Inventor

Description

EP 1 520 497 A2

Readers of the Patent Office are provided under the laws and practice to receive the full text of the application as filed.

[0001] The present invention relates to the filtering and storage of treated water in a storage vessel.

[0002] Although various water filters are available, they do not address the problem of water storage and distribution. Conventional storage vessels are designed to store water in a tank or container. This means that the water is not treated and is not stored in a manner that is suitable for drinking.

[0003] The present invention provides a water storage apparatus which includes a reservoir for untreated water, a filter means in fluid communication with the reservoir, and a main vessel portion for receiving and storing treated water. The apparatus also includes a Peltier-effect device for cooling the treated water.

[0004] The apparatus includes a reservoir (50) for untreated water, a filter means (51) in fluid communication with the reservoir, and a main vessel portion (2) for receiving and storing treated water. The apparatus also includes a Peltier-effect device (25) for cooling the treated water.

[0005] The apparatus includes a reservoir (50) for untreated water, a filter means (51) in fluid communication with the reservoir, and a main vessel portion (2) for receiving and storing treated water. The apparatus also includes a Peltier-effect device (25) for cooling the treated water.

[0006] The apparatus includes a reservoir (50) for untreated water, a filter means (51) in fluid communication with the reservoir, and a main vessel portion (2) for receiving and storing treated water. The apparatus also includes a Peltier-effect device (25) for cooling the treated water.

[0007] The apparatus includes a reservoir (50) for untreated water, a filter means (51) in fluid communication with the reservoir, and a main vessel portion (2) for receiving and storing treated water. The apparatus also includes a Peltier-effect device (25) for cooling the treated water.

Description

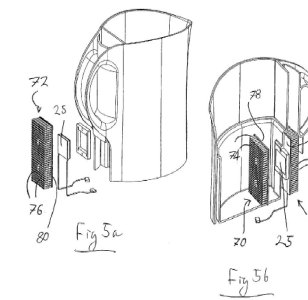
Claims

1. A portable water treatment and storage vessel comprising:

- a reservoir for untreated water;
- filter means in fluid communication with said reservoir; and
- a main vessel portion for receiving and storing treated water;

wherein said main vessel portion comprises electro-thermal cooling means for removing heat from the treated water therein, thereby cooling the water.

Claim(s)



Drawing(s)

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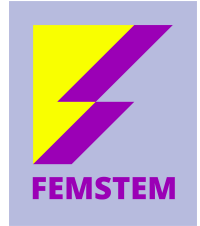
<http://www.prirodnileciva.cz/imgGaler/patent-europe.jpg>



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Steps for Patenting

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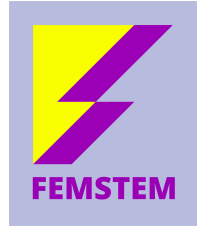


- **Research Existing Patents.** Before filing a patent, it's important to conduct a thorough patent search to ensure your invention is novel. Patent databases like the U.S. Patent and Trademark Office (USPTO) or European Patent Office (EPO) provide searchable records.
- **Filing a Patent:** Depending on the jurisdiction, you can file for patents through agencies like the USPTO, EPO, or World Intellectual Property Organization (WIPO) if international protection is needed. Working with a patent attorney, especially in the specialized field of biotechnology, is highly recommended.
- **Consider Global Protection:** Biotech innovations often have global implications. You may want to file patents in multiple jurisdictions depending on where you plan to commercialize or protect your invention.



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Searching for patents is easy



Free worldwide patent information at:



www.espacenet.com



www.uspto.gov



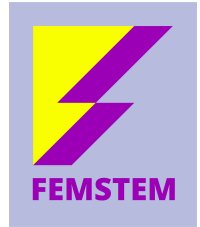
www.wipo.int

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Advice for Women Entrepreneurs in Biotechnology



- **Seek Mentorship and Support**

Navigating the patenting process can be complex, especially in the highly regulated field of biotechnology. Women scientists should seek mentorship from experienced patent attorneys, entrepreneurs, or organizations that support women in STEM.

- **Networking and Resources**

There are programs and grants available for women entrepreneurs in STEM, such as the National Science Foundation's (NSF) Small Business Innovation Research (SBIR) program, which supports women-led tech ventures.



<https://news.fullerton.edu/spotlight/empowering-women-for-careers-in-biotechnology/>

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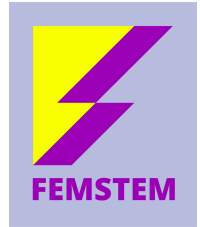
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Exercises (1)



<https://www.slideshare.net/slideshow/copy-of-pcr/15162187>

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Patent Search Exercise

Look for patents associated **Polymerase Chain Reaction**, using these three tools:

[Google Patents](#)

[USPTO](#)

[Espacenet](#)

Be prepared to report back about the following:

1. What results did you get from each tool? Was the document count different in each?
2. What easy did you find each tool to use? What was frustrating?
3. Which database would you choose to search if given a similar question?



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Exercises (2)

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Case Study Analysis: Successful Women Biotech Entrepreneurs

Instructions:

Look for patents associated [Emmanuelle Marie Charpentier](#), using these tools:

[Google Patents](#)

Be prepared to report back about the following:

1. What results did you get from each tool?
2. How entrepreneur Emmanuelle Marie Charpentier leveraged patents to secure market exclusivity, partnerships, or funding?
3. How the entrepreneurs' patent strategies contributed to their success?



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Exercises (3)

Google patent search on *Multi-channel pipette* invention

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Instructions:

Using search tool <https://patents.google.com/> fill in the following spaces with a few inventions that are similar to *Multi-channel pipette* invention. For example, there are many different mechanical pencils in the market. Your goal is to find similar but different inventions.

Write brief description of the invention:

Keywords used for search: _____

Patent Number	A screenshot or sketch of relevant artwork	A written description of the findings	Additional remarks
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