

Protect your ideas

An introduction to patents for students of
natural sciences, engineering, medicine
and business administration



Learning goals

- Understand what intellectual property is about
- Balance the pros and cons of applying for a patent
 - Understand what a patent is
 - Know how to obtain a patent and how much it costs
 - Understand how patents can be used
 - Be aware of the alternatives to patenting
- Use patent information to gain valuable knowledge

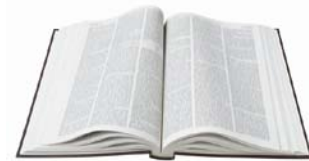
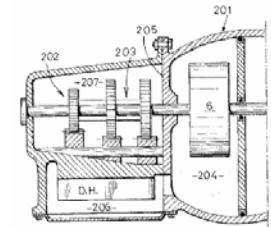
Overview of intellectual property

Legal right

What for?

How?

Patents	New inventions	Application and examination
Copyright	Original creative or artistic forms	Exists automatically
Trade marks	Distinctive identification of products or services	Use and/or registration
Registered designs	External appearance	Registration*
Trade secrets	Valuable information not known to the public	Reasonable efforts to keep secret



Some IP found in a mobile phone

Trade marks:

- Made by "Nokia"
- Product "N95"
- Software "Symbian", "Java"

Patents:

- Data-processing methods
- Semiconductor circuits
- Chemical compounds
- ...

Copyrights:

- Software code
- Instruction manual
- Ringtone
- ...



© Nokia

Trade secrets:

?

Designs (some of them registered):

- Form of overall phone
- Arrangement of buttons in oval shape
- Three-dimensional wave form of buttons
- ...

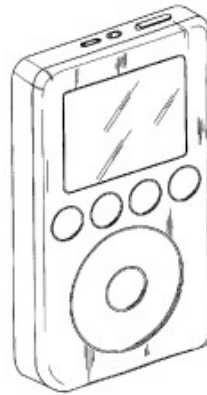
Importance of intellectual property

- **Essential business asset** in the knowledge economy
 - Swedish steel-maker Sandvik: 20% of its value is from IP!
- Increases **funding for innovative projects**
 - Without IP many innovative projects would not be profitable because anyone who wanted could simply copy the results
- Protects **small innovative firms**
 - Dolby[®] Laboratories
 - W. L. Gore & Associates (Gore-Tex[®])
- Needed to release IP into the **public domain** under **controlled conditions**:
 - Linux (GPL): improvements must be free too!

Examples of valuable intellectual property



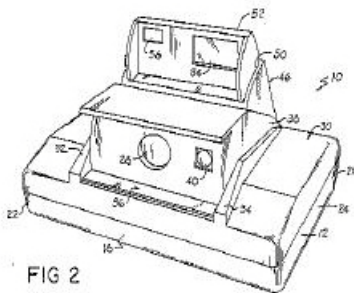
Coca-Cola®



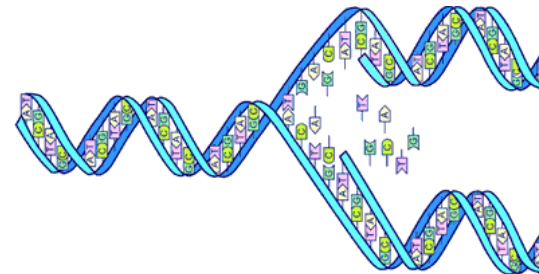
Apple® iPod®



Harry Potter

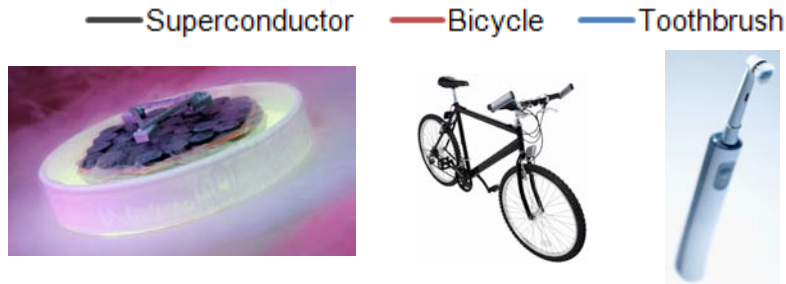
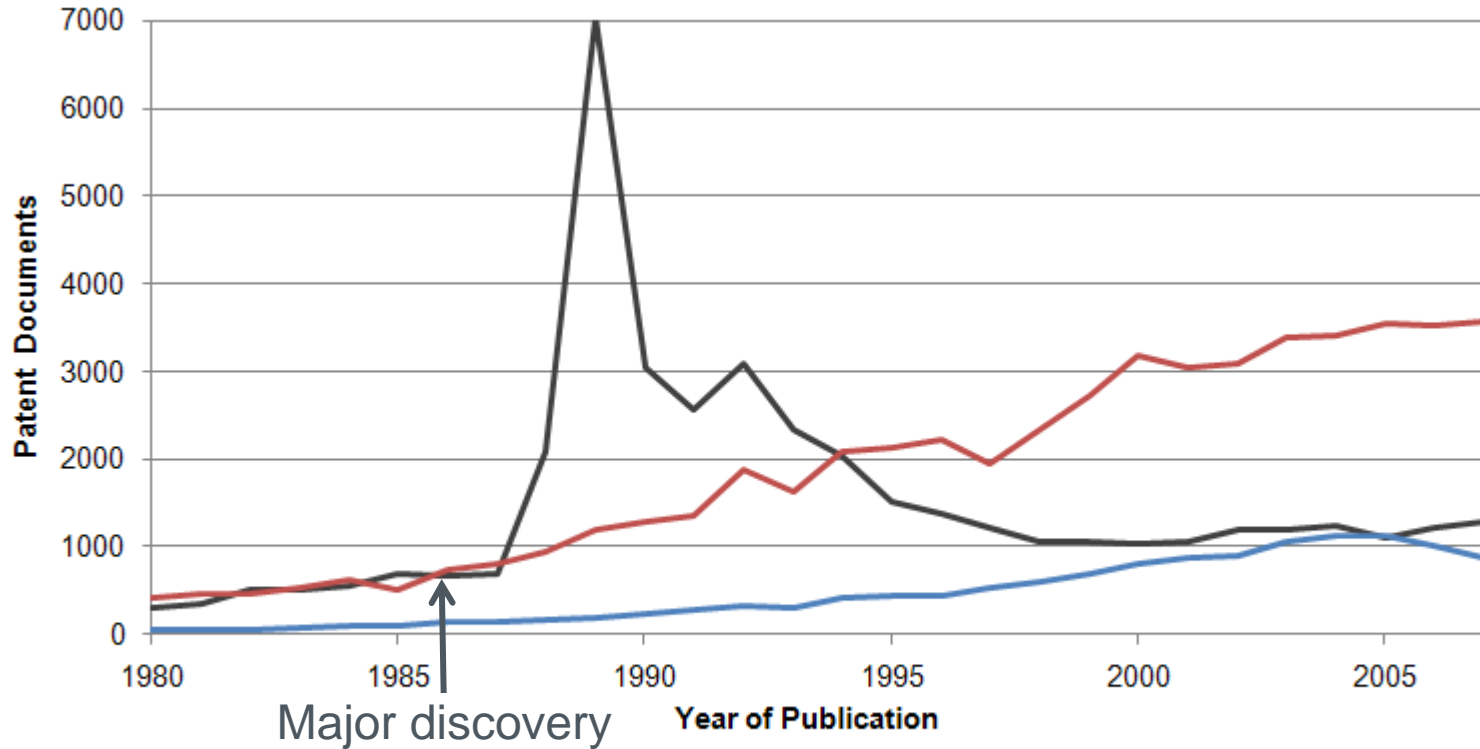


Instant camera



DNA copying process

Patents are all around us



The first account of a "patent system"

In the ancient Greek city of Sybaris (destroyed in 510 BC),
leaders decreed:

*"If a cook invents **a delicious new dish**, no other cook is to be permitted to prepare that dish for one year.*

*During this time, only the inventor shall reap the commercial profits from his dish. This will **motivate others** to work hard and compete in such inventions."*

The patent system

Senate of Venice, 1474:

*"Any person in this city who makes any new and ingenious contrivance, **not made heretofore in our dominion**, shall, as soon as it is perfected so that it can be used and exercised, give notice of the same to our State Judicial Office, it being **forbidden up to 10 years** for any other person in any territory of ours to make a contrivance in the form and resemblance thereof".*

Today:

New to the world (Europe); up to 20 years of protection

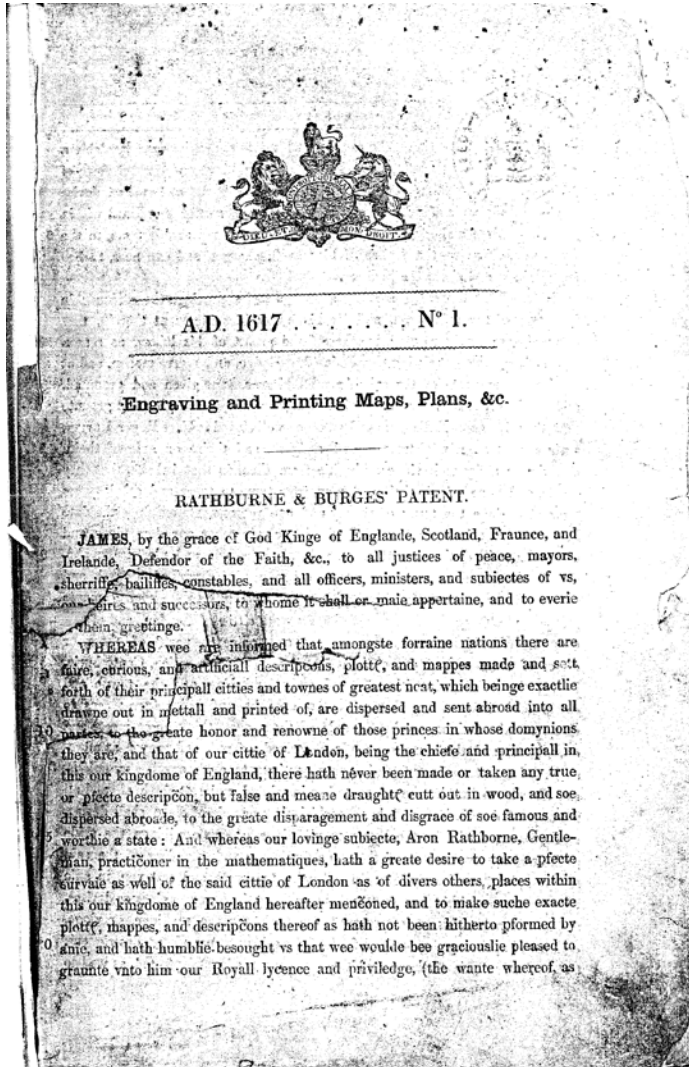
Incentive to **innovate**

(grant protection)

Incentive to **share knowledge**

(publish the invention's details)

An early English patent issued in 1617



GB patent No. 1769-913: Watt's improved steam engine



A.D. 1769 N° 913.

Steam Engines, &c.

SPECIFICATION.

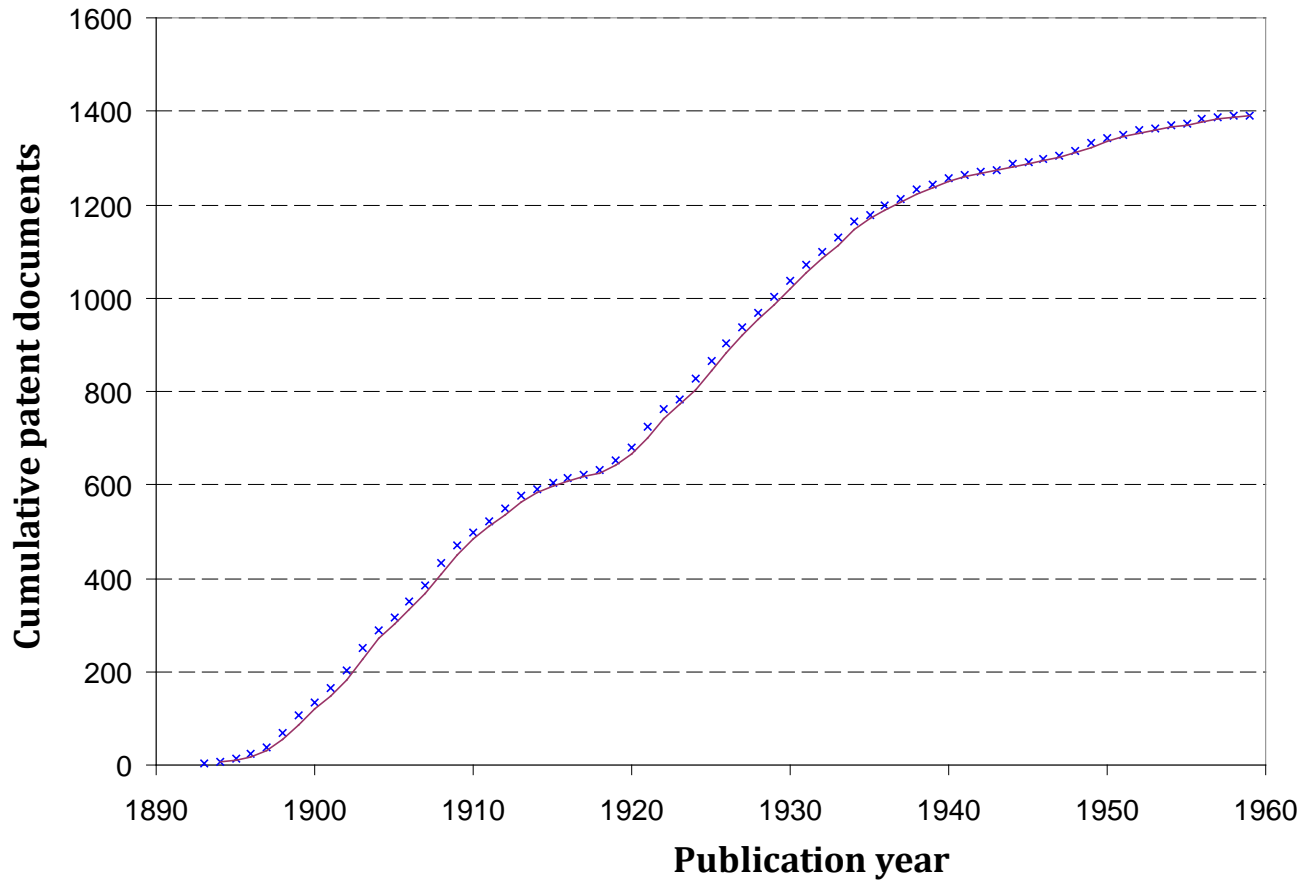
WATT'S

WE PRESENTS SHALL COME, I, JAMES
Merchant, send greeting.
ent Majesty King George the Third, by His
Seal of Great Britain, bearing date the Fifth
ar of His said Majesty's reign, did give and
s Watt, His special licence, full power, sole
, the said James Watt, my exors, adfiors,
y might, during the term of years therein
end, throughout that part of His Majesty's
England, the Dominion of Wales, and Town
so in His Majesty's Colonies and Plantations
OD OF LESSENING THE CONSUMPTION OF STEAM AND
said recited Letters Patent is contained a pro-
Watt, by writing under my hand and seal, to
the nature of the said Invention to be inrolled
Chancery within four calendar months after
etters Patent, as in and by the said Letters

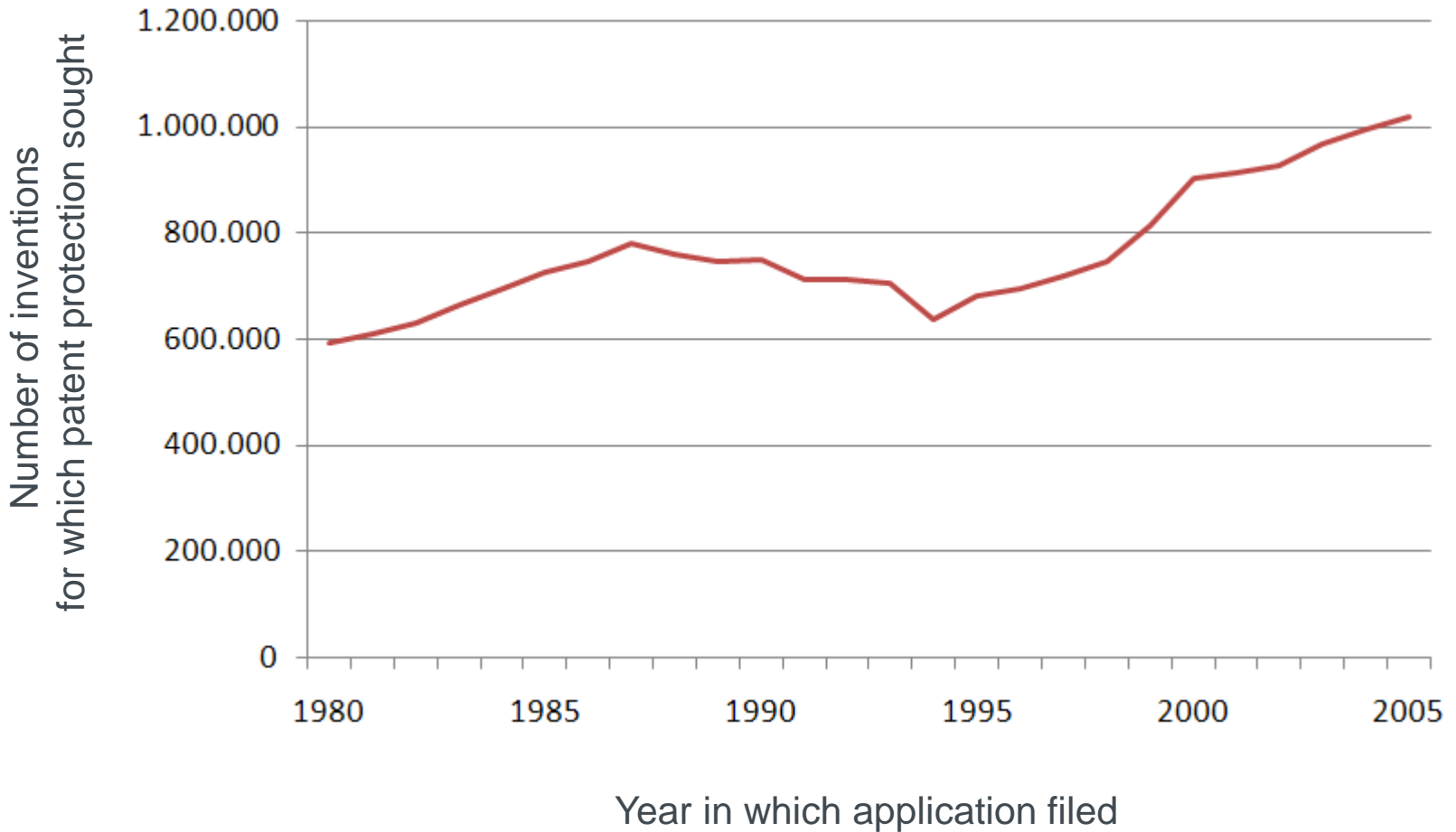
TO ALL TO WHOM THESE
WATT, of Glasgow, in Scotland,
WHEREAS His most Excell
Letters Patent under the Great
5 day of January, in the ninth ye
grant unto me, the said James
priviledge and authority, that I
and assigns, should and lawfull
expressed, use, exercise, and v
10 Kingdom of Great Britain called
of Berwick upon Tweed, and all
abroad, my "NEW INVENTED METER
FUEL IN FIRE ENGINES;" in which
viso obliging me, the said James
15 cause a particular description of
in His Majesties High Court of
the date of the said recited L

The development of steam engine patents

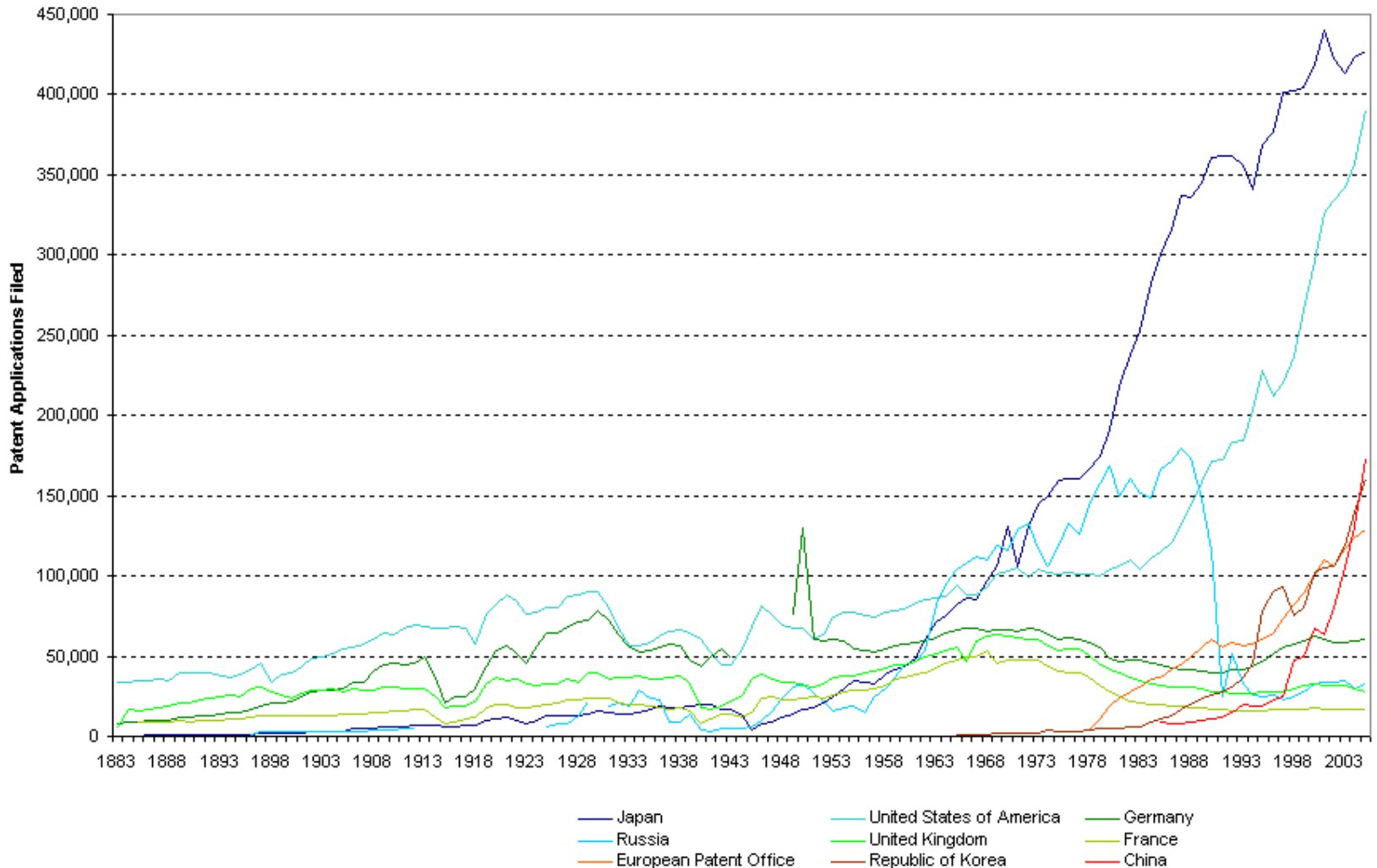
Cumulative patent publications of steam engines



Number of patent applications per year worldwide



Filing rates at selected patent offices



Source: WIPO Statistics Database

The "social contract" implicit in the patent system

**Reveal
invention**



**Get
exclusivity**



... so that others can learn from it
and improve upon it!

Rights conferred by the patent


- **Prevent others** from making, using, offering for sale, selling or importing infringing products **in the country where the patent was granted**
- **Sell these rights** or conclude licensing contracts
- For up to **20 years** from the date of filing of the patent application

The patent does **not** grant the **right to use** the invention!

*A patent search
is indispensable!!!*

What does a patent look like?

- Bibliographic information
 - Inventor, proprietor, date of filing, technology class, etc.
- Abstract
 - Around 150 words as a search aid for other patent applications
- Description
 - Summary of prior art (i.e. the technology known to exist)
 - The problem that the invention is supposed to solve
 - An explanation and at least one way of carrying out the invention
- **Claims**
 - Define the extent of patent protection
- Drawings
 - Illustrate the claims and description


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



①¹ Publication number: **0 201 184 B1**

①² **EUROPEAN PATENT SPECIFICATION**

④⁵ Date of publication of patent specification: **16.12.92** ⑤¹ Int. Cl.⁵: **C12P 19/34, C12N 15/10,**
//C12Q1/68,C07H21/00

②¹ Application number: **86302299.2**

②² Date of filing: **27.03.86**

Divisional application 92201226.5 filed on
27/03/86.

⑤⁴ **Process for amplifying nucleic acid sequences.**

③⁰ Priority: **28.03.85 US 716975**
25.10.85 US 791308

④³ Date of publication of application:
17.12.86 Bulletin 86/46

④⁵ Publication of the grant of the patent:
16.12.92 Bulletin 92/51

⑦³ Proprietor: **F. HOFFMANN-LA ROCHE AG**
Postfach 3255
CH-4002 Basel(CH)

⑦² Inventor: **Mullis, Kary Banks**
447 Beloit Avenue
Kensington California 94708(US)

Structure of the description

- Prior art
 - *Teapot with one spout*
- Drawback of prior art
 - *Time-consuming*
- Problem to solve
 - *Reduce filling time*
- Solution
 - *Provide a second spout*
- Advantage of the invention
 - *The time needed to fill multiple cups is reduced*



Fig. 1.

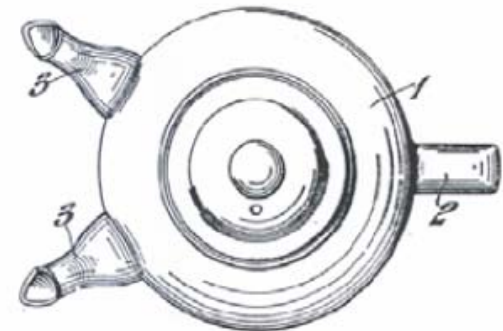


Fig. 2.

What can be patented at the European Patent Office?

Inventions that are...

- **new** to the world (no previous public notice)
- **inventive** (i.e. not an "obvious" solution)
- susceptible of industrial application

NOT:

- Mere **ideas** not reduced to practice
- **Software** as such
- (but algorithms that achieve technical results)
- **Business methods**
- Medical therapies, plant varieties, **etc.**
- ...

See Articles 52 and 53 EPC in

<http://www.epo.org/patents/law/legal-texts/epc.html>

What not to do when considering filing a patent application



- **No publication** prior to filing
e.g. no article, press release, conference presentation/poster/proceedings or blog entry



- **No sale** of products incorporating the invention prior to filing



- **No lecture or presentation** prior to filing
except under a **non-disclosure agreement (NDA)**

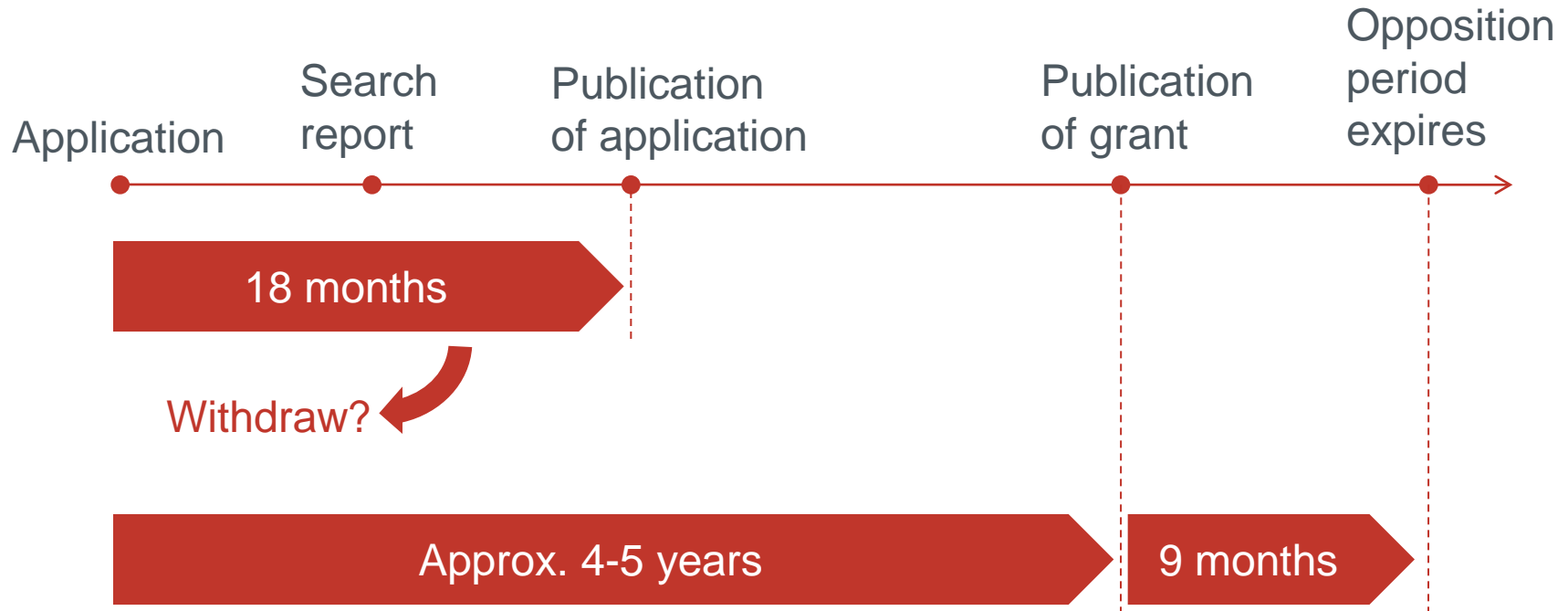


- **Seek professional advice** soon!
- **File before others do!**

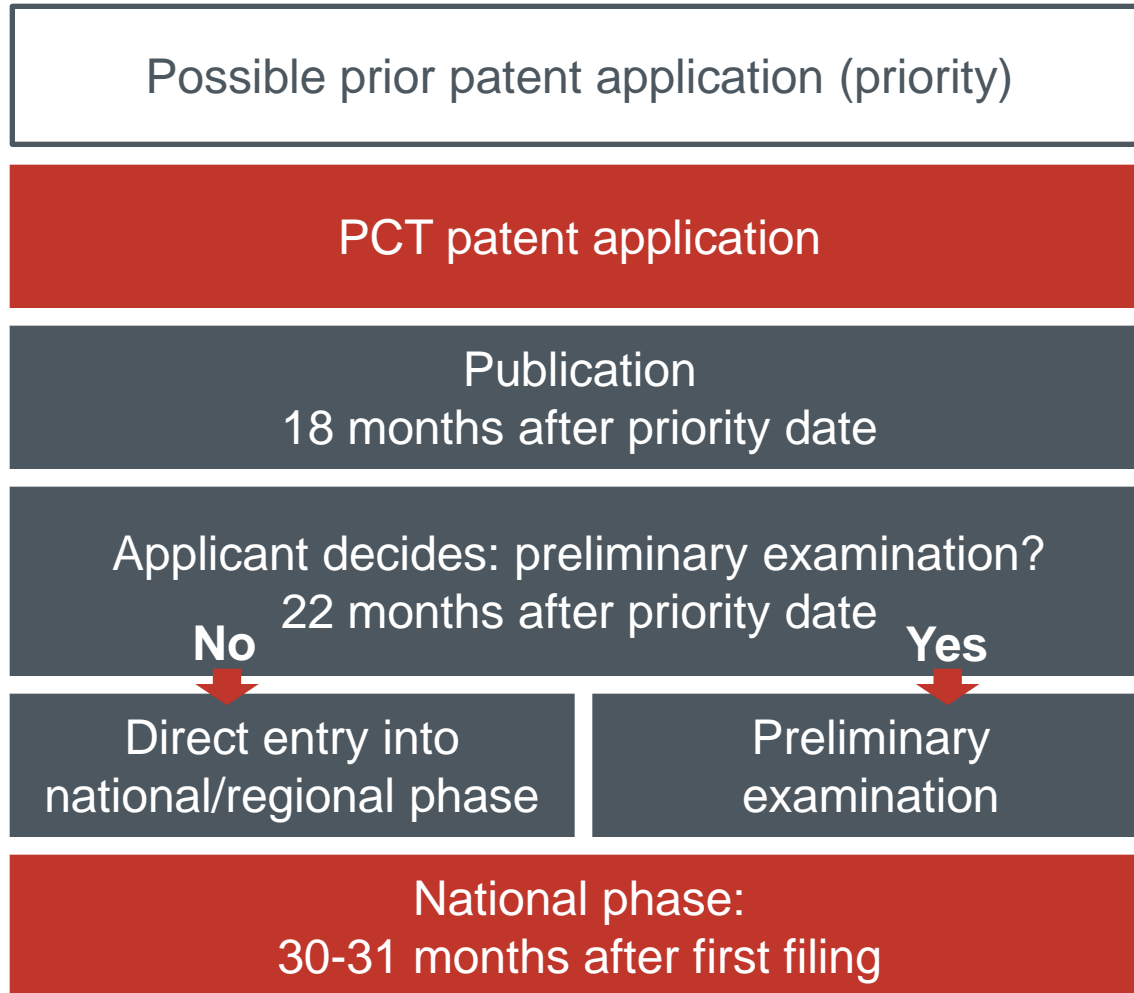
Where to apply for a patent

- **National patent offices**
 - National patent **valid only in the country where it is granted**
 - Non-residents can also apply for a patent
 - One year of "priority" for subsequent applications
- **European Patent Office**
 - A European patent is **equivalent to national patents** in the countries where it is granted (the applicant chooses the countries)
- **Via the Patent Cooperation Treaty**
 - Just one application for up to 141 countries
 - After the initial application phase, the international application leads to multiple national patent examination procedures
 - **Decisions with cost implications can be delayed** until 30-31 months after filing (e.g. choice of countries to file in)
- **There is no such thing as an international patent!**

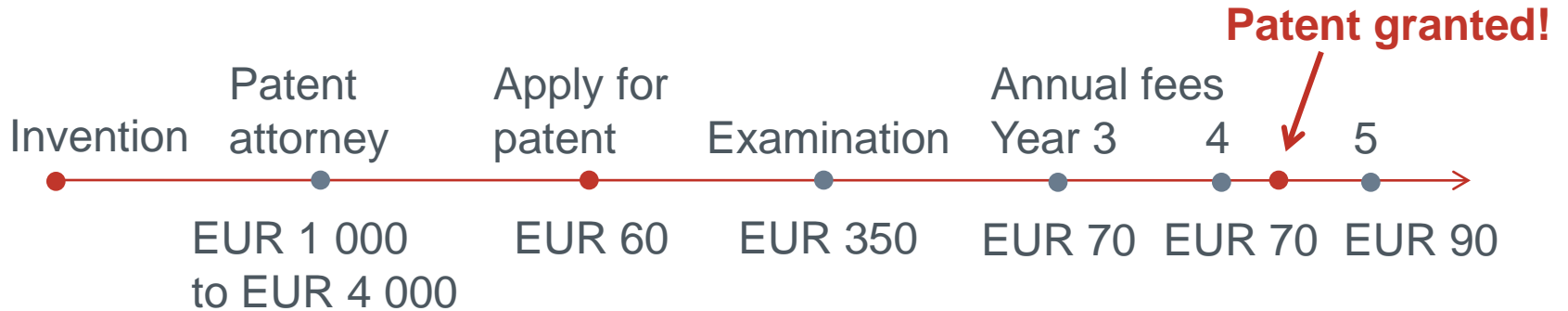
The patent procedure at the EPO



The PCT procedure



Cost of a national patent application: Germany



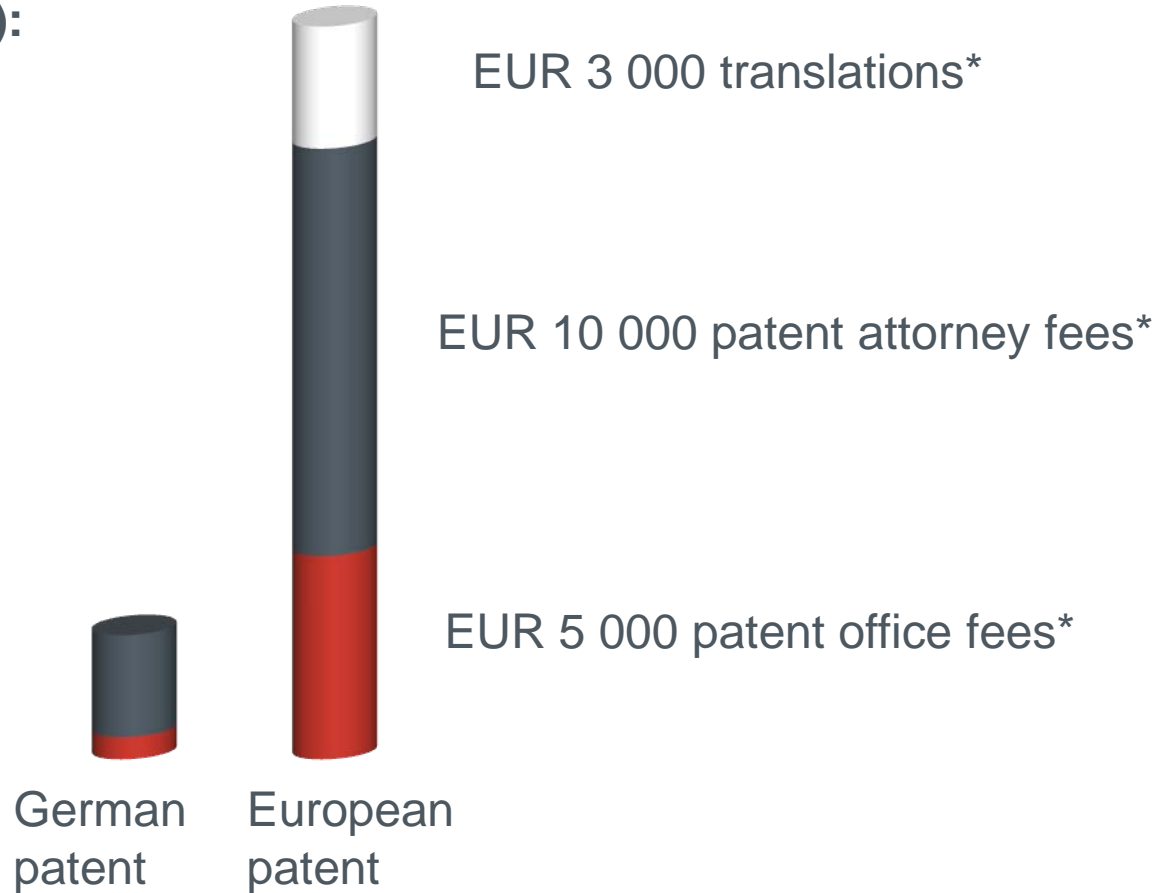
Total: EUR 1 700 - EUR 5 100

(depending on complexity of patent and extent of applicant's preparation!)

Cost of a European patent up to grant

Protection in (e.g.):

- Germany
- United Kingdom
- France
- Italy
- Spain
- Switzerland



* Estimated cost. Actual cost depends very much on the specifics of the individual case.

Advantages and disadvantages of patenting

Advantages

- Exclusivity enables investment and higher returns on investment
- Strong, enforceable legal right
- Makes invention tradable (licensing)

Disadvantages

- Reveals invention to competitors (after 18 months)
- Can be expensive
- Patent enforceable only after grant (this can take 4-5 years)

Alternatives to patenting

Information disclosure (publishing)

- Cheap
- Prevents others from patenting the same invention

- Does not offer exclusivity
- Reveals the invention to competitors

Secrecy (creating a trade secret)

- Cheap (but there is the cost of maintaining secrecy)
- Does not reveal the invention

- No protection against reverse-engineering/duplication of invention
- Difficult to enforce
- "Secrets" often leak quite fast

Do nothing

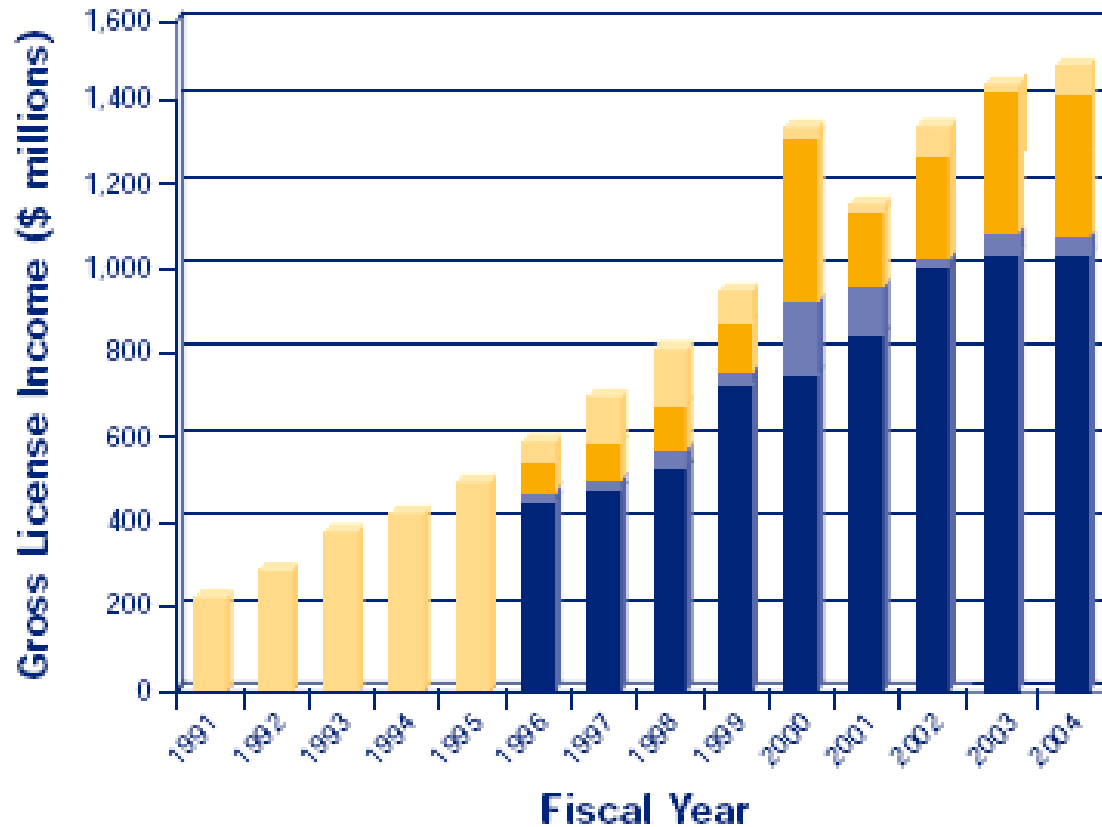
- No effort required

- Does not offer exclusivity
- Competitors will often learn details

How patents are used

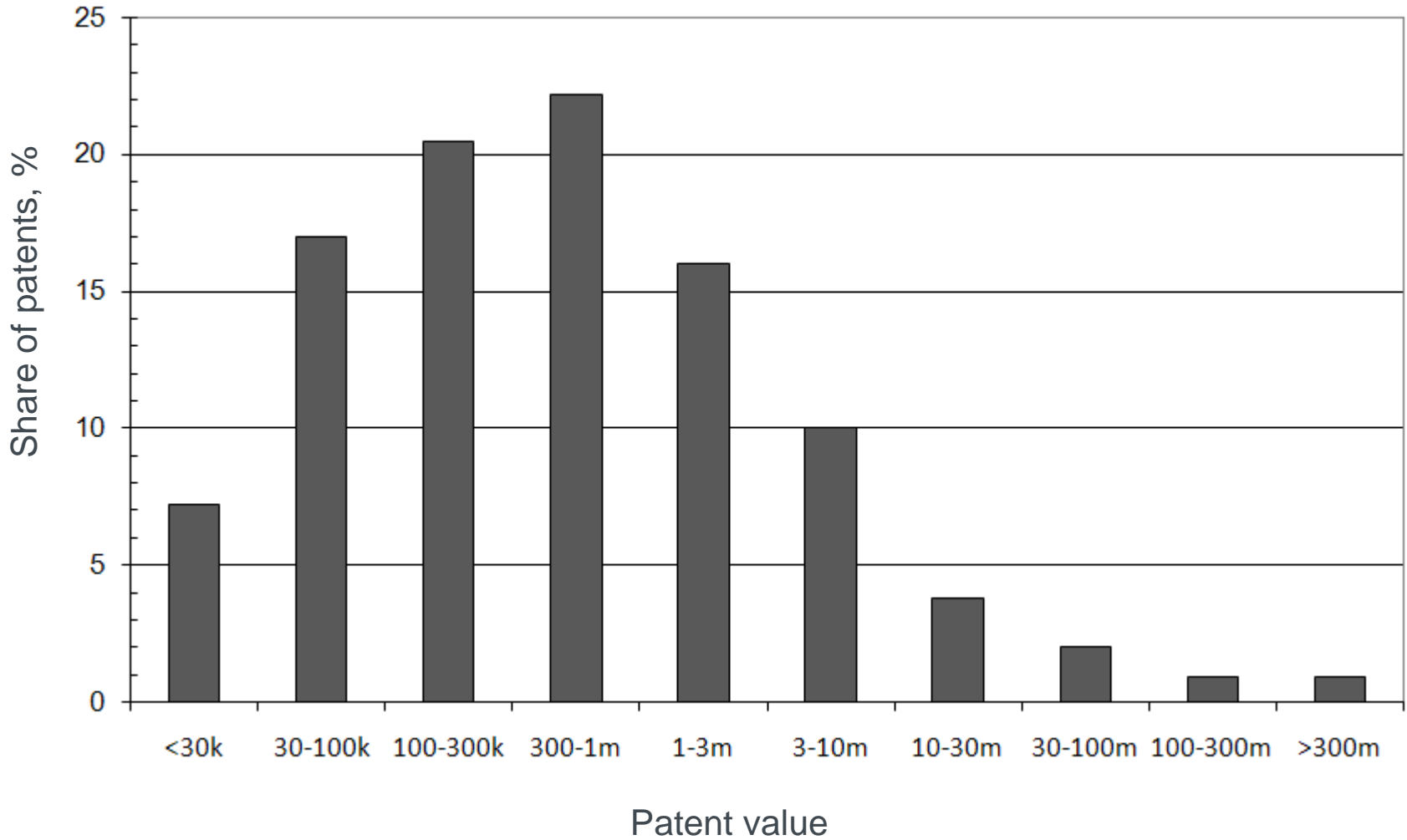
- **Protecting products and processes**
 - Increasing turnover and profits
 - Attracting investors
- Licensing
- Cross-licensing
- Blocking competitors
- Building reputation
- ...
- Not used

Licensing income of US universities

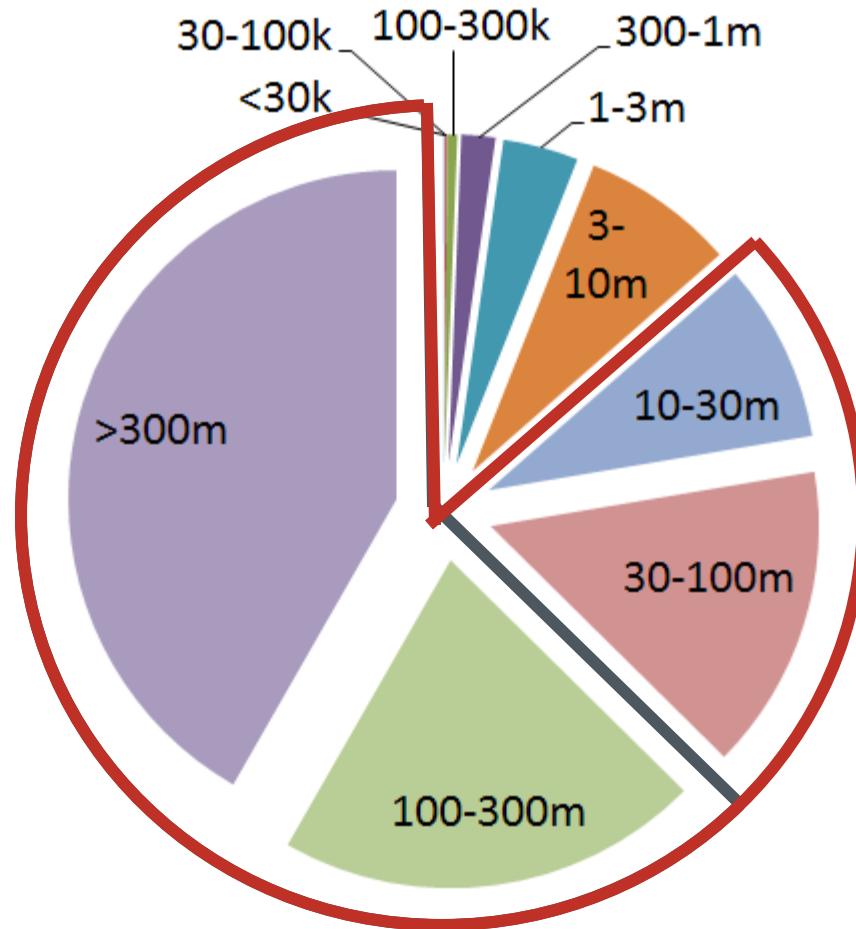


Source: AUTM US licensing survey 2004

The value of European patents



Share of patent value classes in total portfolio value



Just 3% of all patents!

Just 10% of all patents!

Patent management

- **Patent strategy**
 - Offensive/defensive
 - Internationalisation
 - Kind of exploitation: licensing or own use
- **Patent information**
 - Keep abreast of technology
 - Avoid infringing patents
 - Understand the competitive landscape
- **Communication**
 - Compile convincing evidence that your patents are valuable
 - Inform investors and banks, clients and prospective employees
- **Maintenance**
 - Pay renewal fees, observe deadlines
 - Strengthen important patents and get rid of ones with no value

25% of all R&D efforts ...

... are wasted each year on inventions that have already been invented.

Don't start your R&D until you have done a search!

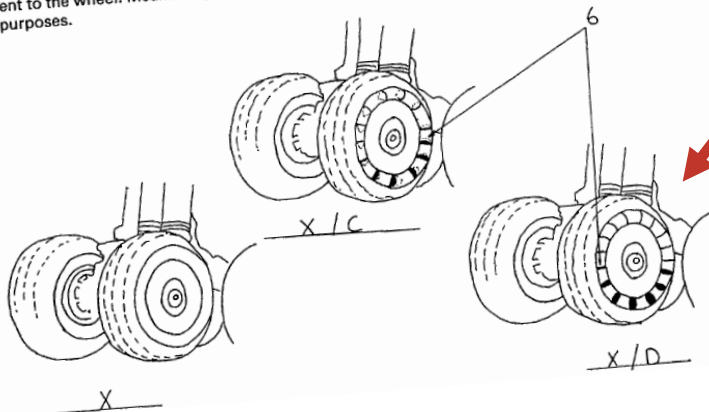
GB-A-2365393

(12) UK Patent Application (19) GB (11) 2 365 393 (13) A
(43) Date of A Publication 20.02.2002

(21) Application No 0019361.5	(51) INT CL ⁷ B64C 25/40
(22) Date of Filing 07.08.2000	(52) UK CL (Edition T) B7G G8H
(71) Applicant(s) Peter John Ginn 153 Waller Road, New Cross, LONDON, SE14 5LX, United Kingdom	(56) Documents Cited GB 2334925 A GB 2242401 A GB 2193932 A GB 2080217 A GB 1407358 A GB 0516738 A US 4040582 A US 3233849 A
(72) Inventor(s) Peter John Ginn	(58) Field of Search UK CL (Edition R) B7G INT CL ⁷ B64C 25/40
(74) Agent and/or Address for Service Peter John Ginn 153 Waller Road, New Cross, LONDON, SE14 5LX, United Kingdom	

(54) Abstract Title
Rotating aircraft wheels prior to landing

(57) An aircraft tyre or wheel is provided with pockets or ridges 6, which catch the airflow past the wheel and cause the wheel to rotate. The pockets/ridges may be formed in the tyre or an additional member for attachment to the wheel. Means may be provided for diverting air from a pocket into the wheel assembly for cooling purposes.

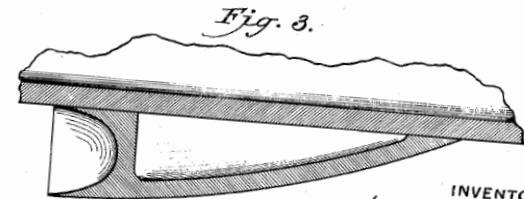
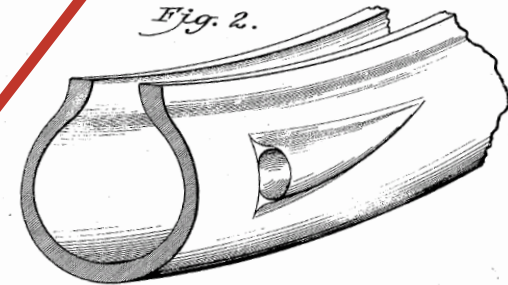
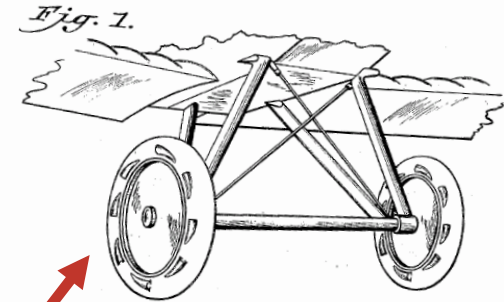


US-A-1833019

Nov. 24, 1931.

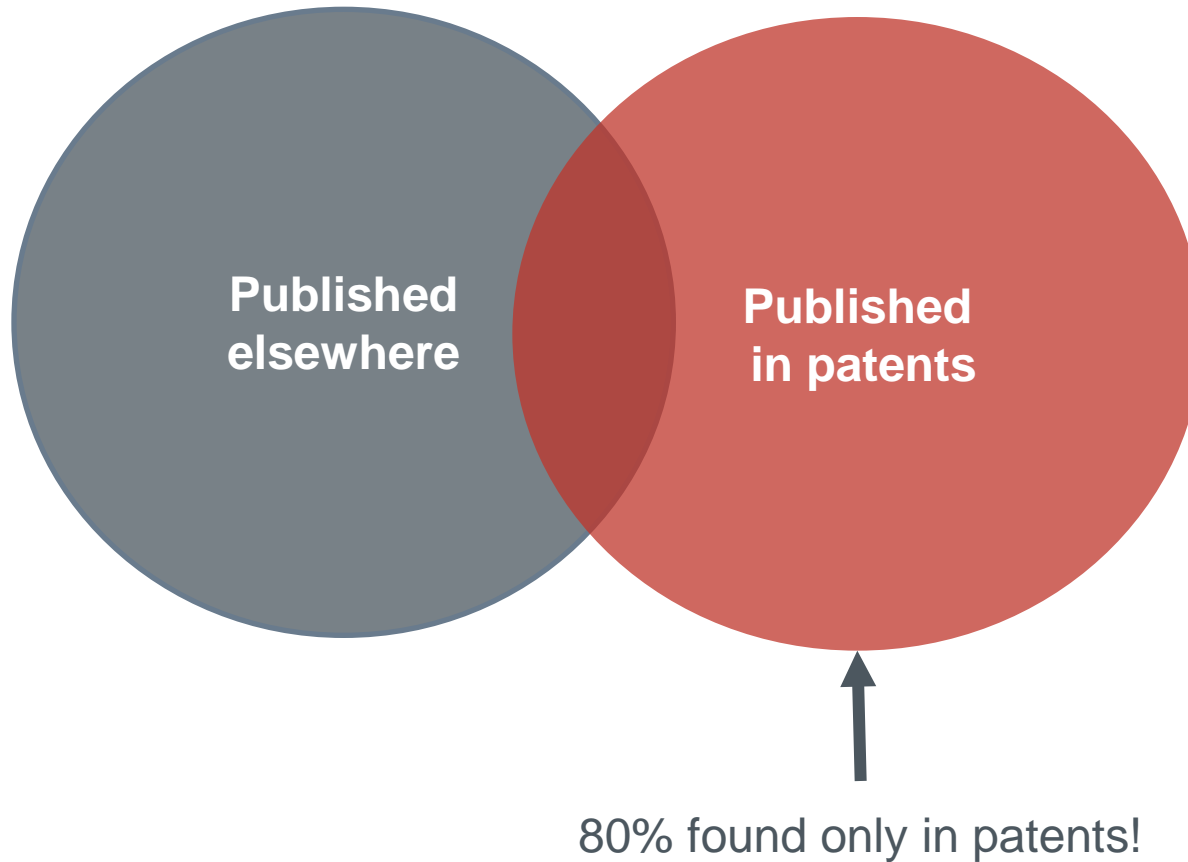
J. A. FAUCHER ET AL
AIRPLANE TIRE
Filed Nov. 1, 1929

1,833,019



INVENTORS
Joseph A. Faucher
Erle P. Halliburton
By
Walter P. Pipes
ATTORNEY

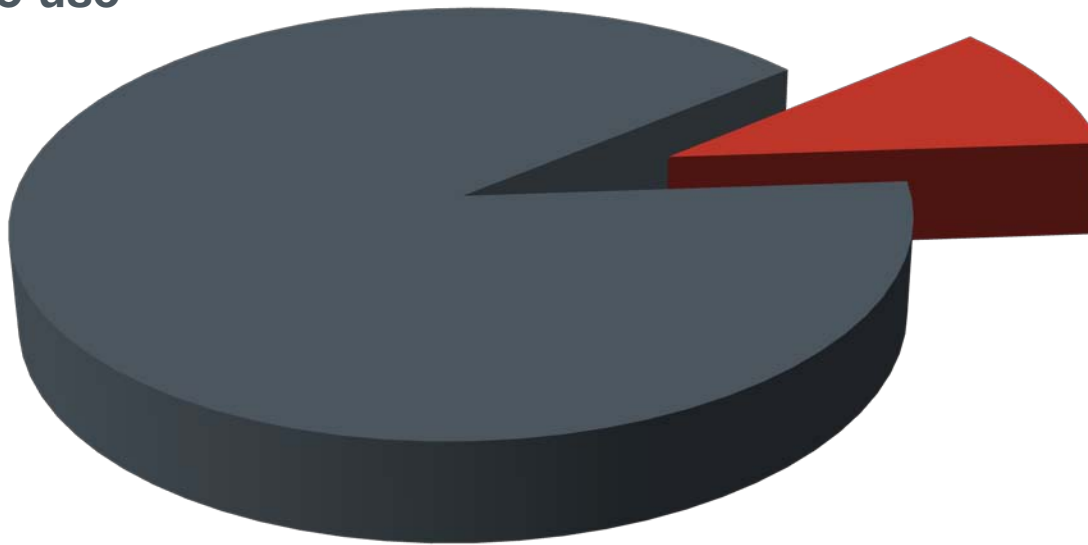
Much information only available in patents



Where do secretive competitors publish their R&D?

Solutions found in patent documents

90%
Free to use



10%
Protected

You can find many great solutions for free!

Searching for patents can be easy ...

The screenshot shows the esp@cenet Quick Search interface. The browser address bar displays http://ep.espacenet.com/quickSearch?locale=en_EP. The page header includes the European Patent Office logo and the esp@cenet logo. A navigation menu on the left lists options: Quick Search, Advanced Search, Number Search, Last result list, My patents list (with a count of 0), Classification Search, and Get assistance. A Quick Help section is also visible, providing guidance on database selection and search terms. The main content area is titled "Quick Search" and is divided into three sections: 1. Database, 2. Type of search, and 3. Search terms. In the "1. Database" section, a dropdown menu is set to "Worldwide". In the "2. Type of search" section, the radio button for "Words in the title or abstract" is selected. In the "3. Search terms" section, the search term "plastic and bicycle" is entered in the input field. Below the input field are "SEARCH" and "CLEAR" buttons.

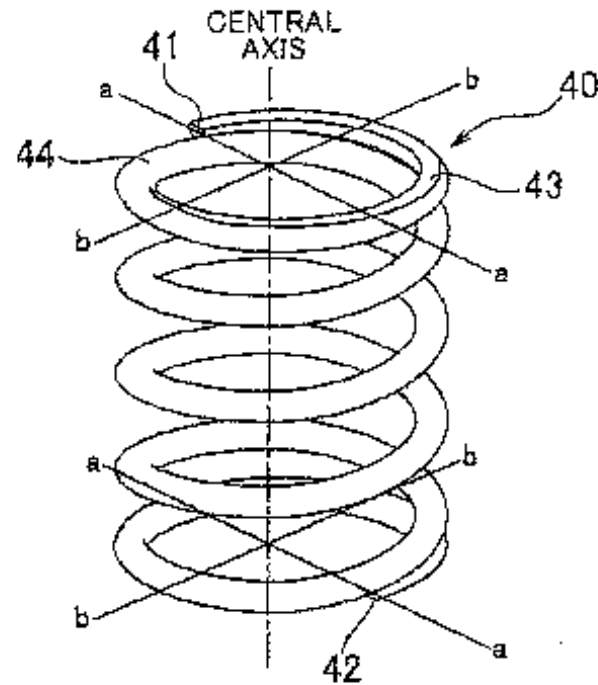
Free worldwide patent information is available at <http://ep.espacenet.com>

... but some basic knowledge is needed!

Beware of "naïve" keyword searches such as ...

~~Spring~~

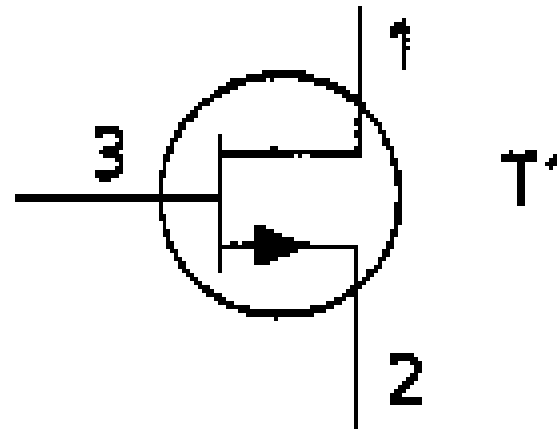
"Energy storing means"



This kind of "jargon" is often used to broaden the scope of the patent ...

~~Transistor~~

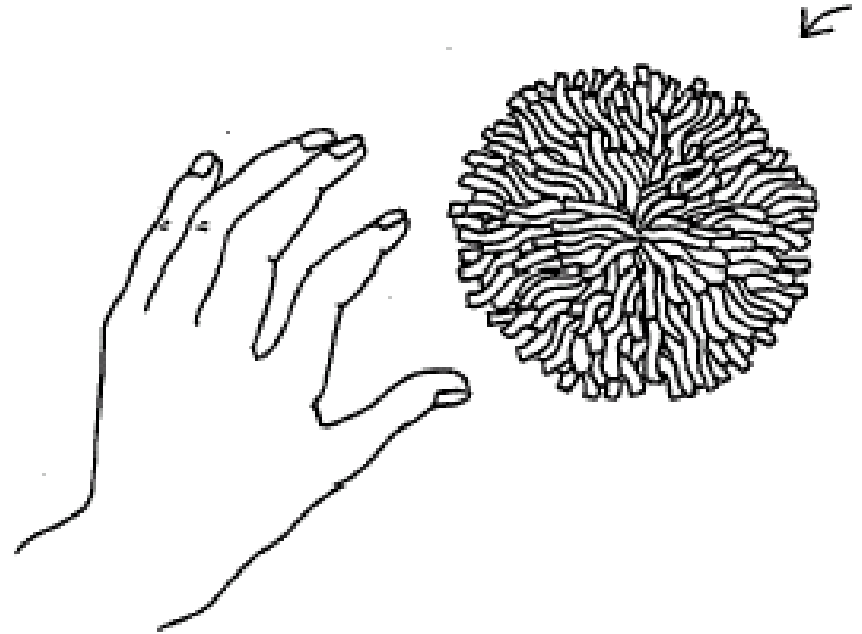
"Semiconductor switching device with a control electrode"



Sometimes, the applicant simply doesn't want his patent to be found ...

~~Toy ball~~

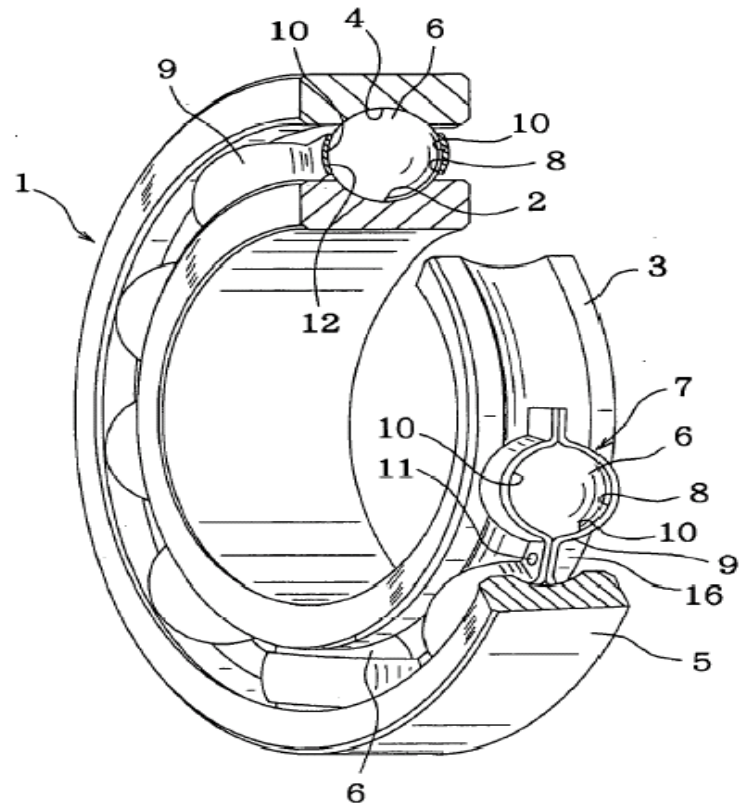
**"Spherical object with floppy
filaments"**



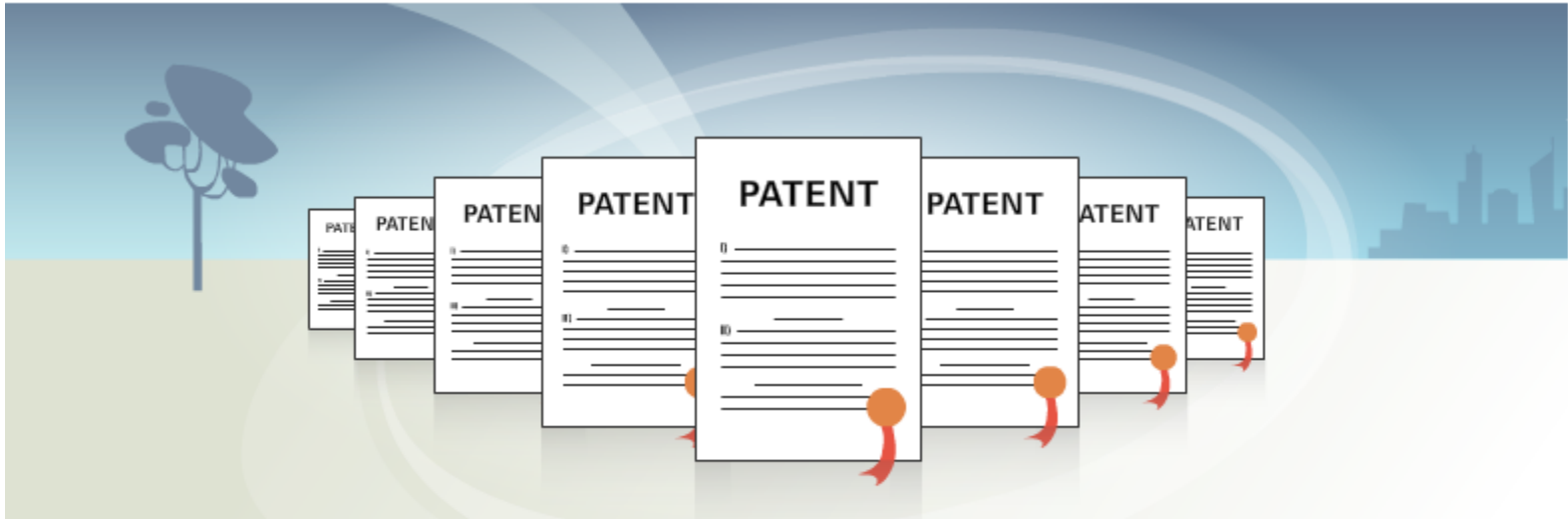
Sometimes, the applicant simply doesn't want his patent to be found ...

~~Ball bearing~~

"A plurality of balls"



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www.epo.org/wbt/pi-tour

www.epo.org/patents/learning/e-learning.html