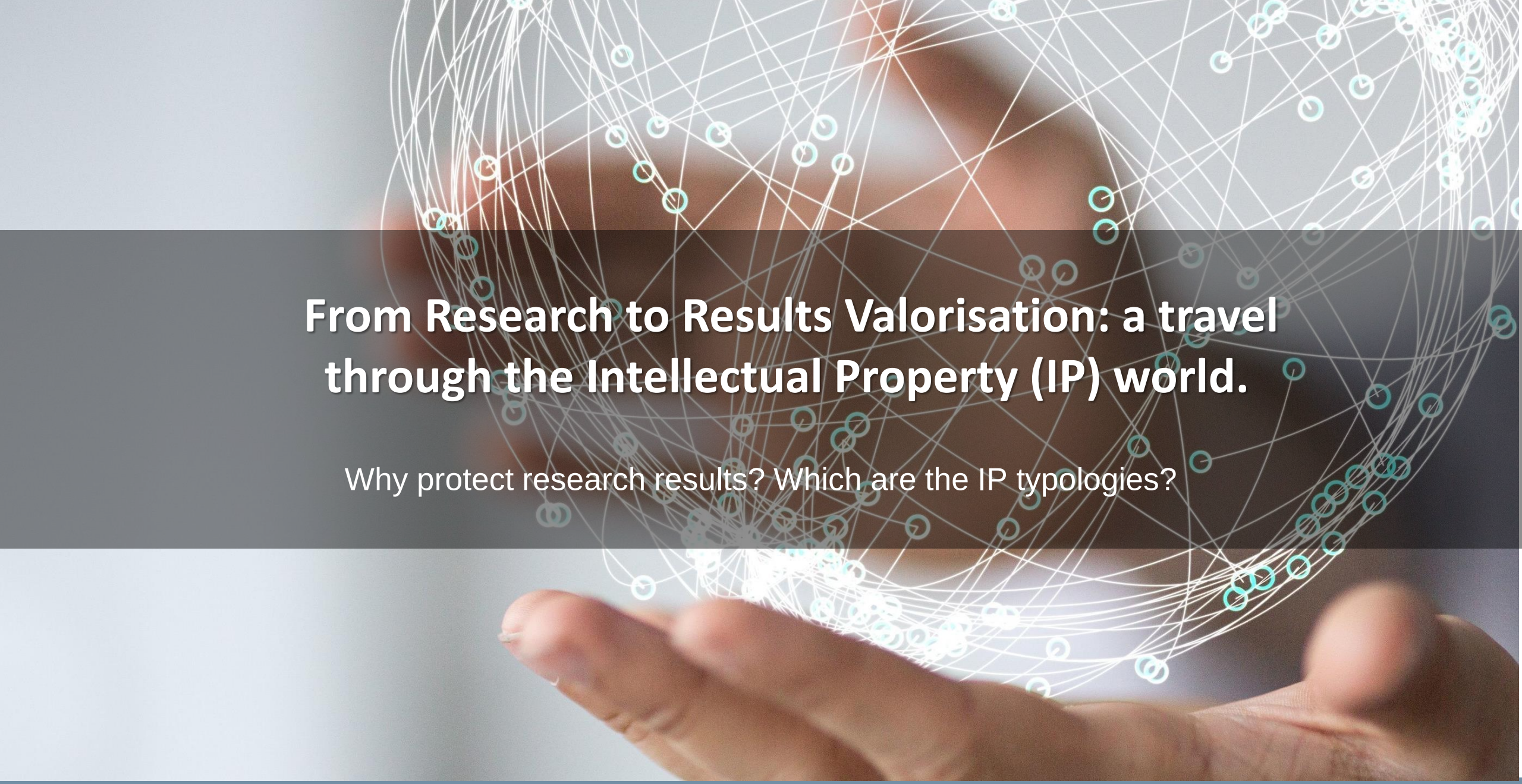
POLITECNICO
MILANO 1863

“IP”h.D.

Intellectual Property fundamentals for Ph.D. Students

Technology Transfer Office - Politecnico di Milano

June 19, 2018



From Research to Results Valorisation: a travel through the Intellectual Property (IP) world.

Why protect research results? Which are the IP typologies?

Paola Bagnoli

From the laboratory… to the industry… to the market!

From the laboratory… to the industry… to the market!

We need to fill a gap!

Introduction

Why me??!

… Am I special?
… Did I succeed?
… Did I make a lot of money?

But I have a story… let's learn from experience!

Let me introduce myself…

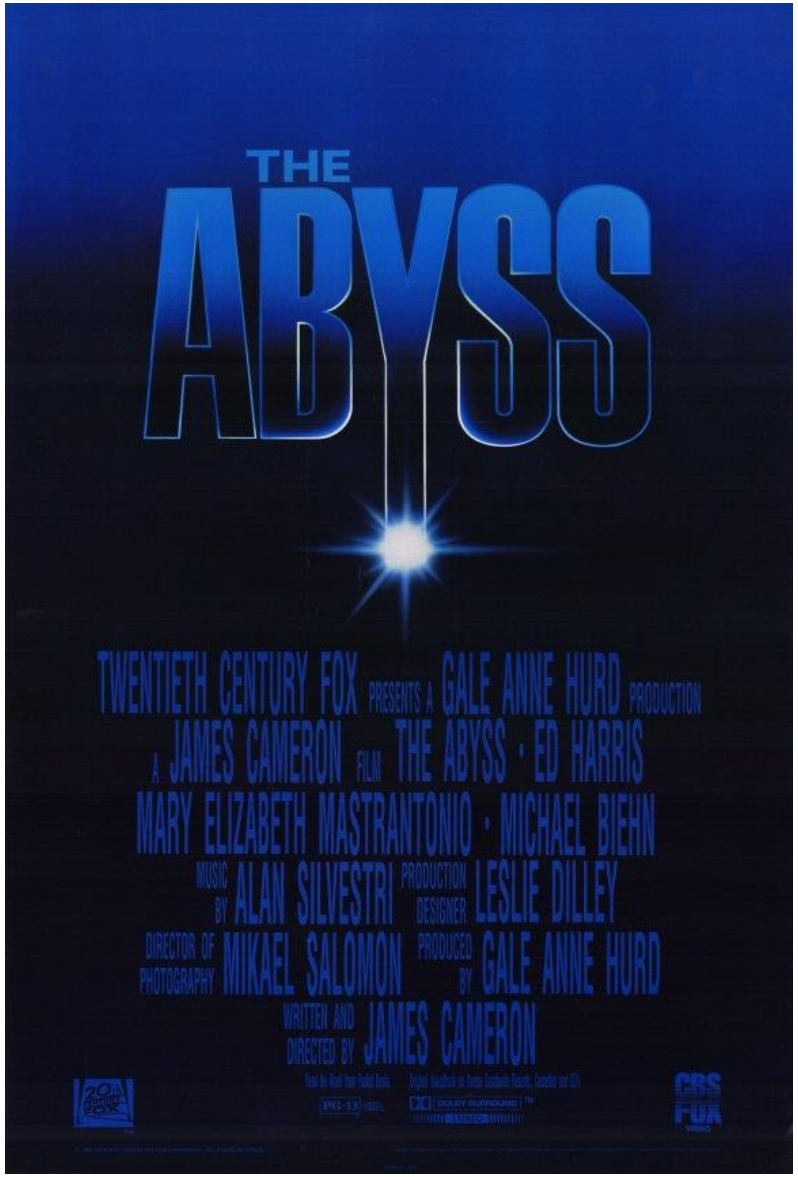
Paola Bagnoli

- ✓ 2002 Biomedical Engineering at Politecnico di Milano
- ✓ 2003-2005 PhD in Bioengineering (*Inter-Poly-technique PhD School*)
- ✓ 2006-2010 Post doc Fellow at LaBS LABORATORY OF BIOLOGICAL STRUCTURE MECHANICS
- ✓ 2011-2014 Assistant Professor (RTD) at Politecnico
  PI of the Project Pro-LiVe (Firb - *Futuro in Ricerca* 2008)

12 years of research on a specific topic:
TOTAL LIQUID VENTILATION

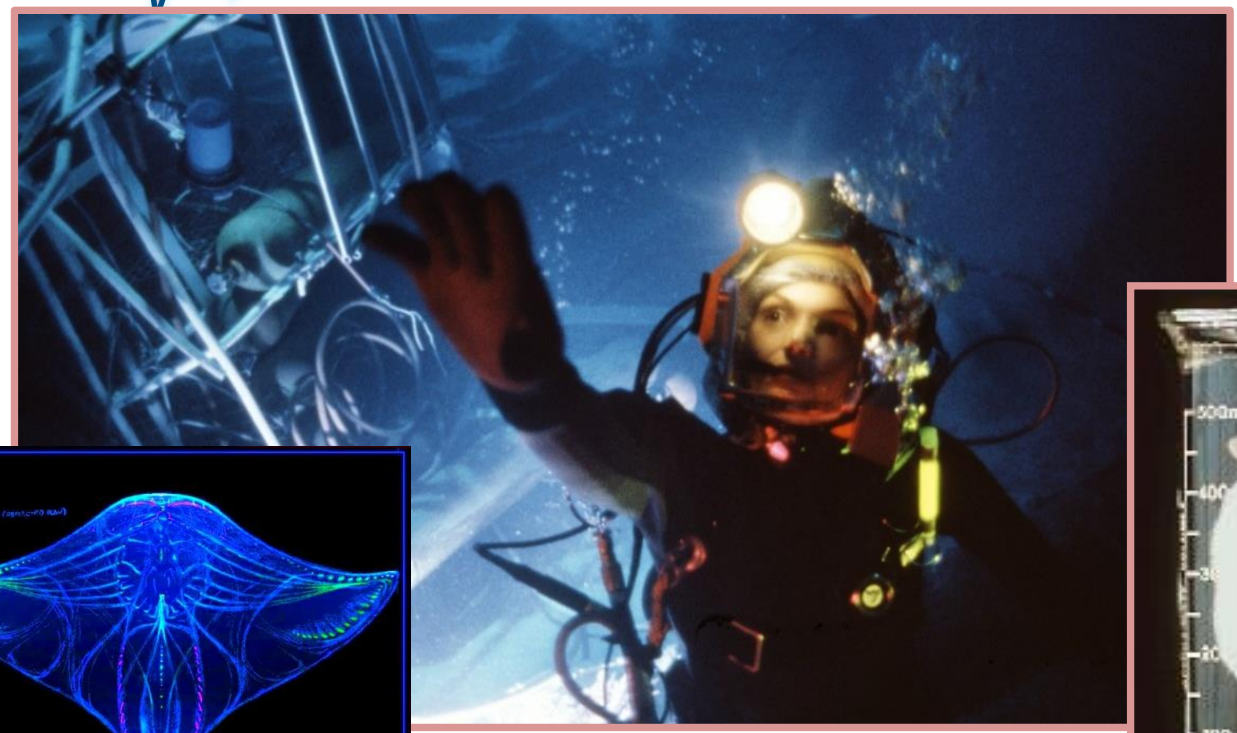
- ✓ 2015 - present Technology Transfer Manager at TTO (Politecnico di Milano)

Can human beings breathe a liquid??!



1989

From the science fiction movie by James Cameron… a dream!



Or reality?

Not only science fiction…

Since 1970 Total Liquid Ventilation has been studied for the respiratory treatment of very preterm neonates.

Not only science fiction…

Since 1970 Total Liquid Ventilation has been studied for the respiratory treatment of very preterm neonates.

Liquid perfluorocarbons (PFCs) as carriers for O_2 and CO_2 in the lungs instead of a gaseous mixture

Inspiration and expiration of **liquid tidal volumes** (TV) accomplished by means of a dedicated circuit

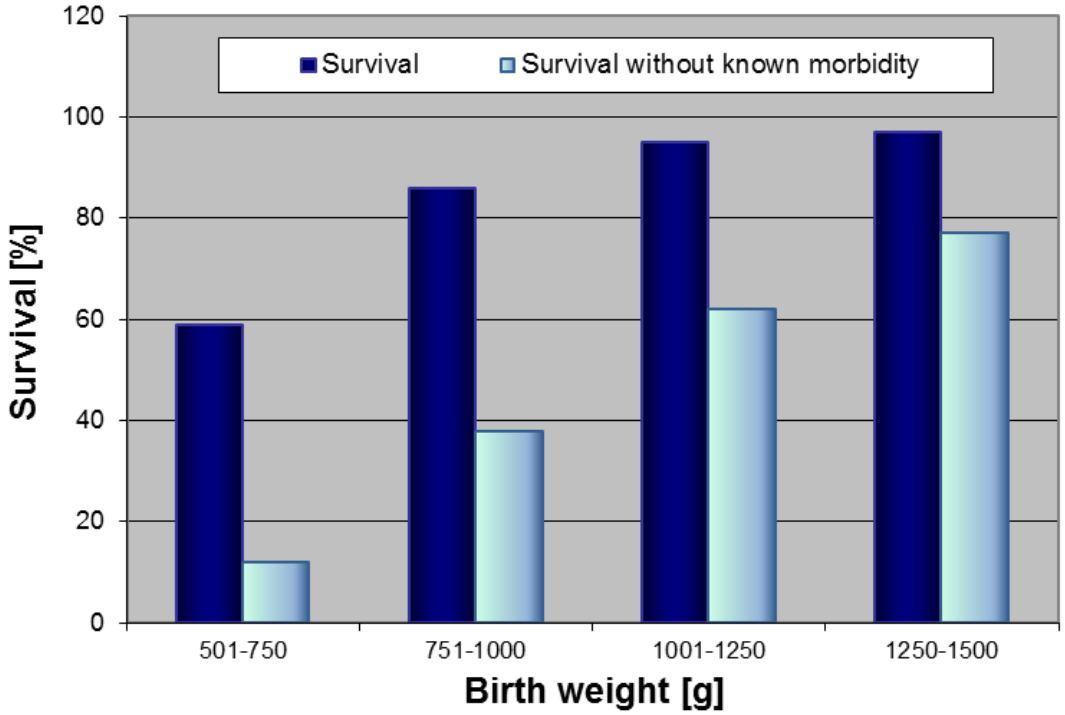
Lower alveolar pressure than during conventional mechanical ventilation (CMV) due to absence of air-liquid interface

Not only science fiction…

Since 1970 Total Liquid Ventilation has been studied for the respiratory treatment of very preterm babies.

Vermont Oxford Network Statistics on newborns

- **5.26% preterm** (Gestational Age (GA) ≤ 34 w)
- **4.6% need respiratory assistance** (mortality: 9.3%)
- **1.2% are Very Low Birth Weight** (VLBW) (GA< 28w or Birth Weight (BW) < 1000g)
- 90% VLBW need respiratory assistance (mortality ≈25%)



…a niche clinical application… and sometimes unfortunately this is a problem….

Something happened!

2010 Grant Firb "*Futuro in Ricerca*"

"Development of a novel device for Total Liquid Ventilation and evaluation of the biological and biomechanical effects induced on the respiratory system." (RBFR081BZQ)

2 research units

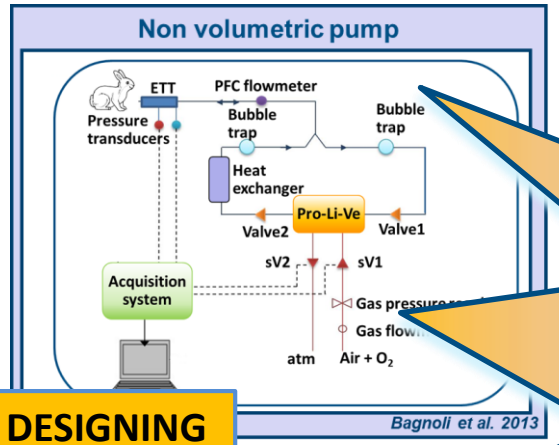
A strong multidisciplinary team: Bioengineers, Clinicians, Veterinaries, Biologists...

We did… A LOT OF WORK for 3 years!

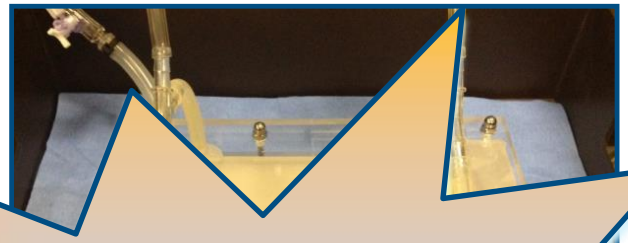
Something happened!

2010 Grant Firb "*Futuro in Ricerca*"

"Development of a novel device for Total Liquid Ventilation and evaluation of the biological and biomechanical effects induced on the respiratory system." (RBFR081BZQ)

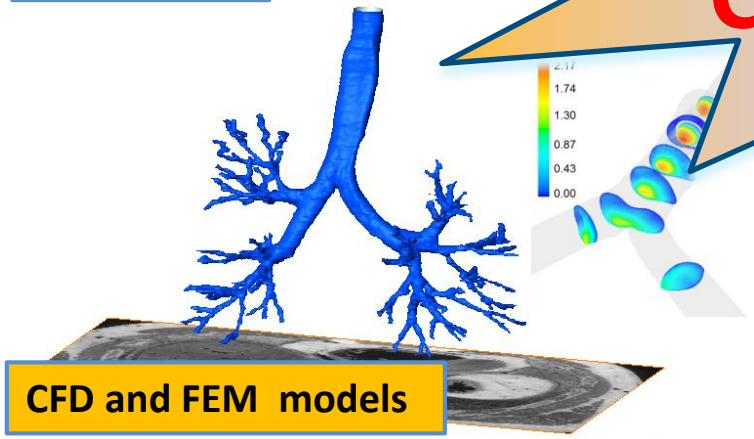


DESIGNING



In Vitro TESTS

NO PATENTS, NO COMPANIES…



CFD and FEM models

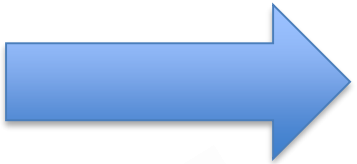
In vivo Trials

PUBLICATIONS!

It is not an happy end story…

My biggest mistake? I've never tried to fill the gap

From the laboratory… to the industry… to the market!



FILL the GAP!!!

My biggest mistake? I've never tried to fill the gap

From the laboratory… to the industry… to the market!

We need to fill the gap!

IP protection

Companies commitment

Let’s build the bridge!

Research Project

IP strategy

IP creation

Evaluation/search

IP Protection

Exploitation

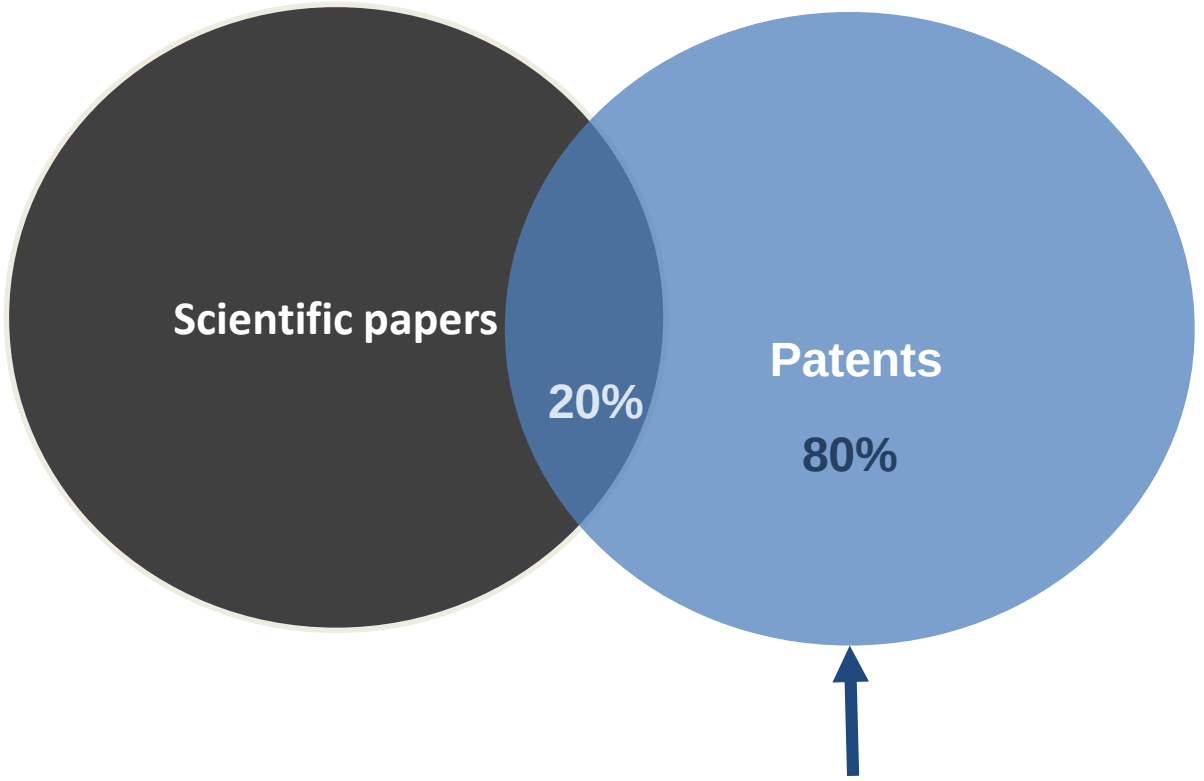
Since the beginning of the project

Protect your ideas

an introduction to Intellectual Property (IP)

Much information only available in patents

Do you know that the 80% of the material published in patents is not published also as scientific papers?



Reference European Patent Office (EPO).

Avoid to reinvent the wheel!

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 also in the Patent databases!

→ Review the literature (including articles and patents) before you start your project.
→ Search again at project milestones: your project might have changed and other inventors might have been active too.

Reference European Patent Office (EPO).

The different types of IP

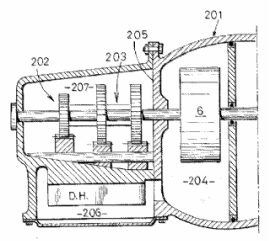
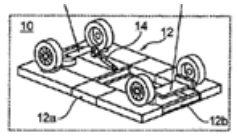
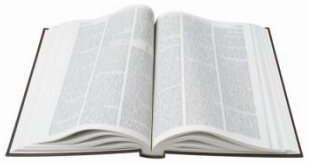
Patent (crown cap)

Trade Mark

Know-how / Trade secret (product recipe)

Design (bottle shape)

The different types of IP

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

One product - many IP rights

Trade marks
- APPLE
- Product “i-phone 7"
- Start-up tone

Copyright
- Software
- User manuals
- Ringtones
- Start-up tone
- Images

Patents and utility models
- Data-processing methods
- Operating system
- Operation of user interface

Designs
- Form of overall phone
- Arrangement and shape of buttons
- Position and shape of screen

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

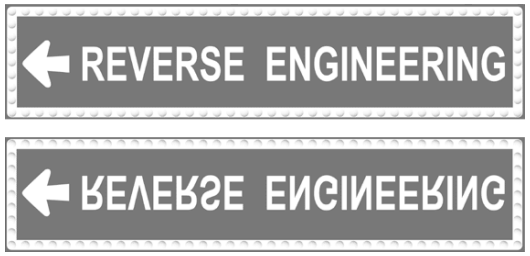
The IP system

Innovators

make significant investments in developing new products

Competitors

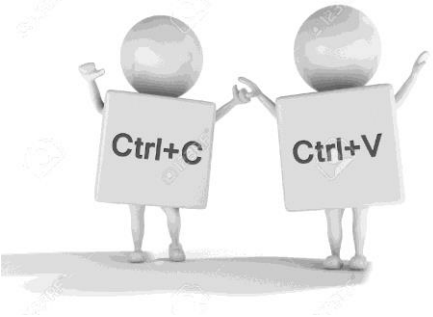
benefit from their efforts



Can offer similar or identical products at a cheaper price

Heavy pressure

may drive the innovator out of business



Get a free ride on the back of the innovator's creativity and inventiveness

IP system
Rights over the use of inventions, designs, brands, literary and artistic works

IP can help in attracting companies towards R&D investments

PATENTS

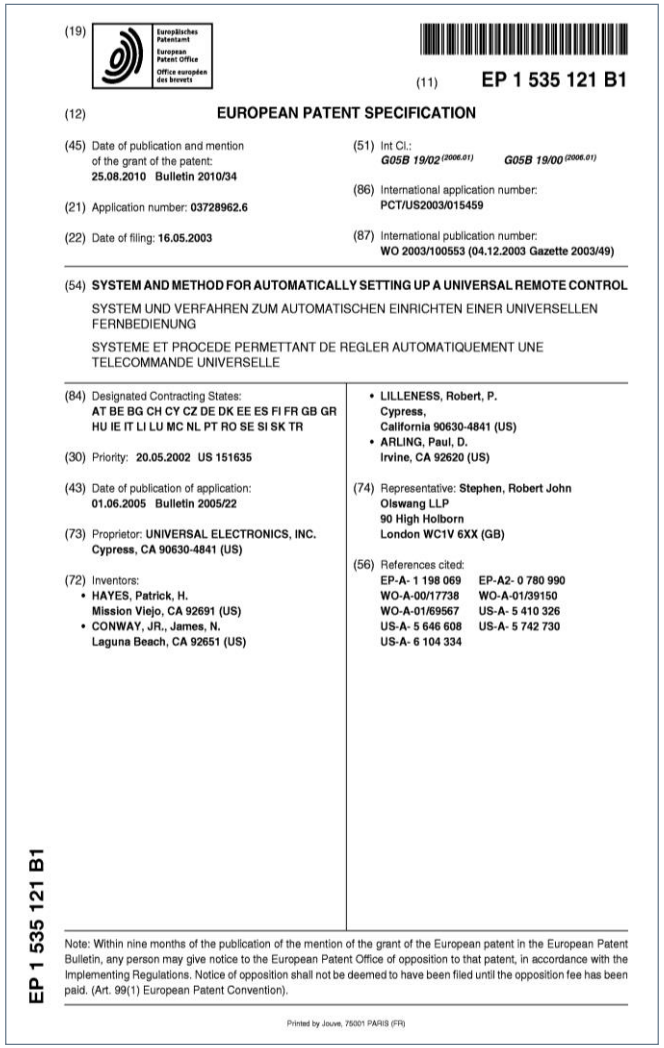
The "social contract" implicit in the patent system

Reveal invention

Get exclusivity

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

What is a patent?



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

(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**

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

(21) Application number: **03728962.6**

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

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

(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)**
- **LILLENESS, 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- 1 198 069 EP-A2- 0 780 990
WO-A-00/17738 WO-A-01/39150
WO-A-01/69567 US-A- 5 410 326
US-A- 5 646 608 US-A- 5 742 730
US-A- 6 104 334

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).

Printed by Jouve, 75001 PARIS (FR)

EP 1 535 121 B1

Patents are granted in nearly every country in the world!

- A legal title 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 patent without his authorisation
  - in countries for which the patent was granted
  - for a limited time (up to 20 years).

- In return for this protection, the holder has to disclose the invention to the public.

Reveal invention (disclosure) ⇄ Get exclusivity (patent)

Patent applicant

Public

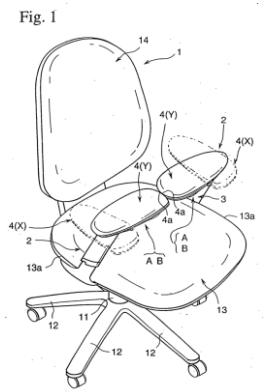
What exactly can be patented?

Patents protect inventions which solve technical problems:

- chemical substances, pharmaceuticals

- processes, methods, uses

- products, devices, systems



REQUIREMENTS:

For an invention to be patented, it must usually be:

1. **new** to the world (i.e. not available to the public anywhere in the world)
2. **inventive** (i.e. not an "obvious" solution)
3. susceptible of **industrial application**

Moreover, an invention cannot be contrary to the “order public” or moral.

What CANNOT be patented?

The following are **not** considered to be inventions for the purposes of granting European patents (*Art. 52(2) EPC*):

- Discoveries, scientific theories and mathematical methods
- Aesthetic creations
- Schemes, rules and methods for performing mental acts, playing games or doing business
- Presentations of information
- Programs for computers, **Software** as such
  (but algorithms that achieve technical results)

What CANNOT be patented?

Software

Program for a computer "as such" is excluded from patentability
(Article 52(2)(c) EPC), but…

- Not excluded from patentability if, when running on a computer,
  it causes a further "technical effect" going beyond the "normal" physical interaction between the program (software) and the computer (hardware)

- Programs for computers are therefore not automatically excluded from patentability

What CANNOT be patented?

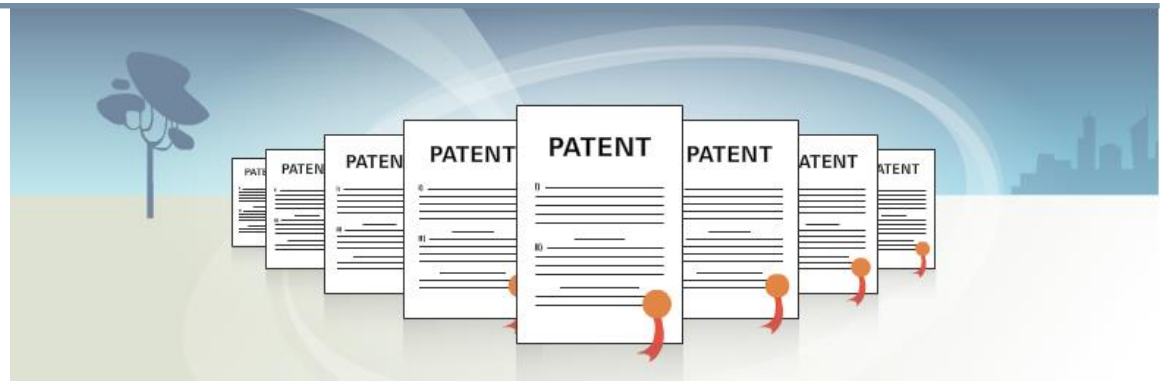
(*Art. 53 EPC*):

- Inventions whose commercial exploitation would be contrary to **"order public"** or **morality**

- **Plant or animal varieties** or essentially biological processes for the production of plants or animals

- **Methods for treatment** of the human or animal body **by surgery or therapy** and **diagnostic methods** practised on the human or animal body

What does a patent look like?



First Page

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

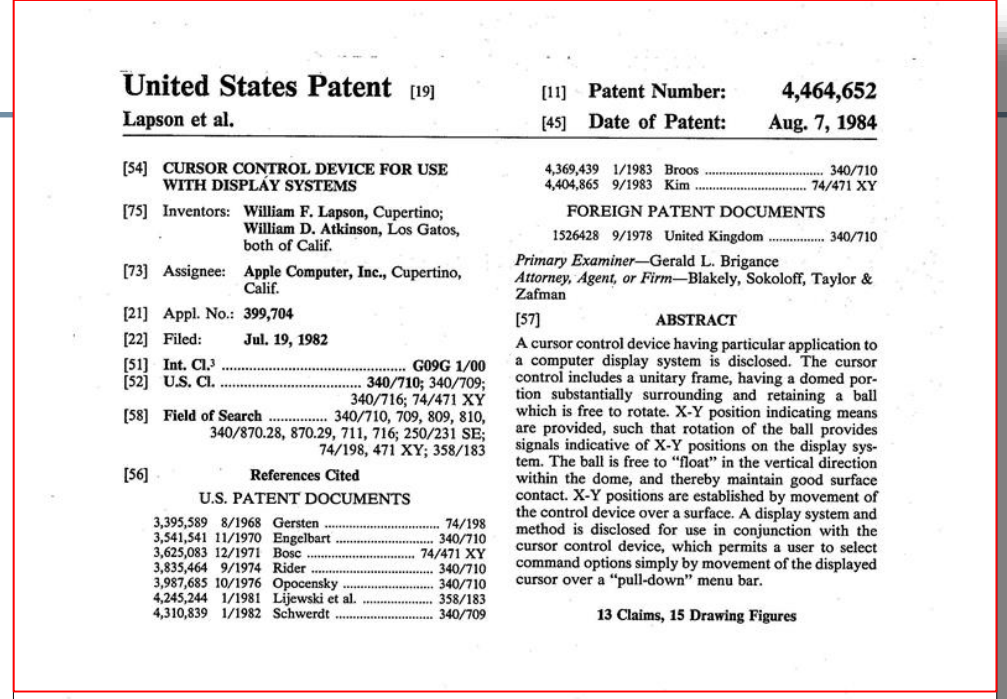
Drawings

- Illustrate the claims and description

First page

bibliographic information
+ abstract

the mouse!



United States Patent [19]
Lapson et al.

[11] **Patent Number: 4,464,652**
[45] **Date of Patent: Aug. 7, 1984**

[54] **CURSOR CONTROL DEVICE FOR USE WITH DISPLAY SYSTEMS**

[75] Inventors: **William F. Lapson**, Cupertino; **William D. Atkinson**, Los Gatos, both of Calif.

[73] Assignee: **Apple Computer, Inc.**, Cupertino, Calif.

[21] Appl. No.: **399,704**

[22] Filed: **Jul. 19, 1982**

[51] **Int. Cl.**³ **G09G 1/00**
[52] **U.S. Cl.** ..... **340/710**; 340/709; 340/716; 74/471 XY
[58] **Field of Search** ..... 340/710, 709, 809, 810, 340/870.28, 870.29, 711, 716; 250/231 SE; 74/198, 471 XY; 358/183

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,395,589	8/1968	Gersten	74/198
3,541,541	11/1970	Engelbart	340/710
3,625,083	12/1971	Bosc	74/471 XY
3,835,464	9/1974	Rider	340/710
3,987,685	10/1976	Opocensky	340/710
4,245,244	1/1981	Lijewski et al.	358/183
4,310,839	1/1982	Schwerdt	340/709
4,369,439	1/1983	Broos	340/710
4,404,865	9/1983	Kim	74/471 XY

FOREIGN PATENT DOCUMENTS

1526428	9/1978	United Kingdom	340/710

Primary Examiner—Gerald L. Brigance
Attorney, Agent, or Firm—Blakely, Sokoloff, Taylor & Zafman

[57] **ABSTRACT**

A cursor control device having particular application to a computer display system is disclosed. The cursor control includes a unitary frame, having a domed portion substantially surrounding and retaining a ball which is free to rotate. X-Y position indicating means are provided, such that rotation of the ball provides signals indicative of X-Y positions on the display system. The ball is free to "float" in the vertical direction within the dome, and thereby maintain good surface contact. X-Y positions are established by movement of the control device over a surface. A display system and method is disclosed for use in conjunction with the cursor control device, which permits a user to select command options simply by movement of the displayed cursor over a "pull-down" menu bar.

13 Claims, 15 Drawing Figures

First page

United States Patent [19]

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4,369,439	1/1983	Broos	340/710
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13 Claims, 15 Drawing Figures

Structure of the description

Prior art

- *Teapot with one spout*

Drawback of prior art

- *Time-consuming*

Problem to solve

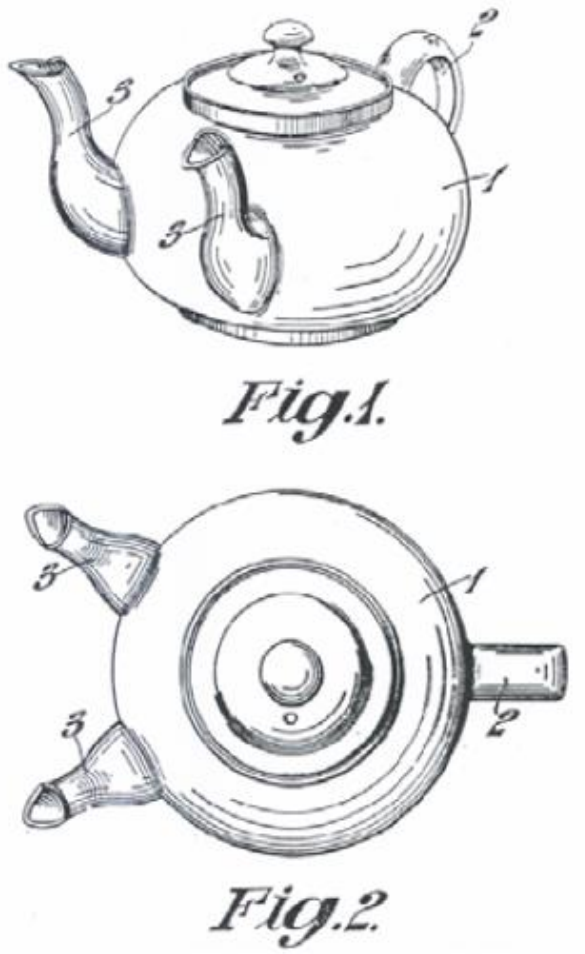
- *Reduce filling time*

Solution

- *Provide a second spout*

Advantage of the invention

- *The time needed to fill multiple cups is reduced*



1930 UK patent application GB360253.

Claims

A tree of claims describing what the patent wants to protect:

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :—

Fig 1.

1. A tea pot or like portable pouring vessel comprising a plurality of spouts from which the contained liquid may be poured simultaneously.

2. A vessel according to claim 1, wherein said pot or container is undivided.

3. A vessel according to claim 1 or 2, wherein said vessel has a single operating handle.

4. A vessel according to claim 3, wherein said spouts are two in number and are arranged symmetrically on either side of the point diametrically opposite said handle.

5. A tea pot or like portable pouring vessel substantially as herein specified with reference to the accompanying drawings.

Dated this 27th day of August, 1931.

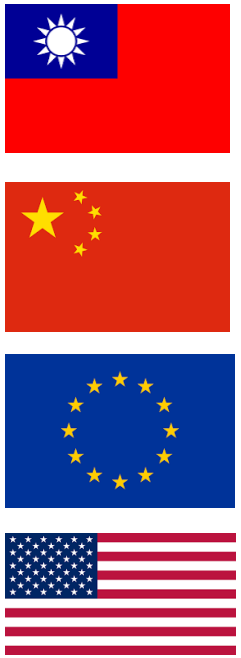
A. A. THORNTON.
Chartered Patent Agent,
7, Essex Street, Strand, London, W.C. 2.,
For the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1931.

UK patent application GB360253.

Patent Families

All the documents that claim the same invention.



Family list: TW201423499 (A) — 2014-06-16

Select all (0/4) | Compact | Export (CSV | XLS) | Download covers | CCD | Print

4 application(s) for: **TW201423499 (A)**

Sort by: Priority date | Sort order: Descending | Sort | show citations

	Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
1. Optical mouse with cursor rotating ability, the motion detector and method thereof	LEE GEOFFREY WEN-CHIEH [TW]	LEE GEOFFREY WEN-CHIEH [TW]	G06F3/0308 G06F3/0317 G06F3/03543	G06F3/0354	TW201423499 (A) 2014-06-16	2012-12-07
2. Optical mouse with cursor rotating ability, instrument, portable detection device, and method thereof	LEE WEN-CHIEH GEOFFREY	LEE WEN-CHIEH GEOFFREY	G06F3/0308 G06F3/0317 G06F3/03543	G06F3/0354	CN103870026 (A) 2014-06-18	2012-12-07
3. Optical mouse with cursor rotating ability	WEN-CHIEH GEOFFREY LEE [TW]	WEN-CHIEH GEOFFREY LEE [TW]	G06F3/0308 G06F3/0317 G06F3/03543	G06F3/03 G06F3/0354	EP2741179 (A2) 2014-06-11	2012-12-07
4. Optical Mouse with Cursor Rotating Ability	LEE WEN-CHIEH GEOFFREY [TW]	LEE WEN-CHIEH GEOFFREY [TW]	G06F3/0308 G06F3/0317 G06F3/03543	G06F3/03	US2014160021 (A1) 2014-06-12	2012-12-07

Patent Families

All the documents that claim the same invention.

<u>Useful</u>:

1. To evaluate the geographical protection of the patent
2. To have a good English translation of foreign patents.

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, MS or Ph.D. dissertations.

- 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!

TRADE SECRETS

What are trade secrets?

Information that

- is not generally known or easily discovered
- has a business, commercial or economic value (actual or potential) because the information is not generally known
- is subject to reasonable efforts to maintain secrecy

Unlimited life, provided the information does not become public knowledge.

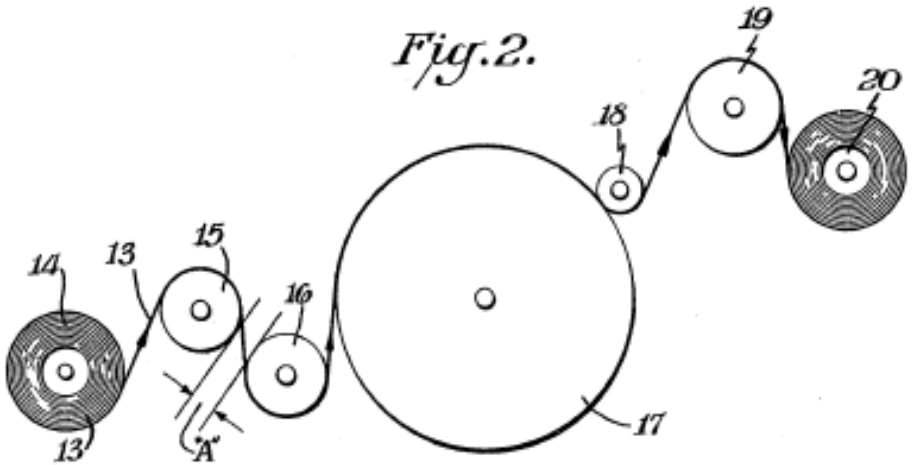
Products/processes where reverse engineering is difficult

Images from www.coca-cola.com

Means of protection

Practical

- Limited access to information
- "Need to know"
- Encryption of data
- Monitored entry to installations



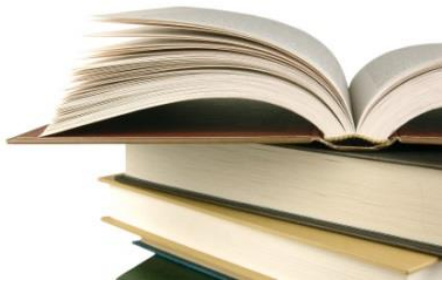
GORETEX Patent

Contractual

- Restrictive covenants in employment contracts
- Non-disclosure agreements

The diagram is taken from the original GORE-TEX patent. Another company had kept a similar process secret for several years before Gore filed their patent

References



The European Patent Convention (EPC)

https://www.epo.org/law-practice/legal-texts/epc.html

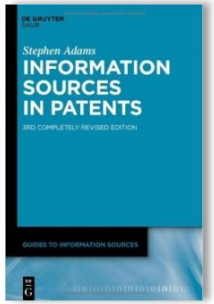
Codice del diritto d'autore e della proprietà industriale.

Ed. Lex. I codici annotati. Serie a cura di P. Menchetti e A. Sirotti Gaudenzi.

Brevetti e proprietà industriale per gli studenti delle discipline tecniche e scientifiche.

a cura di Riccardo Pietrabissa e Massimo Barbieri

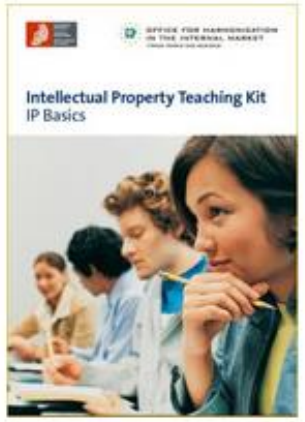
Maggioli Editore, I edizione (2015)



Stephen Adams. Information Sources in Patents. 2012, De Gruyter Saur, 3rd edition.

References

Europäisches Patentamt
European Patent Office
Office européen des brevets



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