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Intellectual property rights

Tobias Kleimann

Patentanwalt

Nanoseminar TU Dresden am 11. Januar 2013

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1. Intellectual property rights
2. Rights procurement
3. Employee inventions
4. Software and Patents
5. Rights enforcement

1

Intellectual property rights

Material property – intellectual property

Material property is protected against damage/theft by a dedicated law, e.g. the German criminal code (StGB):

Section 242 StGB – Theft

(1) Whoever takes moveable property not his own away from another with the intent of unlawfully appropriating the property for himself or a third person, shall be punished with imprisonment for not more than five years or a fine. […]

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Material property – intellectual property

Ideas and concepts as such are not palpable. However, it is desirable to reward their creator.

Machines function according to a principle.

Music can be listened to.

Films can be watched.

A design can be seen.

The state provides for a framework for the protection of intangible assets in terms of (registered) **intellectual property rights**.

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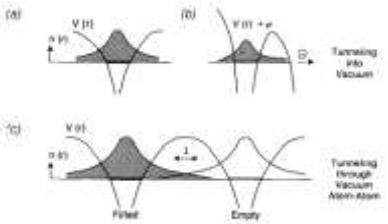
Patents – designs – copyright - trademarks

Subject matter	IP right	Protection	Duration
Technical innovation	Patent	Technical concept	20 years
Design	Design model	Aesthetical appearance	25 years
Literary or artistic work	Copyright	Work	75 years
Brand	Trademark	Danger of confusion	∞

Gerd Binnig/Heinrich Rohrer: Scanning tunneling microscope (Nobel Prize 1986)

Idea:



SCANNING TUNNELING MICROSCOPY - FROM BIRTH TO ADOLESCENCE

Nobel lecture, December 8, 1986

by

GERD BINNIG AND HEINRICH ROHRER

IBM Research Division, Zurich Research Laboratory, 8803 Rüschlikon, Switzerland

Patent:


Europäisches Patentamt
European Patent Office
Office européen des brevets

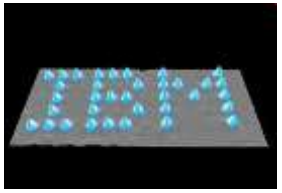
0 027 517
B1

EUROPÄISCHE PATENTSCHRIFT

Int.Cl.: H 01 J 37/285, G 01 B 7/34, H 01 L 41/08

EP 0 027 517 B1

Industrial application:



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Shuji Nakamura: Blue light emitting diode (Millenium Technology Prize 2006)

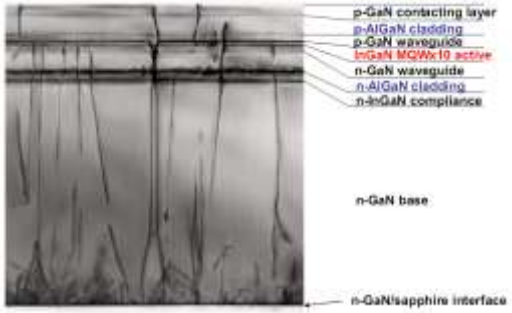
Idea:

Candela-class high-brightness InGaN/AlGaN double-heterostructure blue-light-emitting diodes

Shuji Nakamura, Takashi Mukai, and Masayuki Senoh
Department of Research and Development, Nichia Chemical Industries, Ltd., 491 Oka, Kaminaka, Anan, Tokushima 774, Japan

(Received 2 December 1993; accepted for publication 5 January 1994)

Candela-class high-brightness InGaN/AlGaN double-heterostructure (DH) blue-light-emitting diodes (LEDs) with the luminous intensity over 1 cd were fabricated. As an active layer, a Zn-doped InGaN layer was used for the DH LEDs. The typical output power was 1500 μW and the external quantum efficiency was as high as 2.7% at a forward current of 20 mA at room temperature. The peak wavelength and the full width at half-maximum of the electroluminescence were 450 and 70 nm, respectively. This value of luminous intensity was the highest ever reported for blue LEDs.



Patent:

(19) (11) EP 0 716 457 B1

(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent: 24.09.2008 Bulletin 2008/39

(51) Int Cl.: H01L 33/00 (2006.01)

(21) Application number: 95119987.7

(22) Date of filing: 01.12.1995

(54) **Nitride semiconductor light-emitting device**

Lichtemittierende Vorrichtung aus einer Nitridverbindung

Dispositif semi-conducteur émetteur de lumière comprenant un composé de nitrure

(84) Designated Contracting States: DE FR GB IE

(30) Priority: 02.12.1994 JP 29944894
02.12.1994 JP 29944794
22.12.1994 JP 32010894
23.02.1995 JP 3492495
16.03.1995 JP 5705095
16.03.1995 JP 5705195
14.04.1995 JP 8910295

(43) Date of publication of application: 12.06.1996 Bulletin 1996/24

(73) Proprietor: Nichia Corporation
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Tokushima-ken (JP)

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80799 München (DE)

(56) References cited:
EP-A- 0 496 036 US-A- 5 146 465
US-A- 5 592 501

- PATENT ABSTRACTS OF JAPAN vol.018, no. 680 (E-1633), 9 September 1994 -& JP 06 164055 A (ASAHI CHEM IND CO LTD), 10 June 1994
- PATENT ABSTRACTS OF JAPAN vol.018, no. 673 (E-1647), 19 December 1994 -& JP 06 268257 A (NICHIA CHEM IND LTD), 22 September 1994
- PATENT ABSTRACTS OF JAPAN vol.018, no. 235 (E-1541), 22 April 1994 -& JP 06-021511 A (NIPPON TELEGR & TELEPH CORP), 28 January 1994
- NAKAMURA S ET AL: "HIGH-POWER INGAN SINGLE-QUANTUM-WELL-STRUCTURE BLUE AND VIOLET LIGHT-EMITTING DIODES" APPLIED PHYSICS LETTERS, vol. 67, no. 13, 25 September 1995, pages 1868-1870, XP000526499

EP 0 716 457 B1

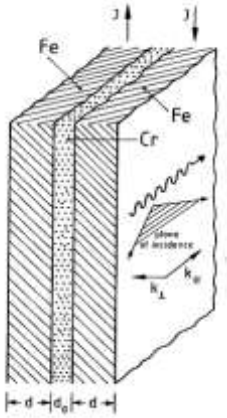
Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed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

Industrial application:

HD DVD

Peter Grünberg: Giant magnetoresistance (Nobel Prize 2007)

Idea:



RAPID COMMUNICATIONS

PHYSICAL REVIEW B VOLUME 39, NUMBER 7 1 MARCH 1989

Enhanced magnetoresistance in layered magnetic structures with antiferromagnetic interlayer exchange

G. Binasch, P. Grünberg, F. Saurenbach, and W. Zinn
Institut für Festkörperforschung, Kernforschungsanlage Jülich G.m.b.H., Postfach 1913, D-5170 Jülich, West Germany
(Received 31 May 1988; revised manuscript received 12 December 1988)

The electrical resistivity of Fe-Cr-Fe layers with antiferromagnetic interlayer exchange increases when the magnetizations of the Fe layers are aligned antiparallel. The effect is much stronger than the usual anisotropic magnetoresistance and farther increases in structures with more than two Fe layers. It can be explained in terms of spin-flip scattering of conduction electrons caused by the antiparallel alignment of the magnetization.

Industrial application:

Patent:

Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Veröffentlichungsnummer: 0 346 817 B1

EUROPÄISCHE PATENTSCHRIFT

(45) Veröffentlichungstag der Patentschrift: 28.10.94 Patentblatt 94/43

(51) Int. Cl.⁵: G01R 33/06

(21) Anmeldenummer: 89110648.6

(22) Anmeldetag: 13.06.89

(54) Magnetfeldsensor mit ferromagnetischer, dünner Schicht.

(30) Priorität: 16.06.88 DE 3820475

(43) Veröffentlichungstag der Anmeldung: 20.12.89 Patentblatt 89/51

(45) Bekanntmachung des Hinweises auf die Patenterteilung: 28.10.94 Patentblatt 94/43

(84) Benannte Vertragstaaten: AT BE CH DE FR GB IT LI NL SE

(56) Entgegenhaltungen:
EP-A- 0 063 387
US-A- 4 133 315
US-A- 4 350 523

(56) Entgegenhaltungen:
PHYSICAL REVIEW, B. CONDENSED MATTER, Bd. 35, Nr. 7, März 1988, NEWYORK US Seiten 4828 - 4830; G. BINASCH ET AL.: 'Enhanced Magnetoresistance in layered magnetic structures with antiferromagnetic interlayer exchange'
PHYSICAL REVIEW LETTERS, Bd. 61, Nr. 21, 21. November1988, NEW YORK US Seiten 2472 - 2475; BAIBICH ET AL.: 'giant magnetoresistanceof (001)Fe/(001)Cr Magnetic Superlattices'
PHYSICAL REVIEW, B. CONDENSED MATTER, Bd. 42, Nr. 13A, 1. November1991, NEW YORK US Seiten 8110 - 8120; J. BARN S ET AL.: 'Novelmagnetoresistance effect in layered magnetic structures: Theory and Experiment'

(73) Patentinhaber: FORSCHUNGSZENTRUM JÜLICH GMBH
Wilhelm-Johnen-Strasse
D-52425 Jülich (DE)

(72) Erfinder: Grünberg, Peter, Dr.
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D-5170 Jülich (DE)

EP 0 346 817 B1

Anmerkung: Innerhalb von neun Monaten nach der Bekanntmachung des Hinweises auf die Erteilung des europäischen Patents kann jedermann beim Europäischen Patentamt gegen das erteilte europäische Patent Einspruch einlegen. Der Einspruch ist schriftlich einzureichen und zu begründen. Er gilt erst als eingelegt, wenn die Einspruchsgebühr entrichtet worden ist. (Art. 99(1) Europäisches Patentübereinkommen).

What is a patent?

- A patent is a **temporary monopoly** for the commercial exploitation of an invention.
- A patent grants an **exclusive right** to the patent owner.
- The exclusive right can be transferred (**license agreement**).
- A **patent (application)** comprises a desription of the invention, figures and the patent claims.
- The **patent claims** are similar to a bill/law/decree.
- **Enforcement** of the patent right by the forces of law and order on private initiative patent in terms of infringement law suit.

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German patent statistics 2011 (GPTO)

59997 German patent applications

26467 concluded patent applications

11891 granted patents

526255 patents in force

Applicant	Applications field
Robert Bosch	3602
Daimler AG	2014
Siemens AG	1910
Schaeffler Technologies GmbH & Co. KG	1832
GM Global Tech. Op.	1566

Subject matter	Applications	%
Vehicles in general	5993	10,7
Engineering elements or units	4809	8,6
Basic electric elements	4101	7,3
Measuring, testing	3677	6,6
Medical science, hygene	2485	4,4

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What have patents to do with physics?

Research results may eventually yield industrial **applications**.

Physics/engineering describes phenomena in terms of a certain **language or code** (mathematics/diagrammes).

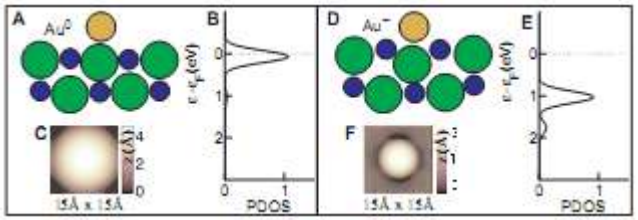
In a patent application the invention must be described in terms of **written language** (patent claims).

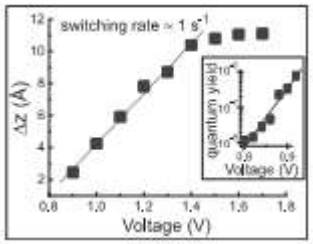
Example: Molecular memory device – Science Magazine

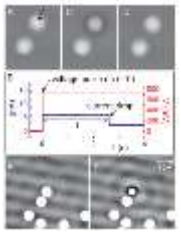
Controlling the Charge State of Individual Gold Adatoms

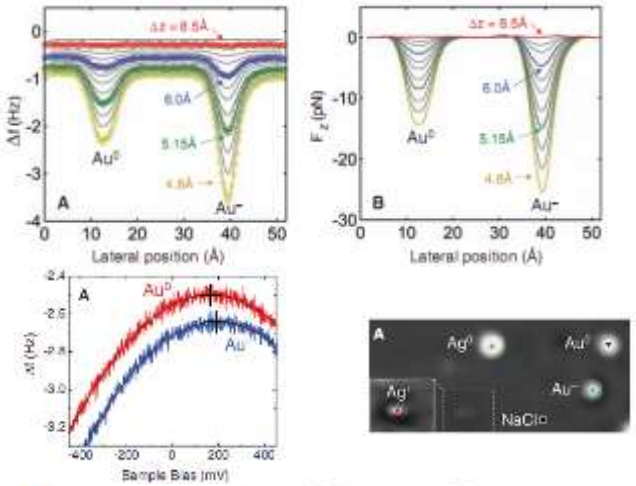
Jascha Repp,[1]* Gerhard Meyer,[1] Fredrik E. Olsson,[2] Mats Persson[2]

The nature and control of individual metal atoms on insulators are of great importance in emerging atomic-scale technologies. Individual gold atoms on an ultrathin insulating sodium chloride film supported by a copper surface exhibit two different charge states, which are stabilized by the large ionic polarizability of the film. The charge state and associated physical and chemical properties such as diffusion can be controlled by adding or removing a single electron to or from the adatom with a scanning tunneling microscope tip. The simple physical mechanism behind the charge bistability in this case suggests that this is a common phenomenon for adsorbates on polar insulating films.









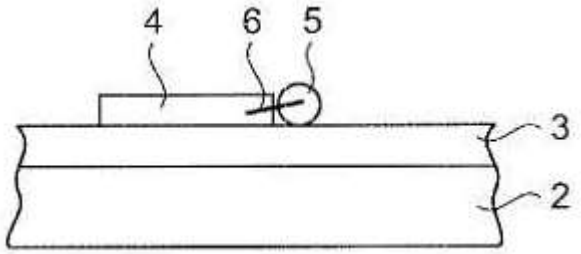
Measuring the Charge State of an Adatom with Noncontact Atomic Force Microscopy

Leo Gross,[1]* Fabian Mohn,[1] Peter Liljeroth,[1,2] Jascha Repp,[2,3] Franz J. Giessibl,[3] Gerhard Meyer[1]

Charge states of atoms can be investigated with scanning tunneling microscopy, but this method requires a conducting substrate. We investigated the charge-switching of individual adsorbed gold and silver atoms (adatoms) on ultrathin NaCl films on Cu(111) using a qPlus tuning fork atomic force microscope (AFM) operated at 5 kelvin with oscillation amplitudes in the subangstrom regime. Charging of a gold atom by one electron charge increases the force on the AFM tip by a few piconewtons. Moreover, the local contact potential difference is shifted depending on the sign of the charge and allows the discrimination of positively charged, neutral, and negatively charged atoms. The combination of single-electron charge sensitivity and atomic lateral resolution should foster investigations of molecular electronics, photonics, catalysis, and solar photoconversion.

Science vol. 324 12 June 2009

Example: Molecular memory device – EP 2 092 528



First patent claim:

1. A memory device (1, 101) comprising a molecule-atom complex (4, 5, 6) arranged on a first insulating layer (3), wherein a first memory state of the memory device (1, 101) corresponds to a first charge distribution state of the molecule-atom complex (4, 5, 6) and a second memory state of the memory device (1, 101) corresponds to a second charge distribution state of the molecule-atom complex (4, 5, 6), wherein the total charge of the molecule-atom complex (4, 5, 6) corresponding to the first memory state is equal to the total charge of the molecule-atom complex (4, 5, 6) corresponding to the second memory state, said first insulating layer (3) being formed on a first contact layer (2) and said molecule-atom complex (4, 5, 6) comprising at least a single atom (5) and at least a molecule (4) on said first insulating layer (3).

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What has a physicist to do with IP rights?

German patent and trademark attorney prerequisits:

Degree in **engineering or natural sciences** (at least Master`s degree), one year practical experience, 26 months traineeship with experienced patent attorney, 8 months internship at patent office and federal patent court, 2 years law course on general law (distant learning), state examination (written and oral)

European patent attorney prerequisits:

Degree in **enginerering or natural sciences** (at least Master`s degree), three years in the patent business, European qualifying examination (EQE) (4 written exams)

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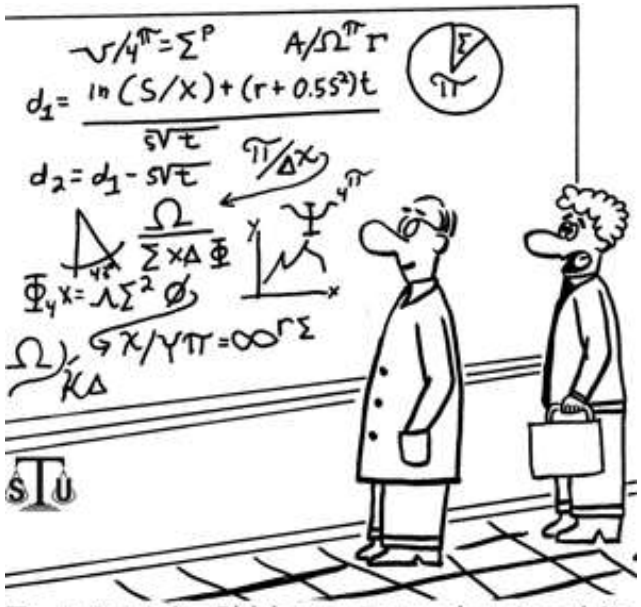
What is a patent attorney?

A patent attorney is a special **legal counsel** for IP issues:

- Procuring patents, trademarks, designs
- Representation before patent and trademark offices and courts.
- License agreements.
- R&D cooperation contracts.
- Enforcing IP rights against infringers
- Defending clients against (im)proper claims.



To patent it, I'd have to understand it.
You may need a different lawyer.

2

Patent procurement

Patent laws

Patents are governed by national laws:

German Patent Act (PatG)

United States Patent Act

European Patent Convention (EPC) – European grant procedure

Patent Convention Treaty (PCT) – international application

Have common or very similar foundations and requirements for patent eligibility and patentability.

Claim categories:

Apparatus
device
system

Product
substance
composition

physical entitiy

Method
... for controlling
... for manufacturing
... for assembling

Use
... as a medicament
... of a substance
for...

activity

Article 52 EPC – patentable inventions

(1) European patents shall be granted for any inventions, in all fields of **technology**, provided that they are **new**, involve an **inventive step** and are susceptible of industrial application. […]

Article 54 EPC – novelty

(1) An invention shall be considered to be new if it does not form part of the **state of the art**. […]

Article 56 EPC – inventive step

An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is **not obvious** to a person skilled in the art […]

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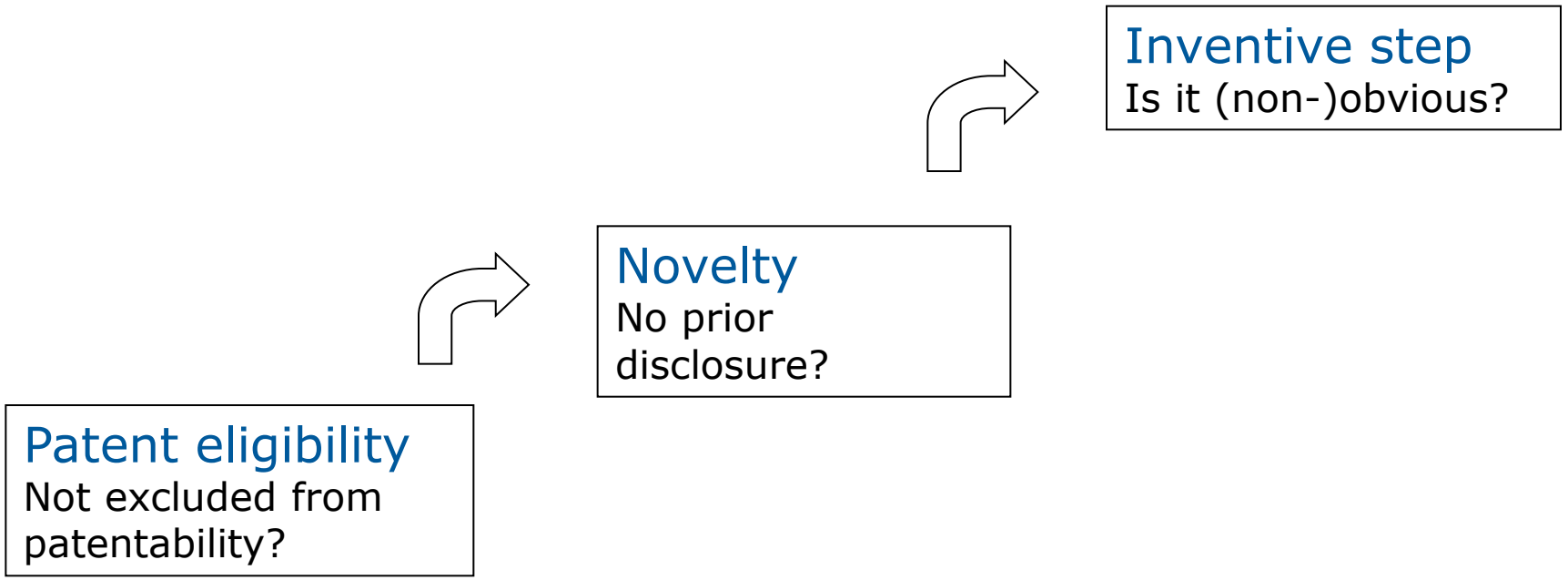
Requirements for patentability – three hurdles



Exclusions from patentability

Article 52 EPC – patentable inventions

(2) The following in particular **shall not be regarded as inventions** within the meaning of paragraph 1:

(a) discoveries, scientific theories and mathematical methods;

(b) aesthetic creations;

(c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;

(d) presentations of information.

Article 53 EPC – exceptions from patentabilty

European patents shall not be granted in respect of:

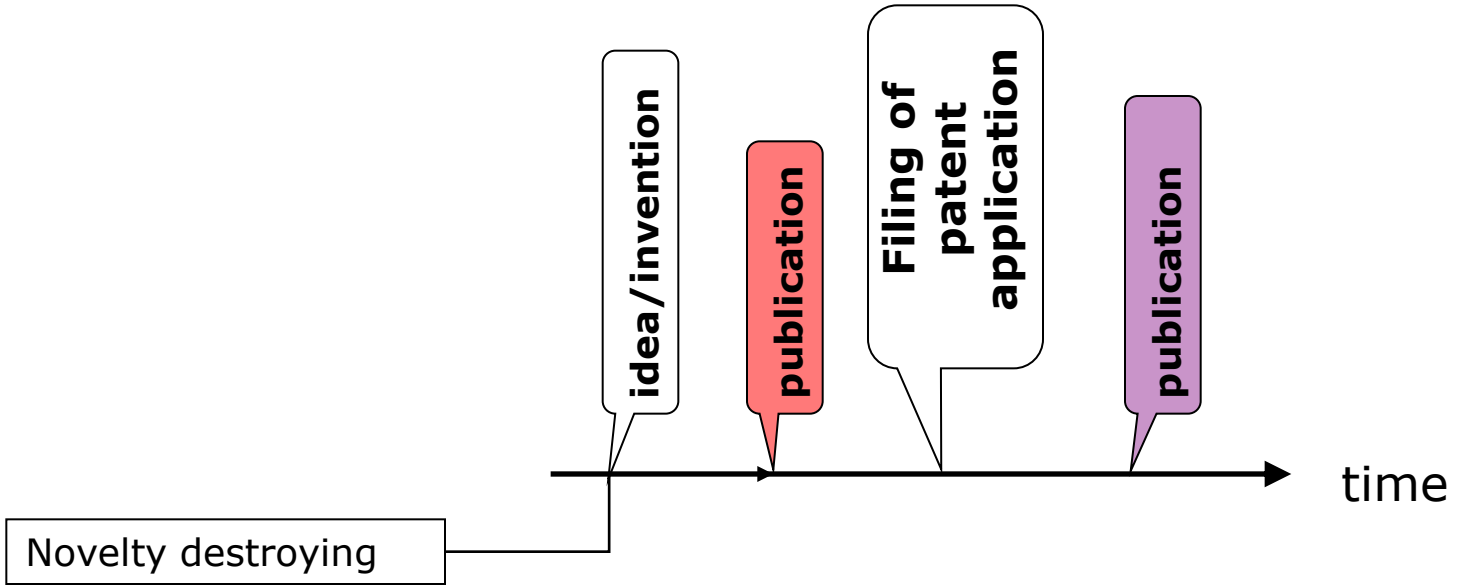
(a) inventions the commercial exploitation of which would be **contrary to "ordre public" or morality**; such exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation in some or all of the Contracting States;

(b) **plant or animal varieties** or essentially biological processes for the production of plants or animals; this provision shall not apply to microbiological processes or the products thereof;

(c) methods for treatment of the human or animal body by **surgery** or **therapy** and **diagnostic** methods practised on the human or animal body; this provision shall not apply to products, in particular substances or compositions, for use in any of these methods.

Article 54 EPC – novelty

(2) The state of the art shall be held to comprise **everything made available to the public** by means of a written or oral description, by use, or in any other way, **before the date of filing** of the European patent application.



Novelty - example

Claimed invention:

A device of the type T having the **features**
a) …
b) …
c) …
d) …

Prior disclosure:

A device of the type T having the **features**
a) …
b) …
c) …

⇨ The claimed device is **new**, because feature d) is not disclosed by the prior art.

Novelty - example

Claimed invention:

A contact device comprising:
a) a metallic base
b) a Cu layer on said base
c) a Cu-Sn alloy on said copper layer
d) Sn particles immersed in said alloy and reaching the outer surface

Prior disclosure:

An electric coupler including:
a) a Cu base
b) said base being covered by a Cu-Sn alloy
c) a Ag coating.

⇨ The claimed device is **new**, because feature d) is not disclosed by the prior art.

Article 56 EPC – inventive step

An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art.
[…]

Indicators for inventive step:

- long known and unresolved problem.
- use of a known means in an unorthodox way.
- many alternative solutions to a problem ruling out the "inventive" concept.
- unexpected technical advantages, bonus effect.
- long felt need for a solution of a technical problem.

Inventive step - example obviousness

Claimed invention:

A device of the type T having the **features**
a) …
b) …
c) …
d) …

Document D1:

"A device of the type T with features a) b) c). It is desirable to implement a means that solves the problem P although there is currently no solution to the problem P."

Document D2:

"A solution for solving the problem P comprises the feature d). The feature d) can be implemented, for example, with devices of the type T."

D1 and D2 point to each other

Inventive step - example non-obviousness

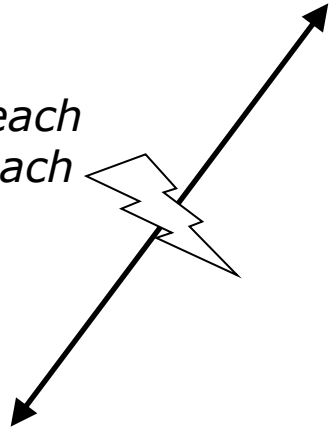
Claimed invention:

A device of the type T having the **features**
a) …
b) …
c) …
d) …

Document D3:

"A device of the type T with features a) b) c)."

D3 and D4 teach away from each other



Document D4:

"A solution for solving the problem P comprises the feature d). There are unresolved difficulties in implementing feature d) with T type devices."

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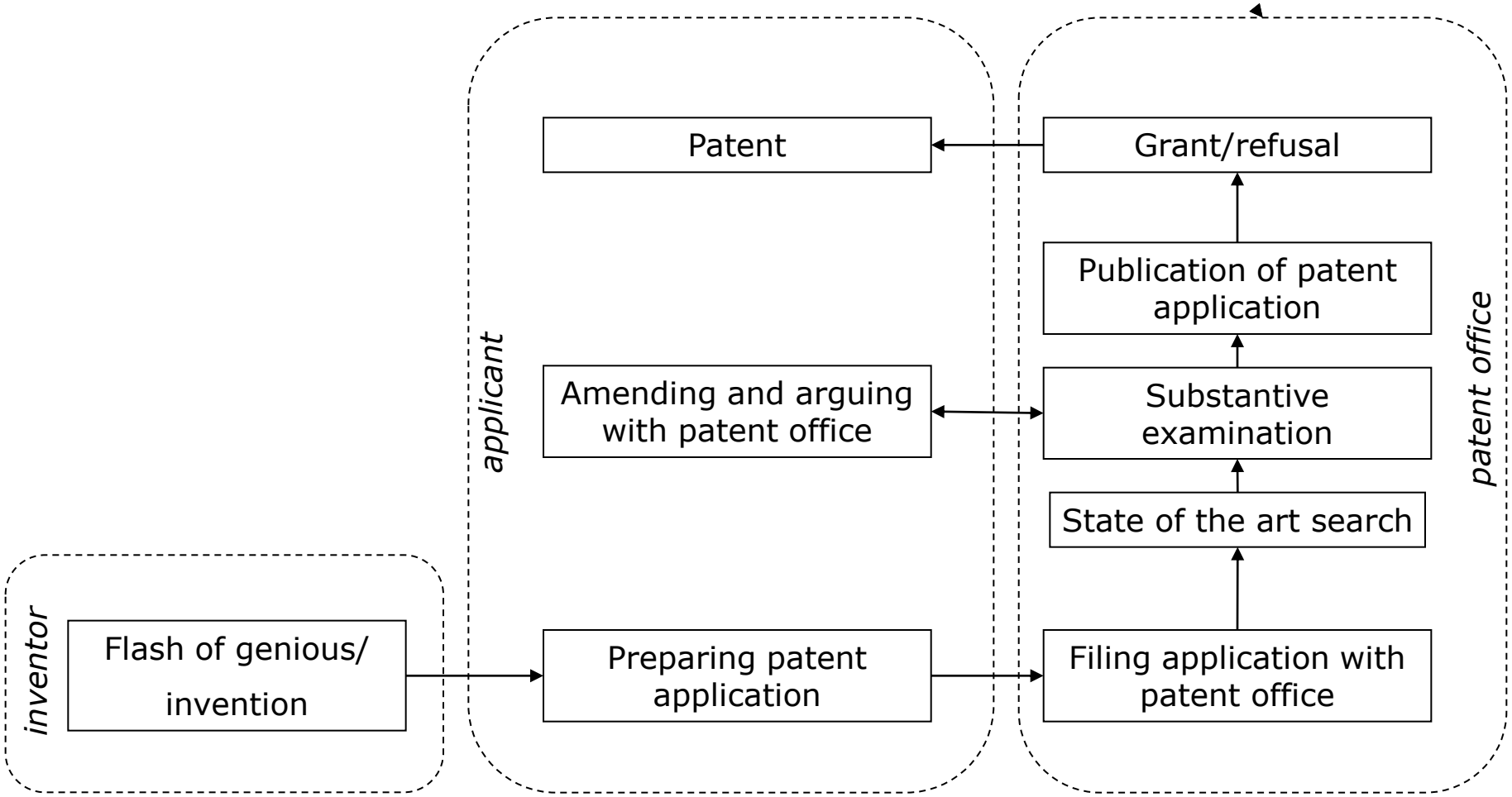
Patent grant procedure



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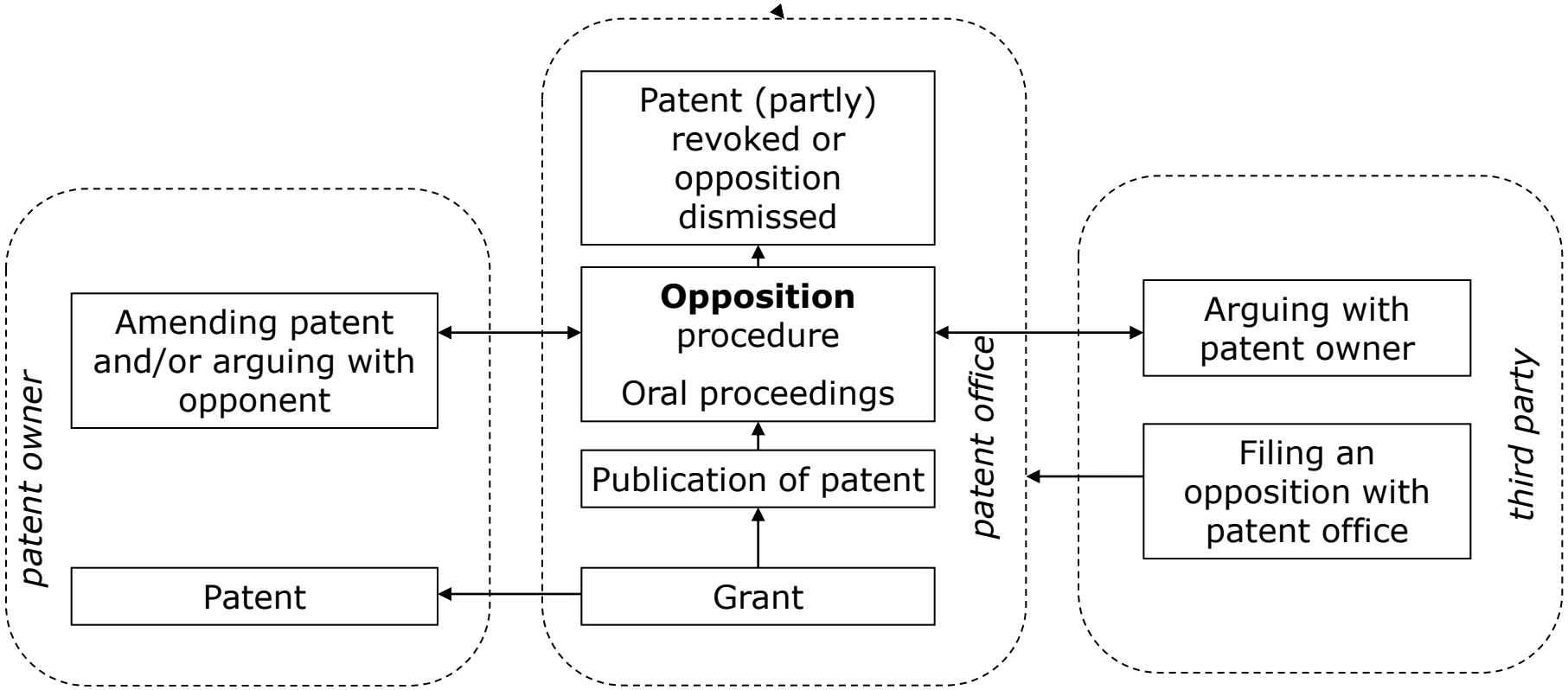
Post grant procedure opposition



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How much does it cost?

Attorney fees:

Drafting: EUR 2000+
Handling fees: EUR 1000+
Eventual petitions etc.: 1000+

Official Fee	EPO (EUR)	GPTO (EUR)
Online filing fee	115	40
Search fee	1165	250
Examination fee	1555	350
Designation fee	555	-
Excess claims fee for each claim exceeding to 15/ 10 claims	225	20
Grant fee	875	-
3rd year renewal fee	445	70
4th year " "	555	70
5th year " "	775	90
6th year " "	995	130
7th year " "	1105	180
8th year " "	1215	240
9th year " "	1325	290
10th and each subsequent year	1495	350

3

Employee inventions

German law on employee inventions (ArbnErfG)

- Stimulation and encouragement of creativity and inventive activity
- Standardized regulations for all companies in Germany
- Standardized remuneration
- Promoting the utilization of inventions
- Strengthening the inventor’s rights versus the employer’s right

Note: about 90 % of all economically promising inventions are made by employed inventors. Only 10% are single inventors.

Obligations of the employee:

- The employee has to submit an **invention report**.
- Has to **support the employer** and make necessary statements for the prosecution.

Employee's rights:

- Is declared as inventor.
- Obtains a reasonable **compensation.**

Obligations of the employer

- Has to file a patent application.
- Has to inform the inventor about the patent (application).
- Has to offer the invention/patent (application) to the employee if there is no further interest.

Employer's rights

- May claim the invention according to invention report.
- May request a free license if patent is taken over by employee.

4

Software and patents

Patents on software?

Article 52 EPC – patentable inventions

(2) The following in particular **shall not be regarded as inventions** within the meaning of paragraph 1:

(c) schemes, rules and methods for performing mental acts, playing games or doing business, and **programs for computers** [...]

(3) Paragraph 2 **shall exclude** the patentability of the subject-matter or activities referred to therein **only** to the extent to which a European patent application or European patent relates to such subject-matter or activities **as such**.

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Questions of the president of the EPO to the Enlarged Board of Appeal in 10/2008:

Europäisches Patentamt
European Patent Office
Office européen des brevets

1. Can a computer program only be excluded from patentability if it is explicitly claimed as a computer program?
2. Can a claim avoid exclusion from patentability by mentioning the use of a storage medium or computer?
3. Must a claimed feature cause a technical effect on a physical entity in the real world to be considered a technical feature?
4. Does programming a computer involve technical considerations?

2010: Enlarged Board of Appeal refuses referral by the president of the EPO G3/08 as inadmissable but answers questions.

Present standards :

- Computer programs can be patented under the EPC
- EPO requires claimed technical aspects for “Software Patents”.
- Technology can be a business - but (pure) business is not technological.
- Developed case Law and consistent examination guidelines exist.
- G03/08 referral did not change legal situation.

5 Rights enforcement

Section 9 PatG - rights conferred by the patent

A patent shall have the effect that the patentee alone shall be authorized to use the patented invention. A person not having the consent of the patentee shall be **prohibited**

1) from **making, offering, putting on the market or using** a product which is the subject matter of the patent or stocking the product for such purposes;

2) from using a process which is the subject matter of the patent or, when he knows or it is obvious from the circumstances that the use of the process which is the subject matter of the patent;

3) from offering, putting on the market, using or importing or stocking for such purposes the product obtained directly by a process which is the subject of the patent.

Section 11 PatG – limitation of the patent rights

The effects of a patent shall **not extend** to

1. Acts done **privately** and for non-commercial purposes

2. acts done for **experimental purpose** relating to the subject matter of the patented invention;

[…]

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Patent litigation in Europe/Germany?

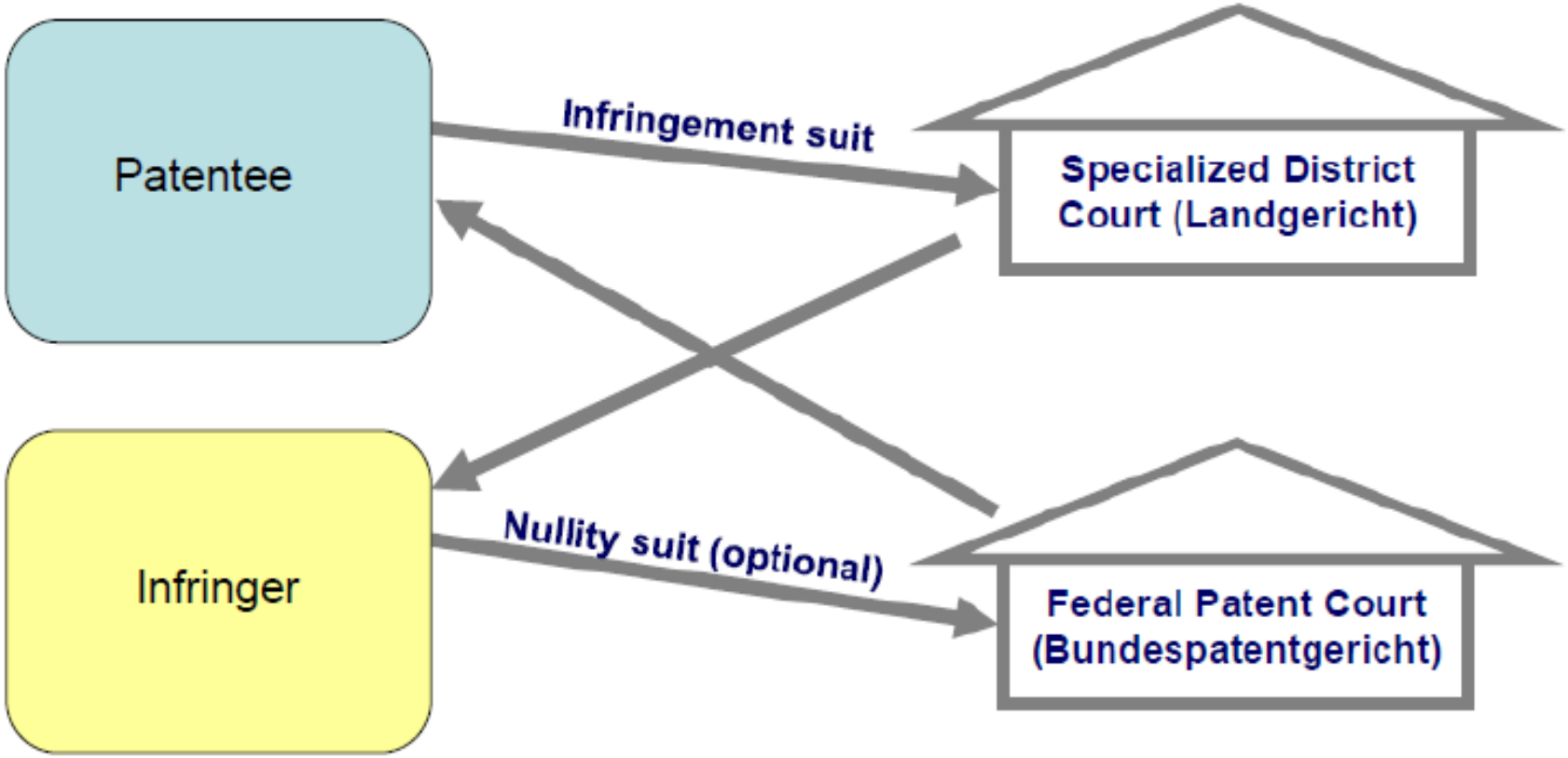
- The patent litigation courts handling the most cases in Europe are[1]:
  1. Düsseldorf (Germany)
  2. Paris (France)
  3. Munich (Germany)
  4. Mannheim (Germany)

- Prosecution and litigation in Germany is relatively affordable

- A judgment from a German court carries considerable weight in other jurisdictions

[1]: *Source: VPP-Rundbrief 1/2009*

In Germany different Courts deal with patent validity and with infringement



Infringement and nullity courts in Germany

Patent infringement suits:

There are 12 specialized patent infringement courts in Germany. The most important ones of these are located in Düsseldorf, Mannheim and Munich

Patent nullity suits:

To invalidate a patent, a nullity suit must be filed with the Federal Patent Court in Munich.

Thank you for your attention!

Optimist:

„The glas is half full!“

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Thank you for your attention!

Optimist:

„The glas is half full!“

Pessimist:

„The glas is half empty!“

HORN KLEIMANN WAITZHOFER

Thank you for your attention!

Optimist:

„The glas is half full!“

Pessimist:

„The glas is half empty!“

Patent attorney:

„A liquid bisects an open cylindrical vessel at a predetermined height ...“

Any questions?

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