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Patents

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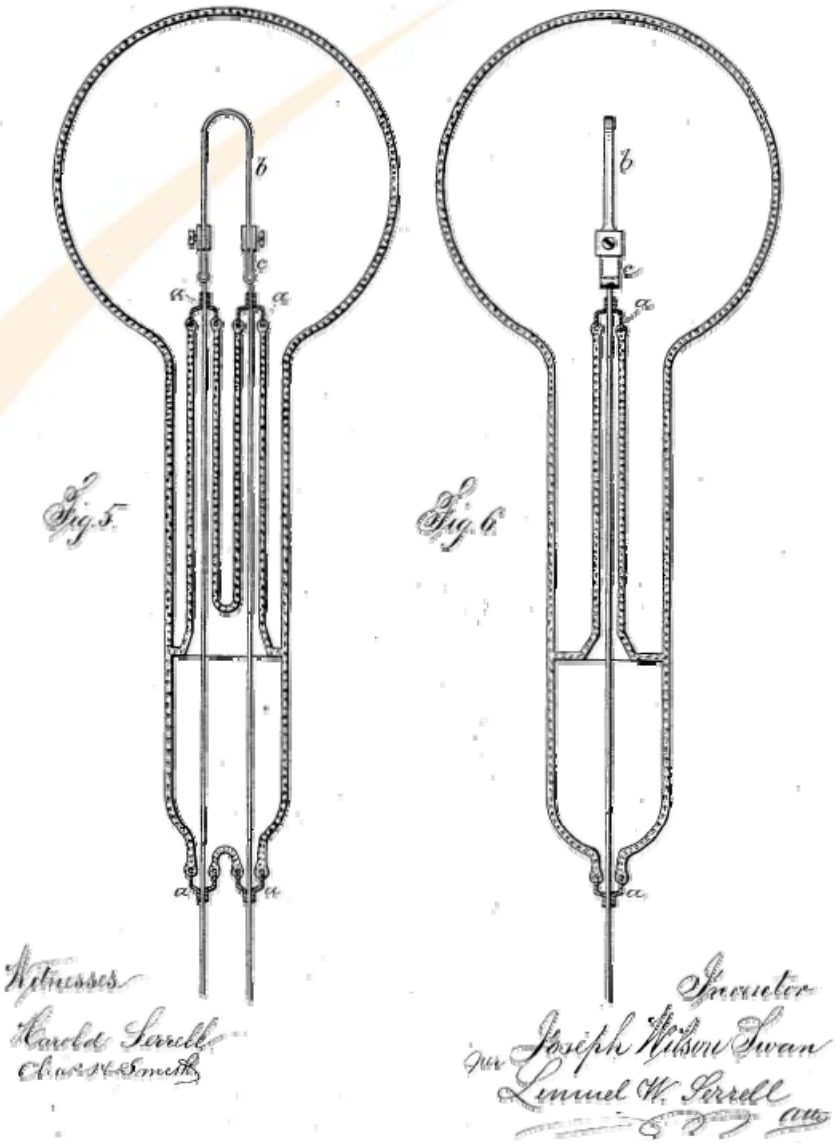
Agenda

- Patents
  - → What is a patent?
  - → What do you get from a patent?
  - → How do you get it?
- Other IPRS
  - → Utility patents
  - → Design, Marks
  - → Copyright

Patents



J. W. SWAN.
Electric Lamp.

No. 233,445. Patented Oct. 19, 1880.

Fig. 5

Fig. 6

Witnesses
Harold Sarrell
Chas. H. Smith

Inventor
Joseph Wilson Swan
per Lemuel W. Serrell
Atty

Note:

We discuss the Austrian patent law, which is very similar to the German/European law.

The US and Japan patent law is quite different!

What is this, a "patent"?

- A patent is a right on an invention
- Inventions are …
  - » Sorry! No official definition available!
  - → Teaching for systematic acting by employing controllable forces of nature to achieve a causally predictable goal
  - → Mental fabrication, resulting in a technical advance through predictable and controllable utilization of forces of nature
  - → Repeatability, Goal-orientation, Forces of nature
- Characteristics:
  - → Result of the mind, idea (implementation not required!)
  - → Technical advance (not in the USA!)
  - → Protection also against independent "second inventions"

What you get from a patent ...

- Monopoly on the use/ownership of the invention
  - → Maximum 20 years; yearly fee raises exponentially
  - → Independent from the knowledge of the patent!
  - → Right starts with the day of the publication of the grant
    - » Some protection also exists before!
  - → Product patent: Producing "devices"
  - → Process patent: How to produce something
    - » Exclusivity also includes the products created directly through the procedure!
- Disclosure of the invention
  - → Compensation of the inventor to the society for the monopoly
- Compensation, information disclosure, destruction
  - → On infringements!
- Claim on mentioning as inventor: Personal right!

... and what not!

- No right of usage
  - → You can prohibit others from using it
  - → This does not mean, that you may (immediately) use it!
    - – Example: Drugs
      - » Approbation, governmental checks, etc.
- No requirement to use
  - → You can leave the patent just "on ice"
- No international right
  - → Patents are exclusively national (=geographically limited)
  - → This includes the EU-/International patents!
    - » "Common" examination; Fees etc. must be paid for each country separately; validity separately in each country!
- Private usage and research is always allowed!
  - → Usage as subject of research, but not as object used in research!

Requirements for patentability: New

- New = Comparison to the state of the art
  - » What is available to the public, written, orally, through using, …
  - → Practice: Written state of the art, i.e. journals and all "protection" rights (patents, utility patents, ...)
  - → Patents are only national, but SotA is international
  - → Closed group + Obligation of secrecy. ≠ Public
    - » Public: Course, Conference presentation, press release, non-restricted theses, ...
    - » Private: Disclosure to selected single other scientists
  - → Independent of who published it (not: USA)!
    - » Exemption: Special inventors events, obvious misuse to the detriment of the applicant

Requirements for patentability: Usable in business

- Usable in business = Practicable and useful
  - → "Business" ≠ Trade regulation; includes e.g. farming
  - → Actual profit is not necessary, not even potentially!
    - » For instance when unlicensed usage cannot be proven
- Examples which are not usable:
  - → Perpetuum mobile
    - » Cannot actually be built, so not practicable
  - → Device for decapitating flies
    - » Not useful (BGH decision!)
      - – Note: If such is necessary for developing drugs, it might be useful!
- This is very rarely a problem!

Requirements for patentability: Inventive and sufficient disclosure

- Inventive = For an expert not derivable easily from the SotA
  - → Implicitly includes a "technical part"
  - → "Normal" technological development is "free"
  - → Expert = Average person/team from business
    - – Approximately equivalent to "engineer"
      - » This is significantly less than the typical university scientist!
      - » Average abilities and complete knowledge of the single affected (and in none other at all!) area
  - → Combination of known elements in a "new" way suffices
    - » But not the simple putting together (only additive)
      - – The combination must be **more** than the **collection** of the parts!
- Sufficient disclosure: Experts must be able to repeat it
  - → Aim and reason for patents is the disclosure to the public; if it is missing/incomplete, the patent is invalid!
  - → Generally the method must be described, not the aim

Inventive: The Problem-and-Solution-Approach

1. Selection of closest state of the art
   → What is the "prior art"?
2. Describing difference between invention and state of the art
   - Only regarding the independent claims!

   → What is "new"?
3. Description of technical effects resulting from difference
   → What does the new elements "produce"?
4. Description of objective problem solved by invention
   - "How to modify the closest prior art to achieve the technical effect which the invention provides over the closes prior art"

   → Why does the change bring about the effects?
5. Explanation, why SotA (even combining several elements) does not provide any hint how to solve objective problem
   → Why it is more than just assembling two old inventions?

What cannot be patented

- Discoveries: Pre-existing things, e.g. laws of nature, species
  - → Patents protect creativity (=what can be changed)
    - » What already exists and just nobody has found is not new, it was just not known to exist, although it did exist!
- Scientific theories and mathematical methods
  - → In their abstract form, i.e. "as such"
    - » Example: A method for faster calculation of matrix multiplications
  - → Their concrete application is patentable!
    - » $a^2+b^2=c^2$ is not patentable, but a triangle calculated through it might perhaps be patented (but: New? Inventive?)!
    - » Example: Fast matrix multiplication for picture analysis
      - – Not "as such"; has technical aspect/effect
- Aesthetical creations: Design, art, ...
  - → Design patent, copyright: These are protected, just differently
  - → No "technical" influence, just "appearance" (non-functional)

What cannot be patented

- Schemes, rules and methods for performing mental acts or playing games
  - → "Thoughts are free"
  - → Practical reason: Proving someone thought in a certain way could be quite difficult …
  - → Games:
    - » These are not really "business"; might be seen differently today!
    - » Refers to the "concept"/"rules" of the game, i.e. "ego-shooter"
      - – But see copyright and design patents for all materials!
- Business methods
  - → Would be too harmful for the economy as a whole
  - → See also software patents!
  - → Only "as such", i.e. devices to support them can be patented, just not the method itself
  - → Attention: In the USA this is possible!

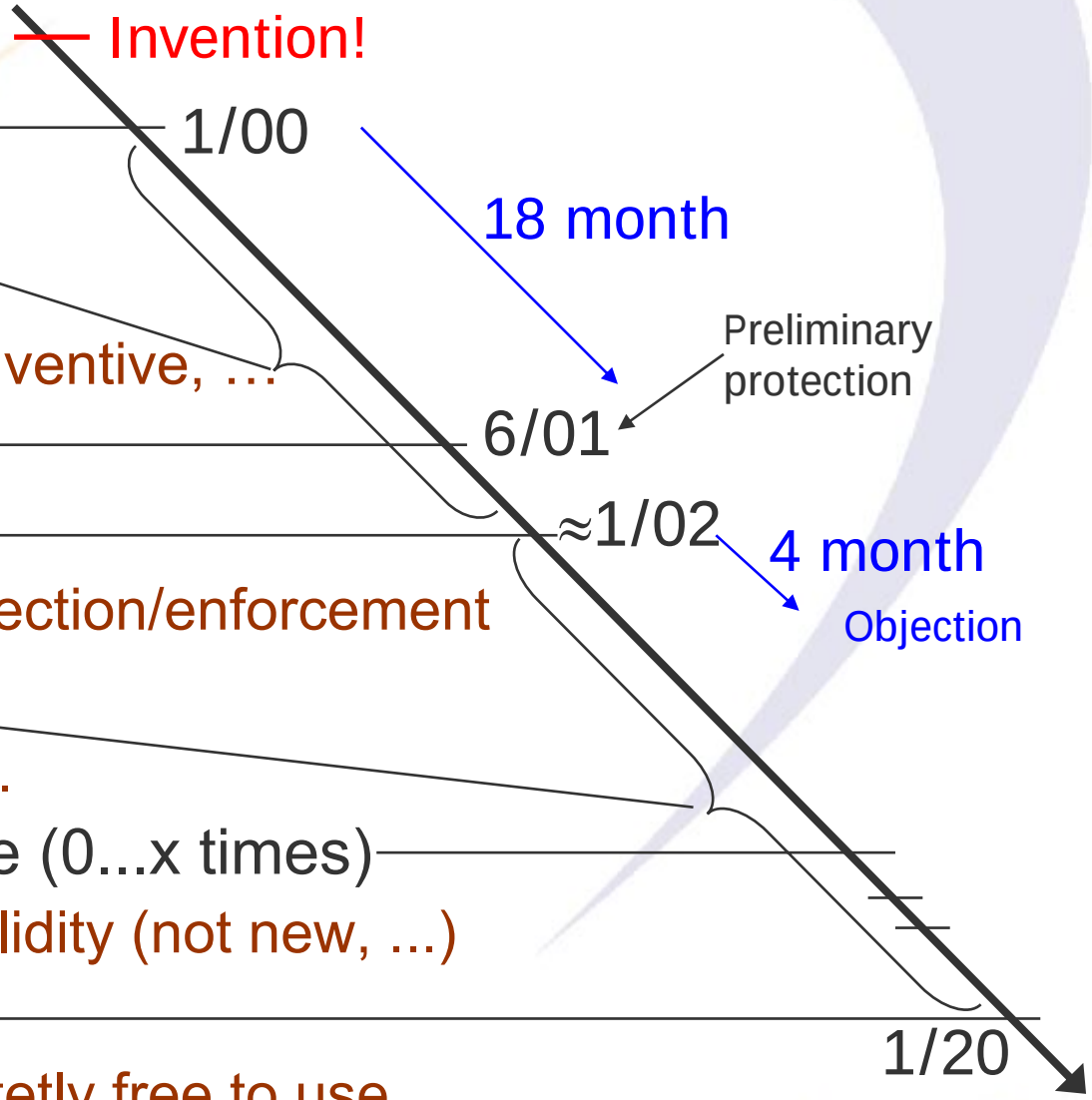
What cannot be patented

- Presentation of information
  - → Showing some data: Tables, forms etc.
- Illegal or immoral inventions
    - » Plain legal prohibitions alone are insufficient!
  - → Letter bombs, anti personnel mines (not in every country!)
  - → Probably also: Viruses, trojans, bugs
  - → Legal examples: Cloning humans, chimeras, …
- Many "biological" aspects: plant/animal species, etc.
  - → For them special laws exist, which are similar to patents!
    - » E.g. additional "deposition" required for "disclosure"
      - – Regrowing the plant/animal must be possible
      - – Otherwise it would not be a "disclosure", as others couldn't repeat the "invention" at all!

What cannot be patented

- Methods for treatment of body by surgery or therapy and diagnostic methods
  - → A kind of "immorality" to monopolize these
    - » Example: How to cut in surgery
  - → Tools, drugs, … for this **are** patentable!
    - » Example: With what to cut in surgery
- Computer programs: See software patents!

The lifecycle of a patent



- Application
  - → Priority starts here
- Patenting procedure
  - → Verification new, inventive, …
- Publication
- Grant
  - → From here full protection/enforcement
- Continuation
  - → Licensing, using, ...
- Invalidation procedure (0...x times)
  - → Challenging the validity (not new, ...)
- Termination
  - → From here completetly free to use

International patent law: EPA

- "Unified" european patent
  - → EPA = European patent agreement
  - → Independent of the EU (originated from Council of Europe)!
- One submission, one examination, one procedure
  - → Result: Separat nat. patents (fees, validity, ...)
  - → Desired countries can be selected freely from the member states (Note: Fees depend on the states and their number!)
- Advantage: Cheap (relatively!), faster, and simpler than obtaining all the national patents desired separately
  - → Which also might lead to different results, claims, …!
- Disadvantage: High initial costs, e.g. translation (G, E, F)
  - → Even higher costs later: Translation into all the national languages for which a patent shall be obtained
    - » Attention: "London Agreement" will reduce these enormously!

International patent law: PCT

- Patents are national; but there is an international procedure!
  - → PCT = Patent Cooperation Treaty
- Single application, but patents are issued for arbitrarily selected countries
  - → These remain separate patents (procedures, fees, validity, ...)
- Application at most 1 year after "local" application (incl. EPA)
  - → Priority of the application according to the first patent!
- International examination (not binding for countries!)
  - → With a positive examination the national checks are usually less of a problem; but claims might have to be adapted
- Advantage: 30 month time for evaluation with little costs
  - → Cost-savings with many countries
  - → Significant costs occur only very late in the procedure (transl.)
- Disadvantage: Long procedure (but this might be desirable!)

EPA vs. PCT

- EPA: One examination, resulting in a single "patent"
  - → This is then translated and issued as national patents
  - → These are just "translations"
- PCT: One examination, report is sent to national offices
  - → Each national patent office then checks whether the patent can be granted according to the examination report
    - » Might also require additional examination, changing claims, …
- EPA is "more unified" than the PCT
  - → But the end result is the same: Independent national patents
  - → PCT is worldwide, EPA only regional
    - » There exist also Asian and African counterparts of EPA

Applying for a patent

- Applying for a patent is quite easy…
  - → But to be successful with it, i.e. receive a high-quality patent, is a bit more difficult (and expensive) …
- There is some obligatory content:
  - → Procedural matters: Registrant, inventor, address, …
  - → Title
    - » Will be published immediately; often very vague because of this!
  - → Description: What your application does and how it works
  - → Claims: The specifics you want the monopoly for
  - → Summary: Brief description of problem and solution
- Must be handed in physically at patent office
  - → Can be handed in personally, put in mailbox, sent by post/fax
- Cost (Austria): Approximately 420 €
  - → Yearly fees: 70 € (3rd year) to 1400 € (16th - 20th year)

Content of a patent application

1. Technical area of the invention
2. The current state of the art
3. The technical problem the invention should solve
4. The invention, i.e., how it works
5. How to realize/produce the invention
6. Advantages over the state of the art through the invention
7. Description of the figures
8. Claims
9. ***(... SotA ..... comprising of ..... new aspect .....)***
    1. ***At least one main claim***
    2. ***Optionally an arbitrary number of dependent claims***
10. Figures (images, diagrams etc.)

What does the patent attorney need?

1. The draft of the publication
2. The planned publication as a draft
3. A draft for that, which should be published
4. A preprint of the publication

   → Additionally: The inventor and some explanations …

- Generally a good description of the invention is necessary
- What is not needed:
  - → Prototype
  - → How to measure the results
  - → How to manufacture the invention
  - → Invoices, cost estimates, prospective buyers, …
    - » But good attorneys will investigate, whether a patent is a sensible idea, i.e. whether this is something which might pay off!

What the patent attorney does

- Does the invention fulfil all necessary criteria?
  - → Sufficient disclosure of the invention?
  - → What can be claimed and to which extent?
- Formulating the application
  - » This is very important! Only a professional can draft claims to be as wide as possible and narrow enough to be accepted
  - » Additionally, experience is necessary to draft patents which are difficult to circumvent
  - → Claims
  - → Description
  - → Figures
- Analysis of and response to examination reports and procedural communication
  - → Support on rejections, modifications, oppositions, ... By the patent office or third persons

Practical hints

- Do not provide application examples in abstracts, publications, etc.: Especially important for "as such" patents
  - → See Vicom: Algorithm no; algorithm for certain application yes
    - » Mentioned in abstract = Publication = No patent any more!
      - – Exactly such a case occurred in Linz! Exemplary application at the end of the abstract prevented patenting the invention!
- Do not think only of Austria: There are the USA too
  - → If it is not patentable in AT/EU, it might still be sensible to go for a patent in the USA
    - » Costs are higher → Economic aspects should be much clearer
      - – E.g., already a prospective buyer/licensee available

Other Intellectual Property Rights (IPR)

Design patents

```
/**
   * Encode a string to be suitable as an URL using UTF-8. Also replaces &amp;quot;+&amp;quot;
   * with &amp;quot;_&amp;quot; (+ is not allowed in IE frame names).
   * @param url the string to encode
   * @return the string encoded as an URL
   * @see java.net.URLEncoder#encode(String,String)
   */
  public static String encodeAsURL(final String url) {
     String res=url;
     try {
        res=java.net.URLEncoder.encode(url,"UTF-8");
        res=res.replace('+','_');
     } catch(UnsupportedEncodingException e) {
        // Should never happen!
     }
     return res;
  }
```

Copyrights

Trademarks

```
Given: a list "List"
largest = List[1]
counter = 2
while counter <= length(List):
   if List[counter] > largest:
      largest = List[counter]
   counter = counter + 1
print largest
```

Utility patents

Geschmacksmuster: 2. Preis beim Plagiarius Award 2004 (http://www.plagiarius.com/)
Original: alfi Gmbh, Wertheim; Plagiat: China

Brief overview on other IPRs: Utility patents

- Similar to patents: Inventions are protected
  - → Austria: Program logic can be protected "as such"!
- Maximum duration: 10 years
- Difference to patents:
  - → There is no examination regarding new or inventiveness
    - » Non-binding (!) examination regarding prior art
  - → Actual examination occurs only in nullification proceedings (no legal guarantees)
    - » Everybody can request this (Deletion ex-tunc!)
  - → Only national: No EU/international procedures
- Transformation into patent possible before granting!
  - → A patent can simultaneously be applied for as a utility patent: Quick procedure for the time until patent is granted!

New: May have been published by the inventor up to 6 month before the application!

Brief overview on other IPRs: Design patents

- Protected are aesthetic creations
- Maximum duration of protection: 25 years
- Difference to patents:
  - → Depends on the external similarity
    - » Contour, colour, form, appearance, decoration, surface structure, ...
    - » Graphical symbols, packaging, furnishing, ...
      - – Impossible: Computer program (code)
      - – Possible: User interface (=graph. appearance)
  - → Requirements: New, peculiarity, visibility
    - » May not be solely based on technical reasons
    - » Not verified on application; only in later court proceedings!
  - → How it functions/works/… is unimportant
- For design patents exists an EU variant

Brief overview on other IPRs: Trademarks

- Protected are Image, word, form (, ...) marks
- Maximum duration of protection: Indefinitely renewable
- Idea: Differentiating from other products/companies
  - → Origin, trust, advertisement
- Various types are possible:
  - → Words, image, combination of them
  - → "Appearance" of a product (see also design patent!)
- Not possible is:
  - → Descriptive, technical reasons (form), deceiving, ...
- Examination on difference to existing marks takes place
  - → Not binding; but danger of a deletion procedure
- Divided into classes: Protected only for classes requested!
  - → E.g. class 42: Soft-/Hardware design/production, ...

Copyright

- Works of literature, art, music, film
- Maximum duration of protection: Death of creator + 70 years
- Difference to patents:
  - → Protected is only the specific expression
    - » The idea behind it remains free
  - → No particular lower boundaries
    - » "Personal styling by the creator"
      - – In practice this is very low
      - – Whenever there are several real alternatives of expression, the selection between them is sufficient!
      - – Too low: "Leistungsschutzrechte" (e.g. picture ↔ picture work)
  - → Independent identical creations are protected themselves!
    - » No monopoly on a certain expression!
  - → No registration needed
    - » Protection already and automatically starts with creation of work

Copyright of student works

- When are products of students works (and then protected)?
  - → Surpass the common, usual, …
  - → Initial programming assignments: No
    - » Projects in advanced programming courses: Yes
  - → Seminar thesis, master/diploma thesis: Yes
- Attention: Co-Authoring by the teacher of the course?
  - → Only, if a part of the formulation is from the teacher
  - → Providing ideas, guidance, etc. is not sufficient!
    - » Copyright does not protect ideas!
    - » But: Programs → Design documents belong to it
      - – Class diagram, etc. → Co-authorship possible
  - → Extensive corrections might be sufficient
    - » In practice they will usually not!
  - → Even if they do: Any disposition is only possible together
    - » I.e., without the student nothing is possible at all

Usage of student works

- Various potential use cases:
  - ✓ Presentation in course, citing it in publications, etc.
  - ✓ Distribution to other participants
    - » Copying for the class (Exception: Textbooks!)
  - ✓ Usage as object of research
  - × Usage for research
  - × Selling the work (book, program, as a publication, etc.)
  - × Usage in teaching (i.e. letting students create slides)
  - × Publication on the Internet
- "Circumvention" of the restrictions:
  - → Transfer of explotation rights to the university/the teacher
    - » This can even be a gift, i.e. without actual payment
    - » Must occur freely, i.e. independently from course participation!
  - → Payment for the work
    - » Support, bonus, etc. alone are probably insufficient!

And at the university?

- Utility patent: Can be used as emergency measure, if a patent had not been/cannot be applied for early enough
- Design patent: Probably very rare
  - → But: Art universities; perhaps in cooperation with companies
- Trademarks: Probably no importance
  - → But important to add rules for them in cooperation treaties!
- Copyright: Very important!
  - → Student works
    - » For integration into courses, projects, etc. → contract necessary!
      - – Usually also quid pro quo; "Permission for mark" is illegal!
  - → Third-party paid employees: Rules who receives what
    - » Important: Who is the formal employer?
  - → Exact definition: Single/all rights, exclusivity, sub-licensing, transfers, payment, etc.

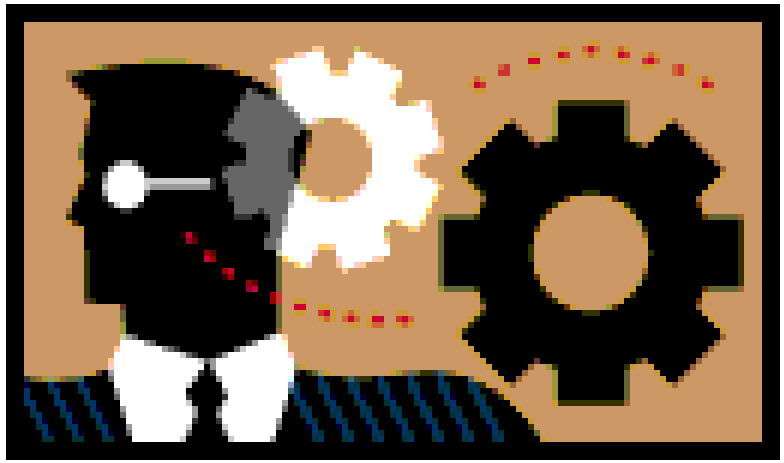
The "London Agreement"

- Currently translation costs are a significant portion of the costs of an EPA patent
  - → Translating a whole patent into another language: ≈ 1.400 €
    - » All 31 member states: 30.800 €
    - » Average (7 countries): 7.000 €
- Note: These translations have no legal importance!
  - → If there is a patent violation, the basis is the patent as granted in the official EPA languages (G, E, F)!
- Also, they are not very helpful, as very late in the procedure!
  - → On average, only after 3 to 4 years after initial application
- Remedy: London Agreement
  - → Concluded 17.10.2000
  - → Will enter into force in first half 2008
    - » Ratified by: Germany, UK, Netherlands, Switzerland, Iceland, Latvia, Liechtenstein, Monaco, Slovenia, France, Sweden, Denmark

The "London Agreement"

- Official language is German, English or French:
  - → No translation of description and drawings if proceeding language is not their own
  - → Claims are always translated into all three languages
    - » E.g.: French application → Only claims translated to E and G
- Official language is different:
  - → Each state globally selects one language from G, E and F
  - → No translation if proceeding language is in this language
  - → Claims may be required to be translated into national lang.
    - » In addition to the translation to the other two official languages
- In case of disputes, the patent owner must provide a full translation (at own expense) to alleged infringer and court
- Result: Most patents will have to be fully translated to G, E, F
  - → Claims (comparatively tiny!) might require more translations

What your patent advisor can do for you



Support by the patent advisors

- Filling in the invention disclosure form
  - → Help in deciding whether it is an employee invention or not
  - → Help in filling in the form
  - → Take over further proceedings
- Questions to patenting and licensing
  - → Directly or with special problems in connection with the legal department or the AWS-Tecma
- Help with contracts for third-party-employees regarding IPR
  - → Ceding of patents and other IPRs, …
- Information on cooperation treaties
  - → How to cover patents, copyright, publications, ...
  - → Division of IPRs between the parties
- Advising on various IPRs

Summary

- Cooperation with companies: Do not forget the university!
  - → At least secure rights for use in research and teaching
  - → Better: Fair division of rights of exploitation
    - » Example: Non-exclusive license for cooperation partner
- Patents: Do not forget them on any practical result
  - → On new and innovative products → Contact the inventors assistant whether a patent is possible
    - » No costs to the institute!
    - » Important for the university and advantageous for the inventors!
- Any questions regarding patents, IPRs, exploitation, …

Your patent advisor is always there for you!

Questions?

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For individual discussions and other questions:

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