

IP Training for New Recruits—Central Research Laboratories

The Patent System—An Introduction

Intellectual Property Management Division

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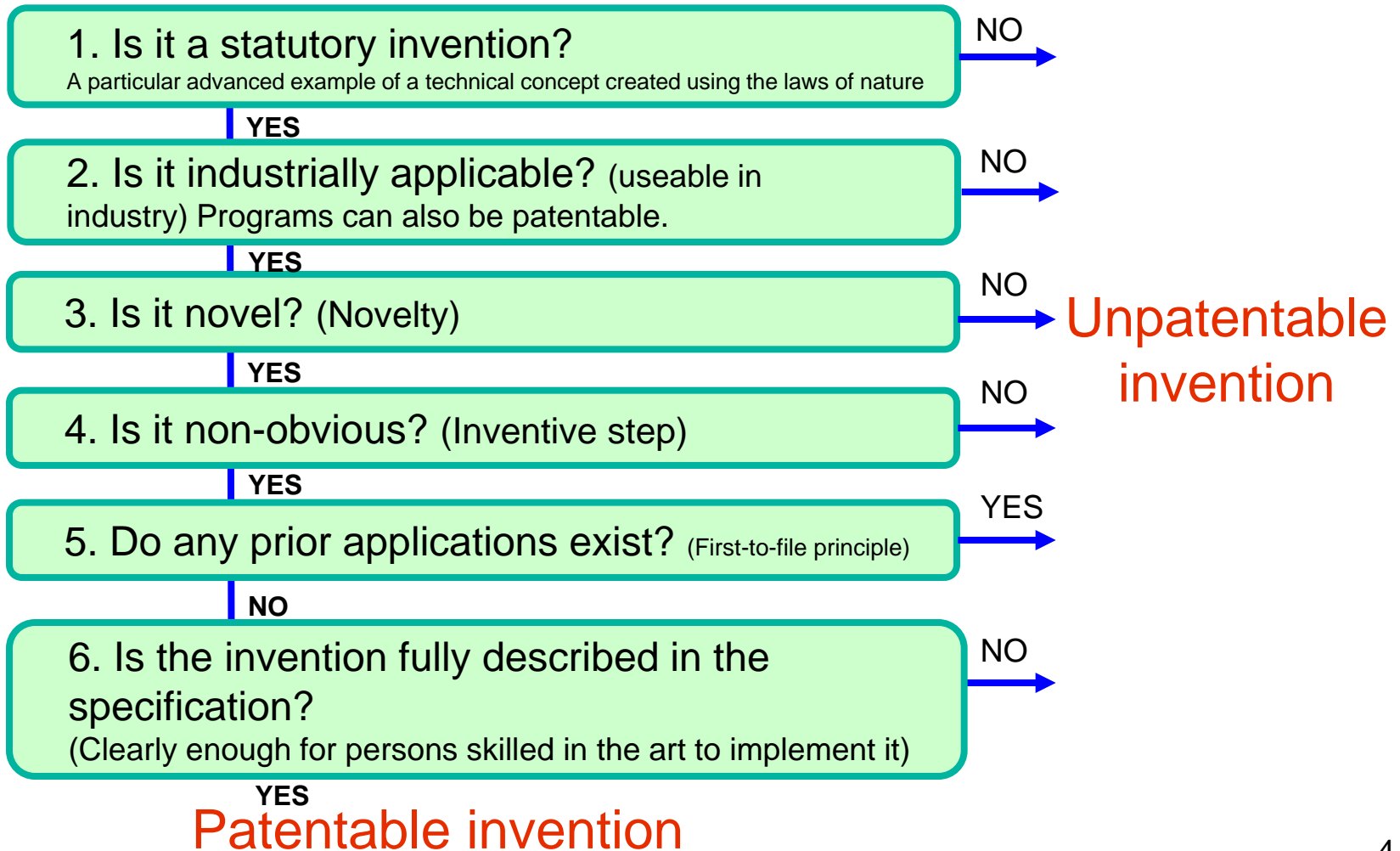
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1. Research outcomes and patents

This chapter describes what type of inventions are patentable and how to excavate an invention.

(1) What is a patentable invention?

The outcomes of research can give rise to numerous inventions. However, not all of these inventions will necessarily be patented. A “patent” refers to patent rights conferred under the Patent Act; therefore, in order to be granted a patent an invention needs to fulfill certain requirements established under the Patent Act for it to be a “patentable invention.”



How to judge novelty

An invention becomes the common property of many people once it is made public, so it would not benefit society at all to grant exclusive rights through a patent to inventions that are already made public. Patentable inventions must be innovative and new ideas that have never been seen before.

Unpatentable inventions deemed non-novel

Inventions deemed non-novel	Examples
1. Inventions known to unspecified persons prior to the patent application	Announced on TV or at academic conferences
2. Inventions used by unspecified persons prior to the patent application	Sold openly
3. Inventions which have been described in published material and seen by unspecified persons prior to the patent application	<ul style="list-style-type: none"> Published in books, research papers, and patent publications Made public on the internet

How to judge novelty

Level of technology that is patentable

Current level of technology (Publicly known prior art)

Possesses novelty and an inventive step

Possesses novelty but no inventive step

Does not possess novelty



Interchangeable pen



Pen for drawing both fine and thick lines



Fine pen



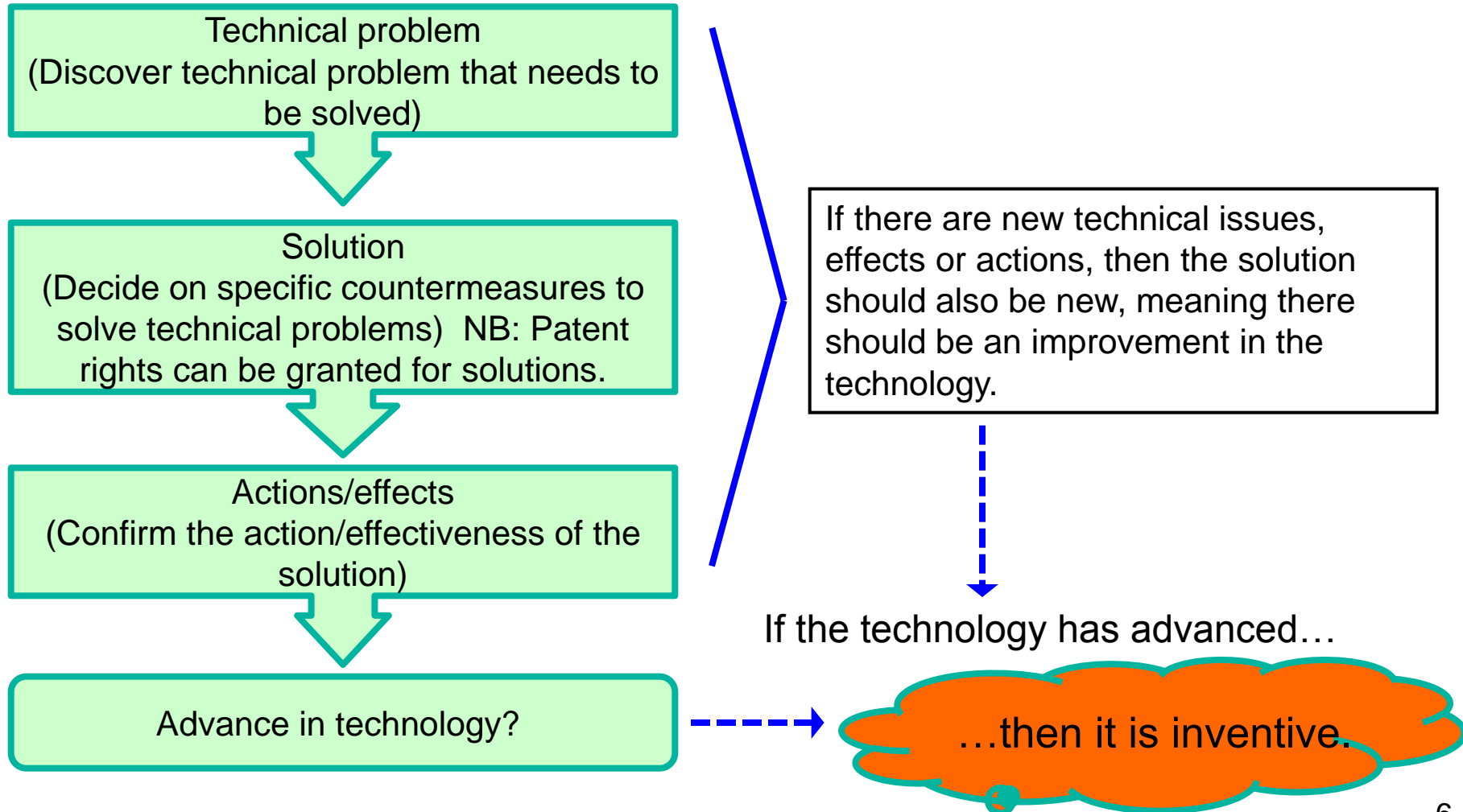
Thick pen

*"Publicly known" refers to concepts known not only in Japan, but on a worldwide level.

* In the event that the structure of the invention is the same as the structure of a prior art, then the invention is not novel. If the structure is exactly the same, then the invention is also considered to lack novelty even if the inventor emphasizes that the objective and the action effects are different. This is because if the structure is the same, the same actions and effects should be expected as well.

How to judge inventiveness

If the invention is something that could be easily invented by any other researcher or engineer in the field (as in the case of an invention that is only a slight improvement on a prior art), that invention is unpatentable even if the structure of the invention is not the same as a publicly known prior art (meaning it is novel).



(2) Creating and excavating an invention

Points for creating an invention with utility in mind

● **High-utility inventions:** Utility is an important factor of an invention's technical value. Inventions that contribute to the development of an industry and generate a return on investment are worth patenting. Utility is determined by the level of feasibility and how significant the economical effect will be in the event that the invention is implemented.

● **The extent of the technical differences with the publicly-known technology does not necessarily correspond with the utilitarian value of the patent:** A greater technical difference with the publicly-known technology does not necessarily go hand in hand with more utilitarian value in the patent. On the contrary, it is often the seemingly insignificant inventions which end up contributing the most to commercial success in the form of patents. Being so difficult to avoid, in many cases it is precisely these types of inventions which end up becoming the strongest patents.

• Excavating an invention

Excavation timing	Excavation perspective
At the start	Sometimes when a theoretical invention focuses on a partly-completed new research topic, the results of these considerations can turn into an invention.
At time of interim results	Ideas which are not part of the main track of the research theme but which have considerable potential and high technical value when repurposed. This includes ideas for items that are effective in other research studies, such as equipment for experiments, experiment methods and catalytic agents.
At time of final results	When the research is completed (particularly when the research has been successful) it is very easy to forget about patent applications. Make sure that checking for patentable content becomes a routine practice.

• Improving an invention

Type of invention	Development perspective
Unfinished invention	Ideas that have significant technical value and that can be completed with a little tweaking can be developed and completed by putting the ideas into tangible form, conducting additional tests, and providing theoretical clarification.
Unimplemented inventions	The more promising inventions that have not been implemented or were only partly implemented in the course of research before being abandoned can be completed with a little fleshing-out.
Theoretical inventions	Theoretical inventions that it was not possible to actually develop during research can be completed by taking the more important ideas, turning them into detailed proposals on paper, and providing theoretical corroboration

Excavate inventions by reviewing your research outcomes from a patentability perspective (1. Technical issues; 2. Solutions; 3. Actions and effects of the solutions) and, when the research outcomes are incomplete, developing them to completion.

(3) Developing an invention

Invention development is not only about when inventions come about from R&D outcomes; it also refers to inventions that are created in a planned and intentional way. You can obtain systematic and comprehensive patent rights by developing patents this way. Moreover, invention development actually encourages systematic research activities.

• Aims of developing inventions

1. **Add breadth to an invention you have become aware of**

In many cases, inventors feel that by producing one mode of implementation they have already done enough, but fail to realize that they actually have a number of inventions in front of them.

2. **Add depth to an invention**

Incorporate logical content and depth to the invention and improve on its level of completion.

3. **Create a patent family**

Prevent others from obtaining rights by covering other fields surrounding the invention in order to create a family of patents as a stronger patent.

4. **Use invention development techniques to enhance research**

Enhance research by using invention development methods to create research guidelines and in the selection of solutions.

5. **Incorporate the inventions created from research outcomes research activities**

Incorporate patentable technical methods into some other research themes.

• Steps for developing inventions

1. **Select a topic**

It is essential to consider whether or not this is an important topic suitable for developing into an invention.

2. **Create a plan**

Conduct development work at key points in the course of research. Involve several members. Bring the concept to completion through sessions lasting around one hour each.

3. **Gather prior arts**

Be sure to collect, organize and map out prior arts and incorporate into these into the concept.

4. **Develop concepts**

To generate concepts, commonly known methods such as brainstorming, the MN Method and the Gordon Method may be used. Do not focus on feasibility at the conceptual stage.

5. **Evaluate feasibility**

Evaluate the technological aspects of the invention from the standpoints of logic and utility. Get rid of unnecessary elements and prioritize the rest.

6. **Carry out mapping**

Map out the technological aspects using a systematic tree diagram or matrix formation. This will enable you to identify omissions.

7. **Prepare the application**

Prepare the application by categorizing all elements into multiple dependent claims and separate applications, based on the map.

Different types of approaches for developing inventions

- 1. Development from a defect:** Inventions that come about by thinking of countermeasures taken to deal with system or equipment defect which occur in the course of research
- 2. Development out of need:** Inventions that come from thinking of ways to meet needs
- 3. Development through application:** Inventions that come about from devising new uses and responding to new seeds

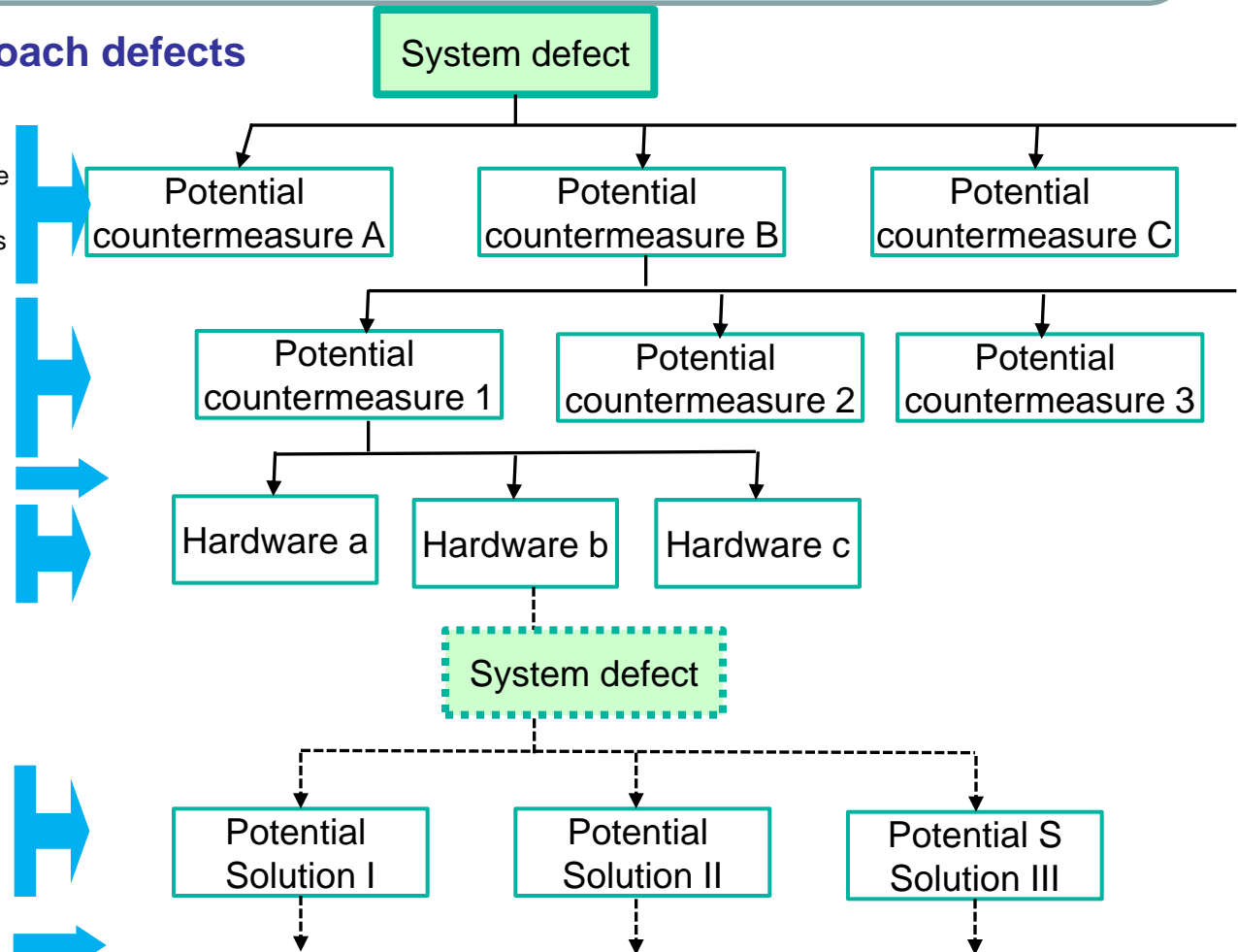
• Examples of how to approach defects

1. First of all, try to draw out the defect countermeasure concepts from superordinate countermeasures
2. Evaluate the concept of the countermeasures from a technical perspective
3. Develop the countermeasure concepts with the highest evaluations into the next tier of countermeasure concepts
4. Evaluate the next tier of countermeasure concepts from a technical perspective
5. Repeat steps 3-4
6. Develop a tangible structure
7. Evaluate the tangible structure

Carry out the following as necessary

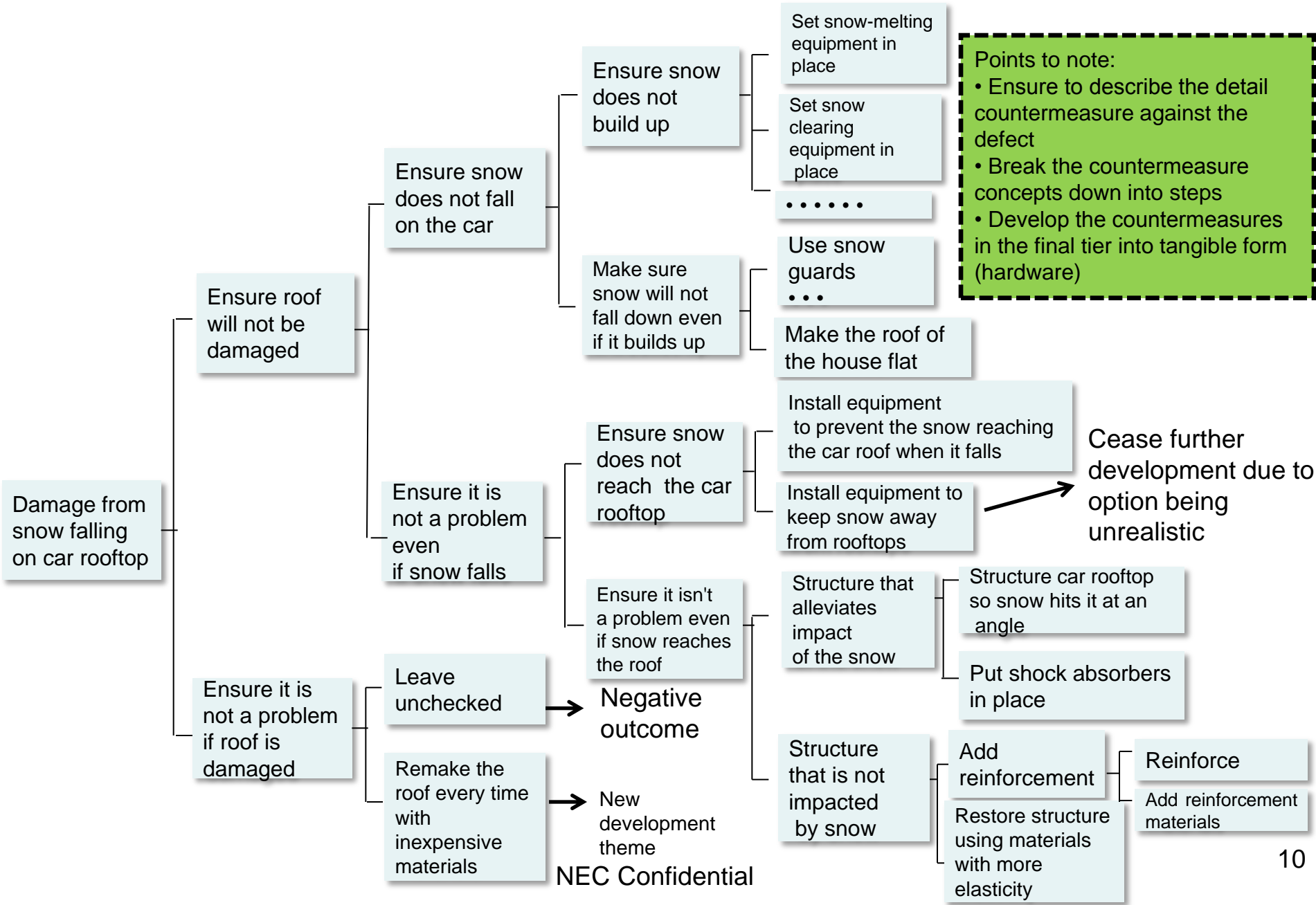
8. Anticipate what defects will be found in the structure with the highest evaluation once realized in tangible form

9. Repeat steps 1-7



Approaches for developing inventions

(Example of development from defect)



Tips for creating an invention

It is fair to say that if you want to obtain patent rights with high value, it is best to create original inventions based on research themes using the invention development process. Having said that, researchers often stumble upon inventions using peripheral technologies that are tangentially related to their research.

Inventions can take all kinds of forms. As indicated below, even concepts that do not include many new elements can still have the potential to become inventions with high utility if they have new functions or effects. You should keep this in mind to help you recognize possible inventions hidden within your research outcomes.

Embodiments of an Invention	
Combination invention	An invention that combines a number of publicly known prior arts
Substitute/conversion inventions	An invention where one element of several publicly known prior arts has been substituted with another publicly known prior art
Inventions with application changes or limitations	An invention that changes or limits the application of a publicly known prior art to something else
Inventions with changes or limitations to numerical values, form, layout, or materials etc.	An invention that makes changes or limitations to the numerical values, form, layout, or materials of a publicly known prior art
Selection invention	An invention created by selecting some or all of the elements comprising a prior art as specified, specific embodiments that are subordinate concepts

2. Preparing a patent application

This chapter looks at the essential nature of excavated inventions, and discusses what sort of contents are required for a patent application, and what preparations need to be made before drafting the specifications.

(1) Understanding the invention

When thinking about the scope of rights (the scope of the patent protection that is being sought), you should try to get an accurate grasp on the essential nature of the invention, come up with various modifications and applications based on this, and ensure that the scope includes all of these without omissions. If you misunderstand the essential nature of an invention, you will end up leaving areas out of the scope of rights which by rights you should have been able to exercise rights over, resulting in loopholes in the patent rights. You should therefore examine your invention with all due care to ensure that you accurately understand its true nature.

Although the tangible outcomes of your research technically represent the best selection out of all your research results, in some cases they do not do a good job of displaying the overall technical concepts of an invention, i.e. the “invention” developed in response to a new function or principle. Failing to grasp an invention correctly can result in a failure to claim an appropriate scope of rights, resulting in only partial rights being exercised.

When filing an application for an invention that takes the form of a research outcome, it is advisable to make all possible efforts to claim rights to the fullest possible extent, so as to make full use of the patent rights. An important role of the inventor is understanding the true nature of the invention correctly so as to fully leverage the patent rights.

Clarifying the essential nature of the invention

Here, when we refer to the “essential nature” of an invention, we are talking about its functions and principles. In other words,

1. **What technological improvements are made with this invention?**
2. **What are the core functions of the invention, or the core problems that this invention attempts to resolve?**
3. **What are the minimum components required to exhibit the functions?**
4. **Within what kind of scope is the invention applicable?**

are some of the elements we need to examine to understand the nature of an invention.

In many cases, the inventor, when it comes to his/her invention, is only really aware of one mode for carrying out the invention (based on one aspect of the nature of the invention), and does not truly understand the essential nature of the invention as a whole.

By using that one aspect as a basis for further examining the invention’s functions and principles or looking at the invention from a multifaceted perspective, the inventor can clarify aspects previously not seen, broaden the scope of the invention, and reveal the invention as a whole; in this way, the invention as a whole—that is to say, the essential nature of the invention—becomes apparent.

• Obtaining the maximum scope of rights

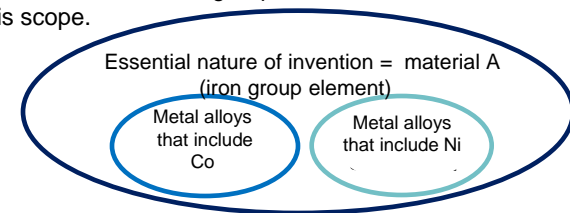
Re-examine the invention from a multifaceted perspective to reveal the maximum scope where the invention can apply, but without deviating from the core function and principle of the invention.

1. Try replacing a function with another means
2. Try applying technology ideas to technical seeds in other technical fields
3. Search for applications in other technical fields

A scope that is expanded to this extent reflects the true nature of an invention.

Example:

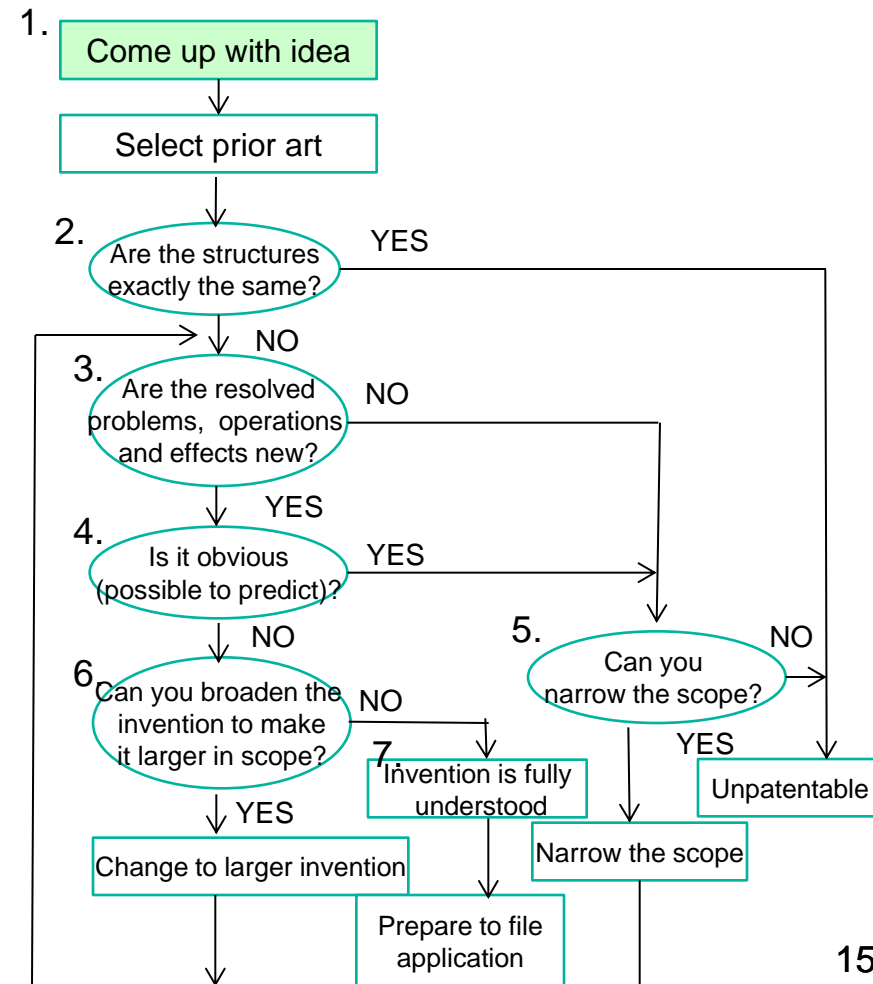
In the event that magnetic alloys which include cobalt (Co) are developed as a material to resolve long-standing problems in cell phone antennae, you should not file a patent application for “cell phone handset using magnetic alloys which include cobalt (Co) for antennae material,” but should rather look for the essential point which solved the technical problem and thus grasp the essential nature of the invention as being “a cellular phone using magnetic alloys which include an iron group element for the antenna material” and seek patent rights for this scope.



Steps for carrying out the process

When you identify an invention in the course of your research, use the following steps to gain a basic understanding of your invention. If you have not thoroughly surveyed the prior arts at this point, use the concepts revealed through this process as the prior art search concepts; then add in the results of your search and new prior arts and carry out the same steps once again to get an understanding of the invention.

1. Write down the idea you have come up with. For instance, create a simple diagram or chart.
2. Compare it with the latest prior art, and see if it shares any of the same structure.
3. When the structures differ, compare to see if the problems, solutions, operations and effects are new.
4. If there are new problems, operations and effects, undertake a comparative check to see if it could be predicted by someone skilled in the field.
5. If it could be predicted in this way, then it is not suitable for patenting in its current form. Add component elements, narrow the range of the invention and carry out the comparison outlined in “3” once again.
6. If the problems, operations, and effects from “3” are new, then consider broadening the invention further.
 - (a) If there are component elements whose absence would not cause problems with the operations or effects of the invention, then delete these.
 - (b) For each component element, consider whether there are alternative means, and if there are, incorporate these alternative means into the invention.
 - (c) For each element, examine whether the invention can be grasped through the generic concept (e.g. keyboard→means of inputting).
7. When the invention cannot be broadened any further, then the process of “understanding the invention” is complete.



(2) Understanding prior arts

Understanding the invention involves comparisons with the prior art that is most similar to the invention in terms of contents out of all the technologies that are publicly known at the time of filing. In other words, it involves differentiation (clarifying differences). This means there have been many cases where, due to an applicant's being unaware of an applicable prior art, the said prior art has been mistakenly included in the scope of the patent claim, leading to the patent being rejected. The Japanese Patent Journal and foreign patent publications such as the Official Gazette of the United States Patent and Trademark Office are used as the leading technical documents for revealing prior arts.

If you have not properly understood the essential nature of the invention, then you will not be able to define the appropriate scope of rights; this will result in the scope of rights being excessively narrow, or can create difficulty in acquiring rights at all in some cases. Understanding the invention starts with differentiations with prior arts, and it is no exaggeration to say that how well you understand your invention will be determined by how accurately you understand the prior arts.

• Searching for prior arts

● Before searching, understand the invention

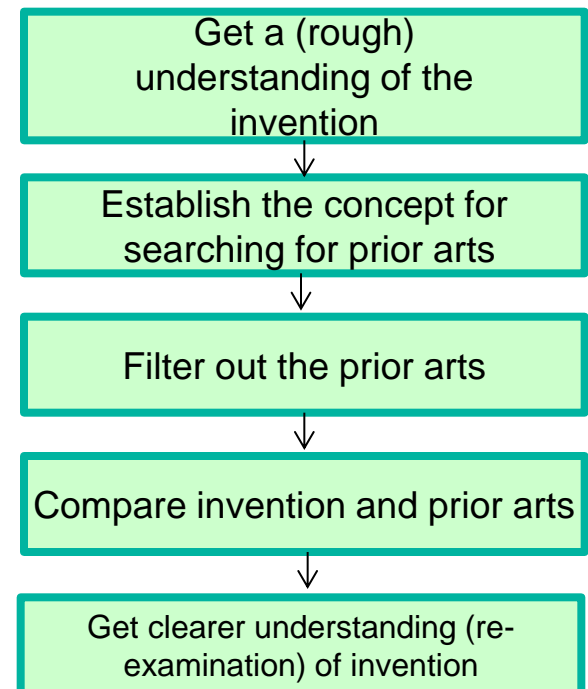
First get a rough understanding of the invention; then, based on this, establish what kind of search to do for prior arts, and establish the search concept.

● Conduct searches of both hardware and functions

Gather prior arts with similar functions even if their structures differ from the invention, as well as prior arts with similar structures to the invention. If the functions are exactly the same, this means that a person skilled in the field may be easily substitute the two, meaning that the invention may not possess an inventive step even if the structures of the two are different.

● Search in closely-related technical fields as well

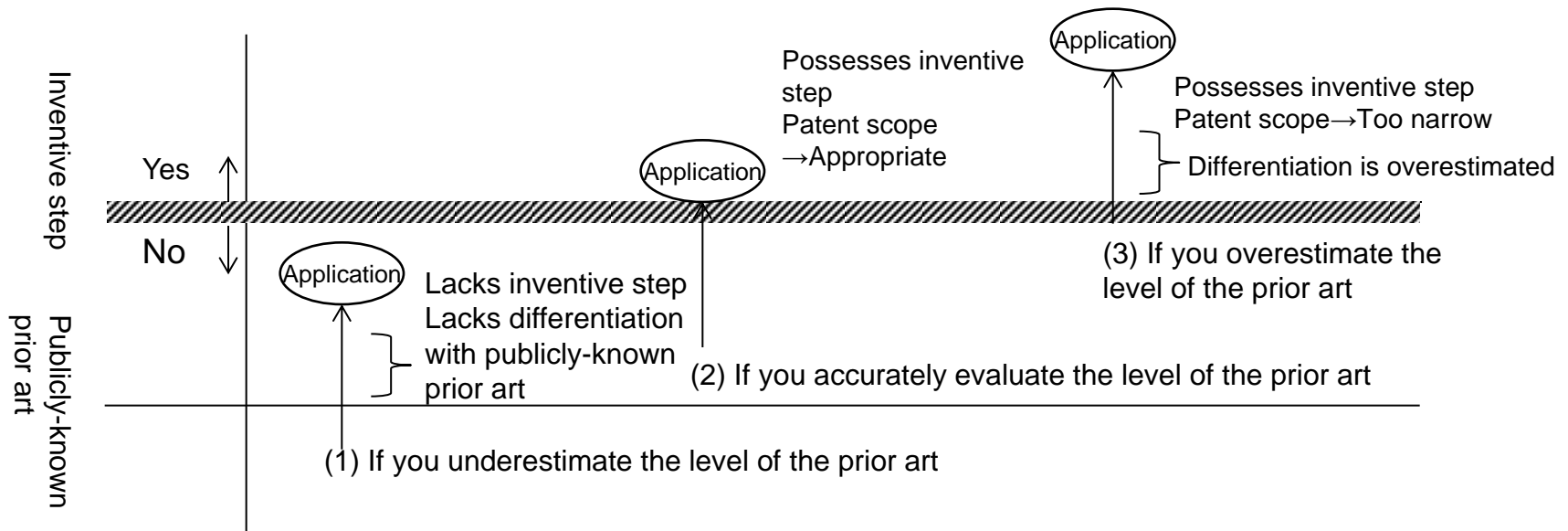
Search not only the technical field that gave rise to the invention but also other fields to which the invention can be applied. For instance, if an invention relating to an antenna for a cell phone can be applied to TV and radio as well, it is possible that a similar antenna is already known in those fields.



How the acquisition of rights depends on understanding prior arts

Whether an invention has an “inventive step” is judged by comparing the invention with prior arts at the time of filing. It is the inventor’s responsibility to work out in advance which prior art is the most similar to the invention, cross-check this prior art against the invention, and explain what the advantages of the invention are.

1. **If you underestimate the level of the prior art** → The invention will be deemed to lack an inventive step due to inadequate understanding of the invention and insufficient explanation of differentiation with the prior art.
2. **If you accurately evaluate the level of the prior art** → Allows you to differentiate with the prior art, get an appropriate understanding of the invention, and creates a high chance of acquiring patent rights over an appropriate scope.
3. **If you overestimate the level of the prior art** → Because the differentiation with prior arts is overestimated due to the prior arts not being understood correctly, the scope of rights acquired will be narrower than it should be.



Comparisons with prior arts

● Reconfiguring your understanding of the invention after looking at the prior arts

The “essential nature of the invention” becomes clearer from looking at its relationship with the prior art. You should reconfigure your understanding and explanation of your invention by comparing it with the most similar (in terms of contents) prior art out of the prior art search results. When the invention is a combination of a number of prior arts, then you will need to compare your invention with several prior arts.

● Determining novelty/inventive step

Comparisons with the prior art are to consider if the invention possesses novelty and an inventive step compared to the prior art. If it does possess an inventive step, this means that by definition it must also possess novelty, so you can safely check for both of these things by just checking for the inventive step.

● Do not give up too easily

If you look at the invention from too broad a perspective, or, on the other hand, if you look at only at one aspect of the invention, it may be difficult to differentiate it with the prior art; you will therefore need to alter your perspective on the invention. You will need to adopt real determination in the quest to patent your invention, by having a clear awareness of the uniqueness of your invention and asking yourself “Surely there is a way to patent this invention?” rather than being too quick to give up.

1. Examine your invention and the prior arts: is there a problem (technical problem) that the invention is trying to solve which perhaps goes one step further than problems solved by the prior arts?
2. Even if your new invention’s primary effects are the same as those of the prior arts, it is possible that the new invention may have superior secondary effects, so check for these.
3. If the structure of your invention is different from the prior arts, ask yourself why it needs to have that structure.

(3) Deciding whether to file a patent application

Sometimes it is difficult to determine patentability, as is evident in the frequent litigation cases which occur concerning whether an invention can or cannot be patented. If a patent is particularly important or if it is especially difficult to form a judgment on patentability, one possible option is to consult a professional. If an invention which you did not file an application for because you thought it was unpatentable turns out to be patentable after all, it will be too late for anything but regrets: “If only I had patented that invention!” ⇒ It is prohibited for researchers to be the sole judges on whether an invention is patentable or not.

Even if the invention is recognized as possessing an inventive step and is granted a patent, this means nothing unless the patent is “a patent with value that can be used” which the company desires for commercialization. You need to examine the patent from the company’s perspective and evaluate what level of economical benefits the invention will bring when implemented, and ensure that the invention possesses true value when you file for a patent.

Not all inventions are filed as patents even at NEC; patent applications are only filed after sifting through all the various judgment criteria in relation to the patent, such as whether it can contribute to NEC’s commercial operations, and whether or not it can be used for competing against rival firms.

Evaluating an invention

It is essential to carry out a specific, comprehensive evaluation of how much revenue a company will be able to generate from carrying out an invention. However, as it is extremely difficult to quantitatively evaluate inventions which at the point of evaluation have never been implemented, the following perspectives should be used to assess the earning potential of an invention.

• Technical evaluation

1. Degree of completion/ Difficulty of implementation	Assess if, when the invention is implemented, there will be other unresolved problems remaining that will have to be resolved at current levels of the technology (cost, manufacturing technology, mass production potential, reliability).
2. Market trends	Evaluate how well the invention will be aligned with market needs when implemented, and how well it will be accepted by the market. Substantial sales cannot be expected from inventions that are not well aligned with the market.
3. Uniqueness	Evaluate the uniqueness of the invention when implemented and turned into a commercial product. Focus on differentiation between the product and competitor products.

• Economical evaluation

1. Technical effects/ economical effects	Evaluate the extent to which problems (improved performance, reduction of costs etc.) have been resolved through implementation of the invention compared with the prior arts.
2. Lifecycle	Evaluate when the implementation of the invention will cease due to the emergence of other new inventions. Inventions that quickly become obsolete are given a low evaluation.
3. Scale of implementation	Assess the extent to which the invention can be applied to products. The more commercial products the invention can be applied to, the higher its usability and, hence, the higher its evaluation.

• Evaluation from perspective of rights

Difficulty of circumvention	Evaluate whether it is possible to achieve the same results using an alternative product or process without implementing this invention. Companies prefer inventions that can be exclusively implemented. Inventions that can be easily circumvented have less exclusivity and are given lower evaluations.
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3. How to draft the documents for patent applications

This chapter introduces how to describe the “essential nature” of an invention accurately, and how to draft the patent application documents so that you can obtain a certificate of rights that is appropriate for the invention.

(1) Scope of claims and specification

You cannot make additions to your application documents once you have filed them; any attempts to make additions to inadequate areas in response to a notice of reasons for rejection from the Patent Office following application will not be recognized. As strict limits are placed on what kind of changes can be made to the scope of claims and specifications after these have been filed, do not shirk the task of preparing your application; be conscientious about preparing a well-written application at the time of filing. Even if you attempt another application, there is a fair chance that a rival will already have filed their own application in the meantime.

• The roles of the scope of claims and specifications

The scope of claims and specifications both serve a dual role as both the certificate of rights when the patent is granted and as the technical documents for disclosing the contents of the patent to third parties. If a right is given to the inventor without the invention being fully disclosed, the balance between an inventor and the third party will be lost, deviating from the aims of Patent Law. You need to draft the scope of claims and specifications so that they fulfill these two roles.

	Right	Duty
Inventor (patentee)	Exclusive implementation	To disclose the contents of the invention
Third party	Use of invention	To respect the patentee's rights

● Function as the certificate of rights

The patent right is the right to exclusively implement an invention, and the technical scope is determined by the scope of the claims. The scope of claims must be supported by the specifications, embodiments and the diagrams written in the scope of claims. This means that the whole package—with the scope of claims at its heart but also including the specification and the diagrams—has the function of the certificate of rights.

● Function as the technical documents

Patent rights are rights granted in compensation for disclosing technical content to a third party. Therefore, a specification which is described clearly and sufficiently to allow a third party to reproduce the invention functions as the technical document.

The following are examples of how third parties can use the invention:

1. During the period of patent rights, a third party may implement the invention with the permission of the patentee (for example, by paying licensing fees).
2. After the period of patent rights has expired, the patent may be implemented freely by a third party.
3. A third party may also use the contents described in the specification to create a new invention, regardless of whether this is during the period of patent rights or not.

Scope of claims and specifications/diagrams

- **The structure of the scope of claims**

The patent rights are determined by all of the application documents including the scope of claims, the specification and the diagrams; however, the scope of the claims is the central focus. The narrower the scope of rights, the clearer the differentiation with prior arts and hence the easier it is to obtain rights; conversely, when it comes to exercising one's rights it is more advantageous to have a wider scope of rights. A well-prepared scope of claims will result in a good balance between obtaining and exercising one's patent rights.

- **The structure of the specifications**

The specification is at the core of the application documents, providing a clear and concise description of the specific details of the invention. It is safest to include everything that you think might be necessary when carrying out the invention to ensure that the patent is not rejected at the examination stage. You must also ensure consistency in the terminology used across all documents, and avoid any expressions that may be unclear. It may make the specification easier to draft if the patent publications etc. that you used when conducting the prior arts search are also used as a reference point for drafting the specification.

- **Diagrams**

Use diagrams to show the modes for implementing the invention or the structure of embodiments and the mechanism of the invention.

(2) Researchers and the specification

Drafting a specification is no easy task; nevertheless, it is preferable for the specification to be drafted by the researcher, as this is the person who understands the nature of the invention in greater detail than anyone else. Even if the researcher decides in the end to ask a chartered patent agent (CPA) to create the specification, he/she will still need to have an understanding of how a specification is structured.

• Specifications and research reports

These two columns set out a comparison of the contents which must be included in a specification vs. the items required for a research report.

Items required in a specification	Contents which must be included	Items required in a research report
Title of invention	The name should describe the contents of the invention briefly and clearly. It should consist of 10-20 Japanese characters.	Title of research study
Technical field	Industrial field of the invention, equipment or goods where the invention can be applied etc.	Field of research
Background arts	Citation and explanation of any items in patent publications or general documents whose contents are similar.	Existing technical (prior arts) level, research background etc.
Problems to be solved by the invention	Problems of prior arts/New needs	Themes, objective etc. of research
Means for solving problems	The kind of means by which the problems are to be solved	Item does not apply here
Advantageous effects of the invention	Description of what benefits the invention provides compared to the prior arts. The explanation must be based on data.	Experimental outcomes, research results etc.
Best mode for carrying out the invention	Examples of experiments actually carried out and prototypes created. Logical explanations of these experiments/prototypes (NB: Feasible examples based on logical conjecture)	Examples of experiments, experimental data, discussion etc. (The section on the left in brackets does not apply in this column.)
Brief explanation of diagrams	Explanation of each individual diagram. Explanation of main legend of diagrams.	Explanation of equipment diagrams, flowcharts etc.

NB: In the specification used for applying for a Japanese patent, the various items are set out in the above format.

(3) Drafting the scope of claims

The scope of claims is the document which indicates the scope of patent rights. No matter how good your invention, you will not succeed in establishing patent rights in the end unless you can create a scope of claims that expresses just the right scope of patent rights for the invention in question. When the scope of claims is too narrow, this often means that when somebody creates a technology by making even a very slight change to the invention (a so-called “circumventing invention”), this technology will not fall under your scope of rights.

• About drafting the scope of claims

Of all the documents involved in a patent application, the most important is the scope of claims. It must be in line with both the “acquisition of rights perspective” and the “exercise of rights perspective.” If the researcher leaves the process of acquiring rights pertaining to his/her invention up to other people, on the grounds that he/she is “not used to the patenting process,” he/she will not be able to fully protect the invention that has resulted from his/her research. We believe that it is better for the inventor to take a proactive stance and, as far as possible, draft the scope of claims him/herself. Here, we have divided the scope of patent claims according to “claims” for each invention.

● “Acquisition of rights perspective”

Whether or not your invention is able to receive a patent will be determined, first and foremost, by the contents set out in the scope of claims. The Patent Office will focus primarily on the following two items set out in the scope of claims when examining your application.

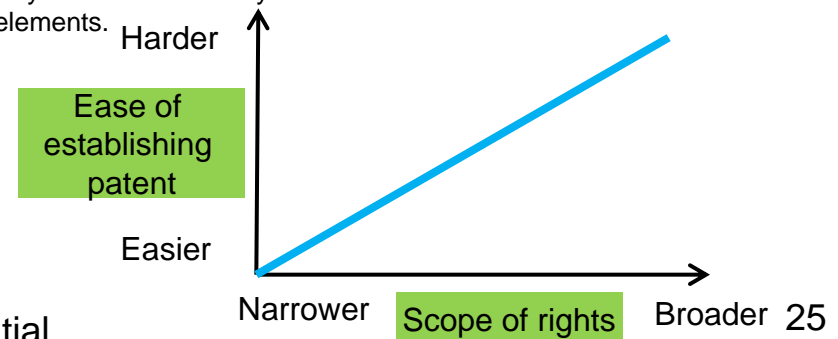
- (1) Whether the difference with prior arts (novelty/inventive step) has been clarified
- (2) Whether the scope deviates from the essential nature of the invention

● “Exercise of rights perspective”

Considered together, the specification and diagrams serve the role of a “certificate of rights.” However, the validity of these documents rests upon the scope of claims as a precondition. Great care must be taken when creating the scope of claims to ensure that it does not make statements which should not be there, does not leave out items which ought to be included, and does not include any points which could become a cause of regret when exercising rights.

● Balancing both perspectives

Although attempting to acquire rights over a narrow scope makes it easier to clarify the difference with prior arts, which in turn makes it easier to acquire a patent, on the flip side a broader scope of rights is advantageous when it comes to exercising rights. There is a trade-off between the two elements, and you will not succeed in creating a useable patent if you think exclusively in terms of one or the other. The best scope of claims is one which maintains a good balance between these two elements.



Types of invention (categories)

The Patent Act categorizes the inventions described in any scope of claims into the three following types: “product invention,” “process invention” and “invention of a process of manufacturing the product.” The force and scope of patent rights will vary depending which of these definitions applies to the invention described in the scope of claims. (Japan's Patent Act, Article 2)

Invention of a product (including computer programs)	As the product in question gives a physical form to the patent, it is usual for the title of the invention to be given a suffix that is either the product name or something such as “..... Device.” The force of the patent rights will extend to the product, so the inventor will be able to exercise rights over the production, sale and use of the product which is the implementation of the invention for commercial purposes. Example: Abnormal operation prevention device, semiconductor device, game program
Invention of a process	Whether an invention consists of a product or a process depends on the nature of the invention; in general, however, when certain processes (order of steps, periods of time) are required for the invention to be created, the invention is categorized as “process invention.” The inventor will be able to exercise rights over the usage of the invented process for commercial purposes. Example: Process control method, robot control method, method for measuring levels of nitrogen oxide in exhaust gases
Invention of a process of manufacturing the product	“Invention of a process of manufacturing the product” allows the inventor to exercise rights not only over the use of the process for commercial purposes but also over the sale and use etc. of the products manufactured via this process for commercial purposes. Example: Process for manufacturing antifebriles

●Representational form for inventions

Select the category that your invention falls into, according to its contents. If it is both an product invention and the invention of a process, you can represent it as both “an product invention” and “an invention of a process”; indicating both of these and making use of the multiple claim system (described later on) is advantageous. “Product invention” makes it easier to detect when another party is implementing the invention without authorization.

●Other representational forms

Product-by-process inventions: A product-by-process invention is an product invention whose scope of claims is based on certain processes as proconditions.

System inventions: A system invention indicates “... System” within its title and its scope of claims, and is commonly used for inventions characterized by software in the electronics field in particular. (A “system” is treated as an product invention.)

Invention of use: An invention which is defined by the objective of intended purpose or use

Drafting the scope of claims (real-life example)

The scope of claims is “a text giving a clear and concise expression of the essential nature of an invention.” The following section breaks down the process for creating a scope of claims, using the example of a “foldable conference chair.” To make it easier to understand, we have used a case of technology which is already publicly known; here, however, we are using this as a hypothetical example of “a patentible technology.”

●Drafting Claim 1 of the scope of claims

Taking the invention of a conference chair as an example, let us try drafting Claim 1 of the scope of claims (in general, Claim 1 describes the most generic (superordinate) invention). Use the steps set out below as a reference point for drafting Claim 1.

--Prior arts

A chair with a removeable back

--Problems with the prior arts

In the prior arts:

- (1) Attaching and removing the backrest requires considerable effort
- (2) Loss of the backrest once removed is a problem.

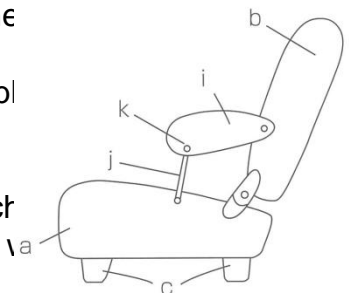
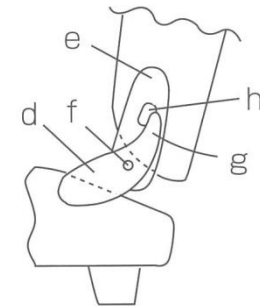
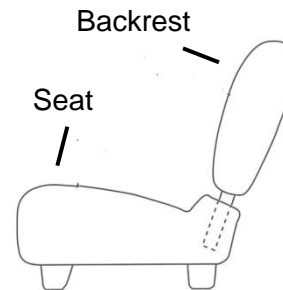
--Mode for carrying out the invention

Foldable conference chair comprising the following elements:

- a. Seat where person sits
- b. Backrest
- c. Four legs fixed to the seat
- d. Hinge 1 fixed to the back of the seat
- e. Hinge 2 fixed to the bottom of the backrest
- f. Pin 1 connecting Hinge 1 and Hinge 2 in a rotatable fashion
- g. Projecting portion fitted to Hinge 1
- h. Stopper fitted to Hinge 2 at the point which acts upon the projecting portion of Hinge 1 when the chair is tilted by an angle greater than the prescribed angle
- i. Armrest attached to the backrest in a rotatable fashion
- j. Link attached to the seat in a rotatable fashion
- k. Pin 2 connecting the front of the armrest to the upper end of the link in a rotatable fashion

--Advantageous effects of invention

The structure described above allows the backrest to be fixed in a prescribed position when the chair is in use, making the chair available for use, while also allowing the backrest to be folded up easily when the chair is not in use, making the chair easier to store.



Steps for drafting the scope of claims-1

Step		Example
Gauging the invention	1	--Component elements of the mode for carrying out the invention • Filter out and catalog those elements which comprise the mode for carrying out the invention a. Seat b. Backrest c. Legs d. Hinge 1 e. Hinge 2 f. Pin 1 g. Projecting portion h. Stopper i. Armrest j. Link k. Pin 2
	2	--Mutual connections between the various component elements • Set out the component elements and the connections between them in writing (in this case, these are identical with the mode for carrying out the invention that have already been described in the previous section explaining this example). Foldable conference chair comprising the following elements: a. Seat where person sits b. Backrest c. Four legs fixed to the seat d. Hinge 1 fixed to the back of the seat e. Hinge 2 attached to the bottom of the backrest f. Pin 1 connecting Hinge 1 and Hinge 2 in a rotatable fashion g. Projecting portion fitted to Hinge 1 h. Stopper fitted to Hinge 2 at the point which acts upon the projecting portion of Hinge 1 when the backrest rotates by an angle greater than the prescribed angle i. Armrest attached to the backrest in a rotatable fashion j. Link attached to the seat in a rotatable fashion k. Pin 2 connecting the front of the armrest to the upper end of the link in a rotatable fashion
	3	--Core functions of the invention • What are the core functions of the invention or the core problems which the invention attempts to solve? The invention enables the chair to be folded up with the seat and backrest still attached without the function of the backrest being impeded when the chair is in use.
	4	--Minimum component elements • What are the minimal elements required for exhibiting the core functions or for solving the core problems? Foldable chair comprising the following elements: a. Seat where person sits b. Backrest d. Hinge 1 fixed to the back of the seat e. Hinge 2 fixed to the bottom of the backrest f. Pin 1 connecting Hinge 1 and Hinge 2 in a rotatable fashion g. Projecting portion fitted to Hinge 1 h. Stopper fitted to Hinge 2 at the point which acts upon the projecting portion of Hinge 1 when the backrest rotates by an angle greater than the prescribed angle. As it is possible for such a chair to be constructed without the legs or armrests, c, i, j and k are unnecessary.
	5	--Functions of component elements • Sort out the functions of the various component elements into groups. • Hinge 1 (d), Hinge 2 (e) and Pine 1 (f) are “elements which connect the seat to the backrest in a rotatable fashion.” • The projecting portion (g) and stopper (h) are “elements which restrict the backrest from rotating by an angle greater than the prescribed angle.”

Steps for drafting the scope of claims-2

Step		Example
Gauging the invention	6	<p>--Other modes for carrying out the invention</p> <ul style="list-style-type: none"> For each for the component elements, try substituting each element with another means which has the identical function, to create another mode for carrying out the invention. <p>• Other possible articles which could serve as “elements which connect the seat to the backrest in a rotatable fashion” are considered as follows.</p> <ol style="list-style-type: none"> (1) Connecting the seat and backrest with a flexible plate (2) Forming the seat and backrest as a single piece and making the gap between the two thinner. (3) Connect the seat and backrest with a ring of the sort used in a binder. <p>• Other possible articles which could serve as “elements which restrict the chair back from rotating by an angle greater than the prescribed angle” are considered as follows.</p> <ol style="list-style-type: none"> (1) This will be restricted in addition to hinges (2) A hinge restricts the rotation by acting upon the back of the seat and the bottom of the backrest.
	7	<p>--Other intended purposes of invention</p> <ul style="list-style-type: none"> Are there intended purposes in other technical fields? <p>• The invention could be applied in the home or in automobiles, so the word “conference” is unnecessary.</p> <p>• As it is the backrest portion which folds up, it is termed a “foldable backrest chair.”</p>
Written representation	8	<p>--Describing the claim</p> <ul style="list-style-type: none"> Are all modes for carrying out the invention included? If the answer is no, revise the language to make sure they are all included. <p>• No other modes for carrying out the invention can be included for above components d, e and f, so their description is changed to the following. “Connecting means which connect the back of the seat and the bottom of the backrest in a manner allowing relative position alterability.”</p> <p>• No other modes for carrying out the invention can be included for above components g and h, so their description is changed to the following. “Restricting means which restrict the backrest from rotating by an angle greater than the prescribed angle, fitted to at least one out of the seat and backrest”</p>
	9	<p>--Revision of the claim</p> <ul style="list-style-type: none"> Correct any language which includes any prior arts. <p>• As it is highly likely that the “relative position alterability” includes the idea of “removability” used in the prior arts, this is changed to “relative rotatability.”</p>
	10	<p>--The claim is complete</p> <ul style="list-style-type: none"> The scope of claims for this invention is set out on the right (Claim 1). <p>Foldable chair comprising the following elements:</p> <ol style="list-style-type: none"> A. Seat where the person sits, and B. Backrest, and C. Connecting means which connect the back of said seat and the bottom of backrest in a manner allowing relative rotatability, and D. Restricting means which restrict the said backrest from rotating by an angle greater than the prescribed angle, fitted to at least one out of the seat and backrest.

Drafting the scope of claims (Checkpoints)

●Finally, pay careful attention to details.

If one looks at the question of a patent exclusively from the perspective of application, it is easy to take too lax a perspective regarding the “exercise of rights.”

Once you have finished creating the scope of claims, try looking at the document once again from the perspective of a third party and try to create a alternative embodiment in an attempt to get around the patent. If you are able to think of an alternative embodiment which is not included in the scope of claims, it is likely that another person will come up with the same kind of idea. This situation is known as a defect (loophole). Review your scope of claims once again to ensure that such alternative embodiments would be included in the scope of rights.

Checkpoints

(1) Whether it is a broad claim or not (However, broad claims require embodiments as support)	
(a) Whether it is a broad concept in technical terms	<ul style="list-style-type: none">• Is the claim limited to the embodiment?• Does the claim envisage implementation by rival firms?• Does the claim use universally accepted terminology?• Is broader language possible?
(b) Whether you have fully investigated the terminology of the generic concept	
(2) Is it a multifaceted claim?	
(a) Is it appropriate for the category?	<ul style="list-style-type: none">• What about objects, processes, equipment....?• Are there any claims using different language?• Materials, manufacturing processes, jigs/molds, products, other usage methods, application products...• What about manufacturing subcontractors, sales outlets, users...?
(b) Does it cover all implementation steps in detail?	
(3) Is it a strong claim?	
(a) Is it a difficult claim for an examiner to reject?	<ul style="list-style-type: none">• Have you gauged the prior arts correctly?• Will you be able to take appropriate steps when making any corrections?• Is the terminology used unlikely to give rise to doubts?• Does the claim take into account the progress that is expected to take place in technology in the future?
(b) Is it easy to exercise rights for this claim?	

Acquiring broad rights-1

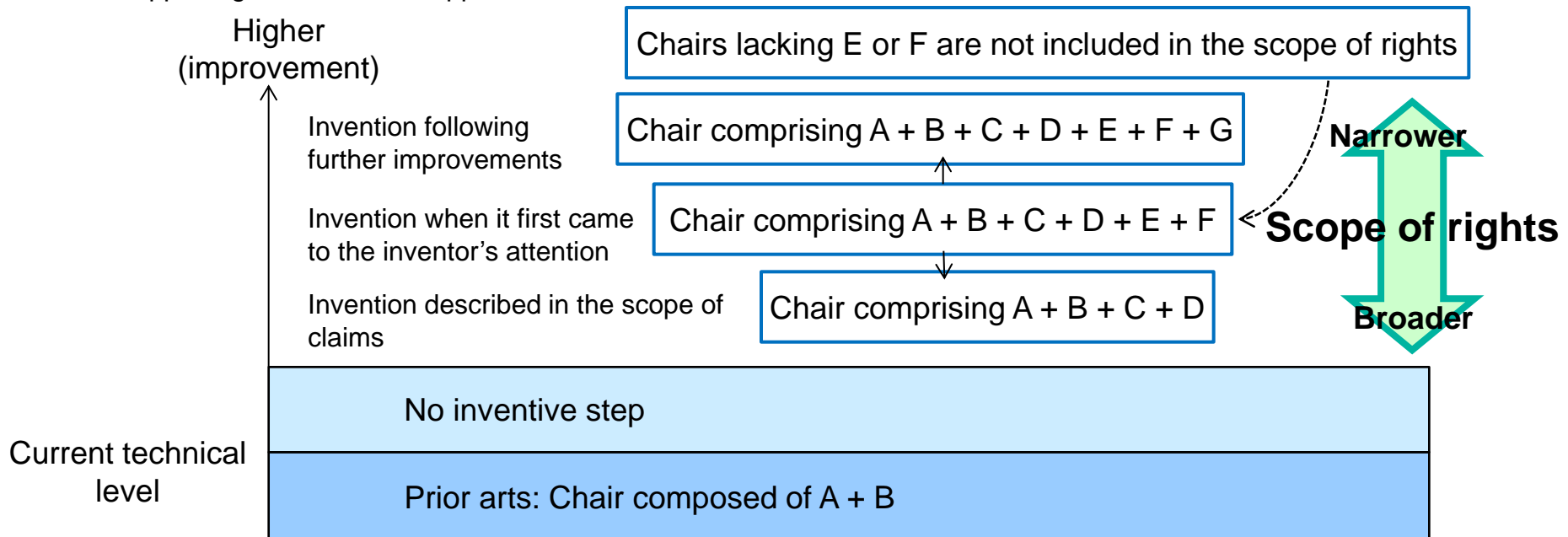
● Having fewer constituent features results in a broader scope of rights

The more constituent features (component elements) there are in the scope of claims, the narrower the scope of rights will be. Sticking to the essential nature of the invention and keeping the number of constituent features to the minimum required will maximize the scope of rights.

(Example)

Foldable chair comprising the following elements:

- A. Seat where the person sits, and
- B. Backrest, and
- C. Connecting means which connect the back of said seat and the bottom of backrest*** in a manner allowing relative rotatability, and
- D. Restricting means which restrict the backrest from rotating by an angle greater than the prescribed angle, fitted to at least one out of the seat and backrest, and
- E. Armrests the backs of which are connected to said backrest in a rotatable fashion, and
- F. Supporting means which support the front of said armrests, fitted to said backrest in a rotatable fashion



Acquiring broad rights-2

● Use the generic concept for the terminology

Use terminology that has as broad a meaning as possible, indicating a scope which does not include prior arts, without deviating from the essential nature of the invention.

(Example) “Chair” rather than “Conference chair,” “Writing implement” rather than “Pen,” and “Vehicle” rather than “Passenger vehicle.”

● Multifaceted claims

If an invention is viewed only from the perspective of a single embodiment, it will inevitably be viewed in a limited way. It is important to look at the invention for which you are trying to obtain a patent from various angles and develop a multifaceted claim (hereinafter referred to as a “claim”) that is as strong and broad as possible, taking all possible variations (horizontal expansion) and forms of language (vertical expansion) into consideration.

Horizontal expansion	Horizontal expansion of the embodiment is where you expand the claims to cover all means which are considered to be means of developing the invention. Example: If the prior arts included only chairs with a fixed backrest, you would need to set out a claim which includes chairs with removeable backrests as well.
Vertical expansion	Vertical expansion where you expand the claim to cover raw materials, materials, interim products, manufacturing procedures, sales, usage methods etc., taking into account the modes for carrying out the invention and the modes of the invented product during distribution.

Applying for patents for multiple inventions-1

It is possible to file a single application for a number of inventions of the same type, provided that the inventions meet the requirement of unity.

“Requirement of unity” means that the inventions must fulfill the following conditions.

- Inventions which possess the same technical features or special technical features for responding to the same problem
 - Example 1) High molecular compound A which has a high barrier performance against oxygen, and a food packaging container made from high molecular compound A
 - Example 2) Invention of a product, invention of a process for producing said product, invention of a process for using said product, invention of a process for handling said product.
 - Example 3) Invention of a process, and invention of machinery, utensils and equipment etc. directly connected with this process.

Filing a single patent application for several inventions allows the expansion of multiple claims for all closely-related inventions such as improvement inventions, examples of intended purpose, and processes for manufacturing, enabling patent protection across a broad scope.

However, creating a specification which systematically encompasses these claims can be difficult if you are unaccustomed to the process. For particularly important inventions, it is a good idea to seek the advice of your superior officer, the IP Department or an expert.

● Dependent claims

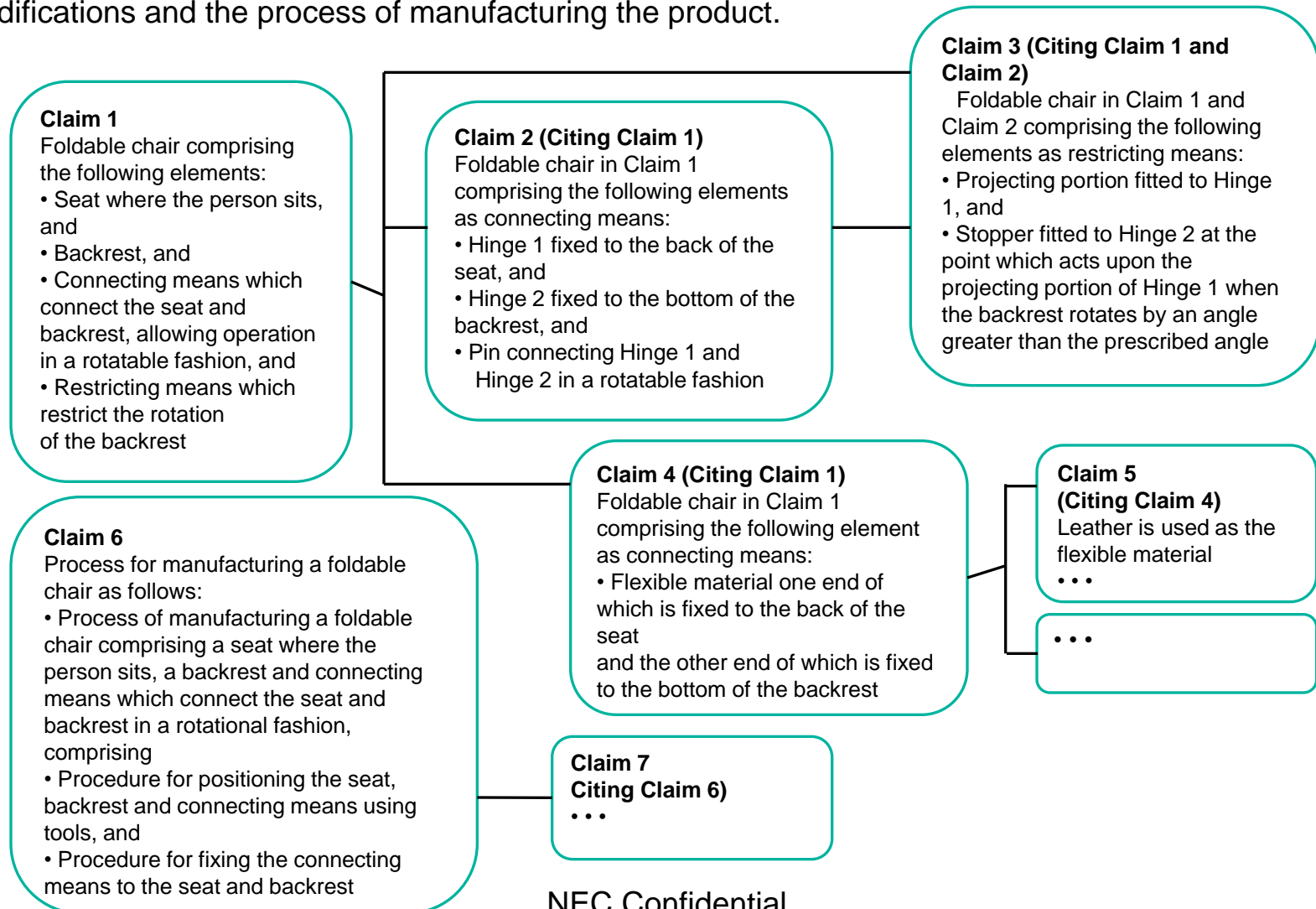
When filing a single patent application for several inventions, it is possible to describe the claims as dependent claims in order to avoid redundant language in the scope of claims and to keep the description of the claims succinct.

Describing claims as dependent claims not only keeps claims shorter by avoiding the repetition of phrases but also makes it possible to clarify further the differences between the cited claims and the claims described by citing these claims, which has the advantages of reducing the work involved and making the claim easier for third parties to understand.

Applying for patents for multiple inventions-2

● An example of how to draft claims from Claim 2 onwards

The following diagram shows the process of creating a patent by expanding multiple claims, using the “foldable backrest chair” described previously as an example. In this case, claims are made for modifications and the process of manufacturing the product.



How to draft the scope of claims

This shows an example of how to draft a patent application form.

Give "Scope of claims" as the name of the document.

In the explanation of the modes for carrying out the invention, it is recommended to write, in brackets, the numbers used in the diagram to clarify the corresponding relationships.

As a general principle, when describing constituent features (component elements) that have been defined already, "said" should be added to clarify what is being talked about.

If several constituent features (component elements) have the same name, clarify which is meant by adding "1," "2" etc.

If the sentences used to define the constituent features (component elements) are excessively long or if a number of punctuation marks/commas are used in the sentence, make the description easier to read by splitting it up so that each essential component forms a separate line. However, you should also make sure that the claim is described in a way that ensures that its meaning will be understood even without the lines or line breaks between the claims, because line breaks are sometimes removed from individual claims when the claim is edited for inclusion in a patent publication.

Name of document: Scope of claims

Claim 1: A chair with a foldable back comprising the following elements: a seat where the person sits (a), a backrest (b), connecting means for connecting the back of said seat and the bottom of said backrest in a manner allowing relative rotatability (d, e, f), and restricting means which restrict said backrest from rotating by an angle greater than the prescribed angle, fitted to at least one out of said seat and said backrest (g, h).

Claim 2: A chair with a foldable back described in Claim 1 comprising the following elements as said connecting means: Hinge 1 fixed to the back of said seat (d), Hinge 2 attached to the bottom of said backrest (e), and a pin connecting said Hinge 1 and said Hinge 2 in a rotatable fashion (f).

Claim 3: A chair with a foldable back described in Claim 1 and Claim 2 comprising the following elements as said restricting means: a projecting portion fitted to Hinge 1 (g), a stopper fitted to Hinge 2 which acts upon said projecting portion when said backrest rotates by an angle greater than the prescribed angle.

Claim 4: A chair with a foldable back described in Claim 1 composed of the following elements as said connecting means: Flexible material one end of which is attached to the back of said seat and the other end of which is attached to the bottom of said backrest.

Claim 5: A chair with a foldable back described in Claim 4 in which leather is used as said flexible material.

Claim 6: Process for manufacturing a chair with a foldable back,

being a process for manufacturing a chair with a foldable back comprising a seat where the person sits, a backrest, and connection means for connecting said seat and said backrest in a manner allowing relative rotatability, comprising Procedure 1 (in which said seat, said backrest and said connection means are positioned using tools, and

Procedure 2 (in which said seat, said backrest and said connection means are fixed)

Cautionary points to bear in mind when drafting the scope of claims-1

It goes without saying that when creating a scope of claims, it is essential to express the technical aspects clearly and precisely, and to avoid terminology which is not commonly used in the field in question. In particular, care must be taken when describing the structure of complex devices and structures which are accompanied by movements, as this kind of text can readily become confusing and hard to understand in Japanese.

●Drafting the claims clearly

A claim that is not described clearly is likely to get a poor reception both at the time of the examination and in terms of exercising rights, reducing the value of the patent. You should pay due attention to the following points in order to make sure that the claim is described clearly.

(1) Do not describe items which are not described in the specification.

Example: Instances where the scope of claims describes a numerical limit to the scope which is not described in the specification.

(2) Make sure that the description and terminology used are identical with those used in the specification, and clarify the correspondence relations.

Example: Case where, in a scope of claims, the phrase “means of data processing” in a word processor is used, and it is unclear whether this refers to the “means of changing character size” or the “means of changing line spacing” or both in the specification.

(3) Elements which are options (“A or B”) and which possess similar properties or functions.

(4) An invention may be described through its functions and operations etc.; however, in the following cases this is not possible.

<1> Where the extent is unclear (example: “Slip-resistant handle”)

<2> Where the property or features themselves are unknown to a third party and are also not explained.

(5) Avoid excessively verbose descriptions.

Use appropriate terminology	Search for the most appropriate terminology and investigate it carefully before using it. Avoid inserting specialist terminology which is not to be found in either ordinary dictionaries or in specialized dictionaries without defining such terms; if such terminology must be used, the meaning must be defined in the specification.
Avoid intention-based language	Using intention-based language in the scope of claims rather than functional and constructive language causes the outline of the scope of claims to be less clearly defined, and frequently leads to patent applications being rejected; it should therefore be avoided.
Make skilful use of functional and structural language	Using functional language can enable the invention to be expressed across a broader scope depending on the contents of the invention, and is therefore one method for ensuring multiple protection of the invention. However, as using functional language can cause the outline of the invention and of the scope of rights to become less clear, it is wise to use both functional and structural language together.

Cautionary points to bear in mind when drafting the scope of claims-2

● Examples of intention-based language, functional language and structural language

Intention-based language that is unclear	Correct way to describe constituent features	
	Functional language	Structural language
<ul style="list-style-type: none"> • “that a person rides” • “in the air” • “as the person wishes” • “can fly around” “Vehicle”	A passenger vehicle comprising the following items: <ul style="list-style-type: none"> • An airframe possessing a cockpit, and • Lift-generating means deployed in the fuselage, and • Steering force-generating means deployed in the fuselage, and • Propulsive force-generating means deployed in the fuselage 	Aircraft fitted with the following elements: <ul style="list-style-type: none"> • A trunk with a cockpit, and • Lift-generating main wings, and • Steerage tailplane, and • Propulsion system

● Language requiring caution

Expressions where care should be taken (high risk of lack of clarity)	Example
Language which is not technical	Names of distributors and commercial products etc. (for example, “photosensitizing agent manufactured by Company A...”)
Relative criteria; language where the extent is not clear	“...somewhat...” “...at a high temperature...” etc.
Voluntary additions, optional matter	“...as necessary...” “...for example...” etc.
Negative language	“...not...” “...excluding XXX...” etc.
Language giving only the lower limit or upper limit	“...at least...” etc.
Limitations of scope that include zero	“...a 0-10% admixture of the additive...” etc.
Substituting the names of items with descriptions given in diagrams etc.	“...part A described in Diagram 1...” etc.

(4) How to draft specifications and diagrams

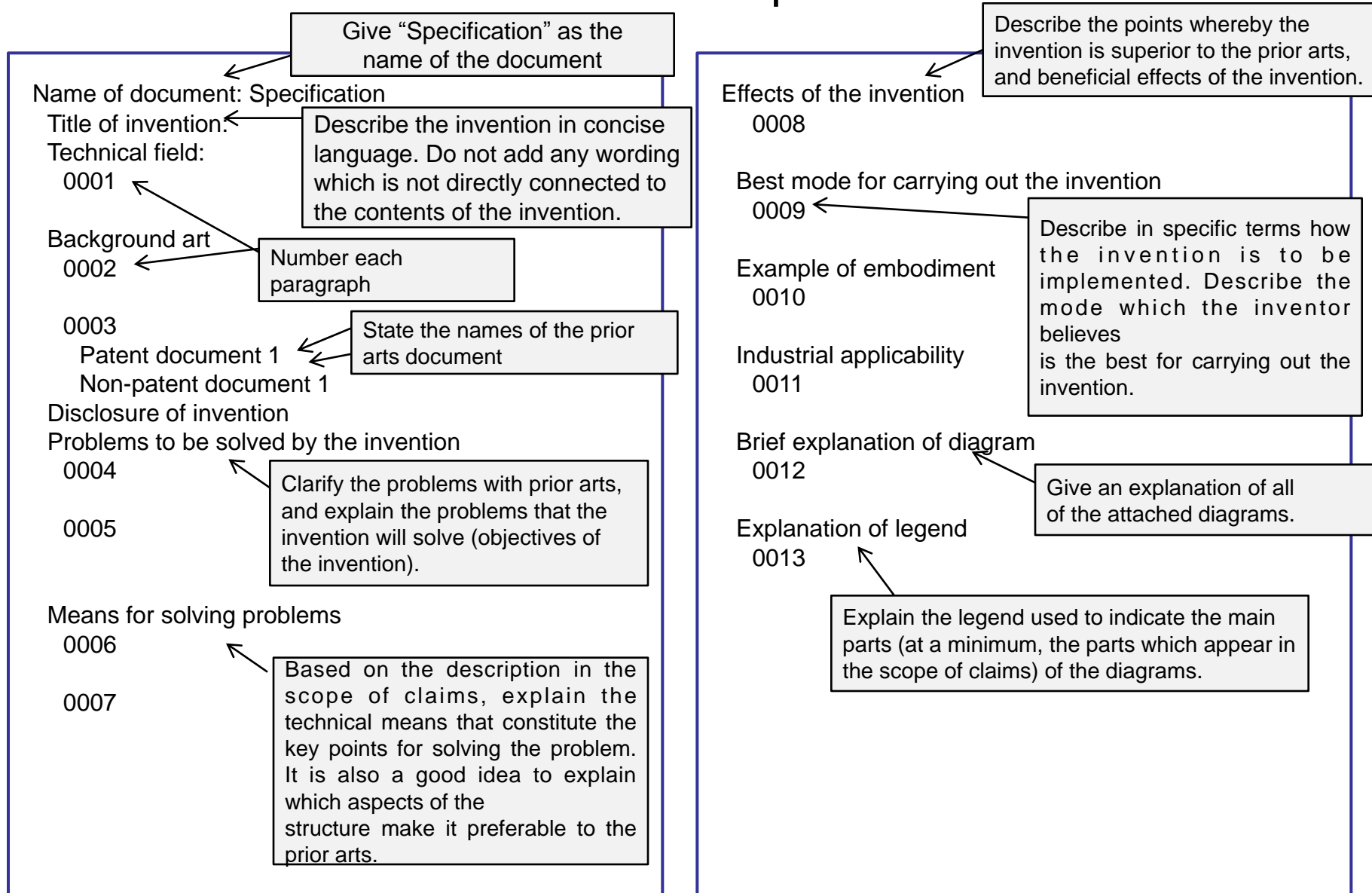
In order to emphasize the broad nature of a scope of claims, it is essential to describe not only one mode for carrying out the invention but a variety of implementation modes that are suitable for backing up such a broad scope of claims, such as various examples of modifications and applications. In some cases where the number of modifications described is small, if new prior arts are discovered after application, this will immediately create a situation where the patent of the invention covers only a narrow scope of claims commensurate with the modifications.

• How to draft the specification

Once the scope of claims is completed, it is fair to say that around 50% of the application documents are now ready. Between the time when you first grasped the invention to the time when you considered the scope of claims, you should have put together an outline of how you will explain your invention. From now, you only need to add the details to this outline as you put it into writing. Use the patent publications you have found as a source of reference when searching for prior arts (prior art document).

Give a clear and concise description of the specific contents of the invention. Be sure to include everything you think will be necessary for carrying out the invention without omissions, to ensure that the application is not rejected at the examination stage. In addition, use consistent terminology across all documents, and avoid unclear language.

The structure of the specification



How to draft the diagrams

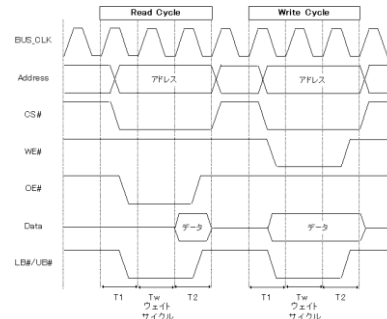
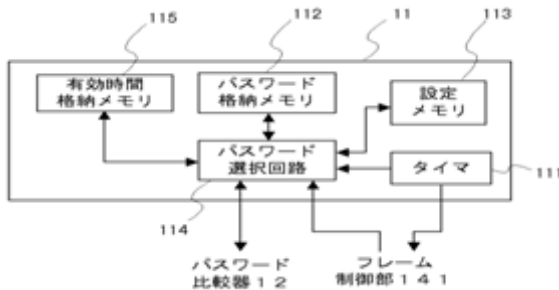
As a general principle, diagrams should be attached to the application, with the exception of any areas where diagrams are not necessary such as methods for synthesizing chemical compounds. Make sure that you prepare diagrams that are appropriate for the type of invention.

Diagrams for objects and equipment etc.: Elevation view, side view, schematic plan view, cross-section view, oblique view, partial enlargement view

Block diagrams: System configuration diagram, circuit diagram etc.

Flowchart: Flowchart showing the progress of program processes

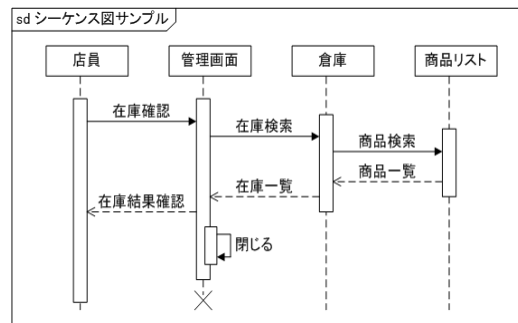
Charts, tables: Experimental data, graphs, tables etc.



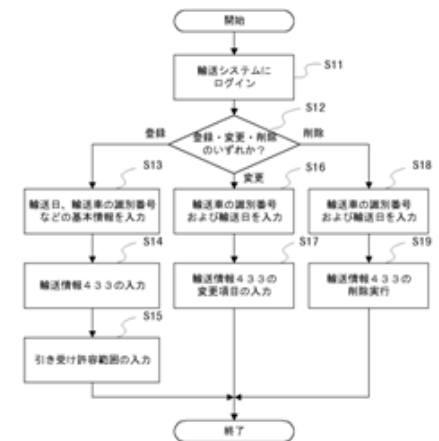
Functional block diagram **Timing chart**

システム基本情報 データベース管理画面									
データベース管理									
データベース名	データベースタイプ	データベースバージョン	データベースサイズ	データベース所有者	データベース管理者	データベース接続先	データベース接続ポート	データベース接続パスワード	データベース接続権限
DB1	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB2	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB3	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB4	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB5	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB6	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB7	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB8	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB9	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect
DB10	Oracle	11g	10GB	SYSTEM	ADMIN	localhost	1521	password	connect

Table of definitions



Sequence diagram



Flowchart

Drafting the specification-1

●Disclose the invention in a manner allowing implementation

Patent rights give the inventor the right to be granted financial compensation for the general disclosure of the technical contents of the invention that he/she has invented. This means that the specification and diagrams must perform the function of a technical document which has clearly and fully disclosed the invention in question sufficiently to allow it to be reproduced by a third party; hence, patent rights cannot be granted if the specification does not meet these criteria. It is a great pity when an excellent invention fails to secure patent rights commensurate with its merit because the specification was not sufficiently well prepared.

●Preparing for amendments

If, during the examination process, the examiner points out a lack of novelty or inventive step of the invention in the notice of reasons for rejection, it is possible to avoid the reasons for rejection by amending the scope of claims or specification. However, you are not permitted to add particularly substantive changes to the descriptions, in accordance with the first-to-file system which places strict limits (known as “limitations of amendment”) on what changes may be made to the contents of the specification and diagrams after the prior application.

It is therefore essential to list all required matters from the time of application, and to take appropriate steps to amend the application as necessary during the procedures which follow, insofar as the strict limits permit.

Example of specification for patent application in Japan

--Technical field, background arts (prior arts)

These clarify the applicable scope of the invention's technology, the particular features of the invention itself and its technical positioning by fully disclosing the technical field into which the invention falls and the prior arts which are the precondition of the invention. For example, it is not as a general principle permitted to add descriptions following application, even in the case of a description of a prior art.

--Problems to be solved by the invention, means for solving the problems, advantageous effects of the invention

Explaining the problems of the prior arts which the invention has solved and the effects of the invention are key points for ensuring that the invention is recognized as possessing an inventive step. Moreover, ensuring that there is a specific description of the invention's structure will also be useful for ensuring that the invention is grasped as a broad technical concept, and will serve to prevent similar inventions created by a third party from being patented later on. Finally, disclosure of the functions, operations and effects of each component element of the invention at the time of application can be used to great advantage at the amendment stage.

--Example of description:

“..... The structure described above not only results in improved heat resistance, being the problem in question, but also enables the product to be manufactured easily and at low cost.”

“The new plastic membrane fitted on the surface as a water resistance means also serves as thermal insulation.”

Drafting the specification-2

Example of specification for patent application in Japan

-- Structure of the invention (Examples of best mode for carrying out the invention)

Consider examples of modifications, preferred embodiment and critical values for each essential component, and add explanations. In addition, try to cite examples of other applications for each technical aspect, and try to think of and add as many examples of intended use for the invention as a whole. Needless to say, this enables you to get a picture of the generic technical concept of the invention based on the modifications and applications that you have thought of, and to apply for a broad scope of patent rights or apply based on multiple claims with regard to the preferred embodiment and other intended purposes; furthermore, adding such descriptions will also be useful not only for consideration of the scope of claims but also for any amendments which you add later on.

--Examples of description

Example of modifications: Air outlets have been formed in multiple directions, but it is also possible for the structure to have wings which change with the wind direction.

Alternative means: It is possible to use the mouse instead of the keyboard as an input means.

Preferred embodiment: For the iron family element, the use of cobalt is preferable.

Specific example: Sensors using infrared and ultrasound technologies are generally known as types of detection sensor.

Critical values: The highest level of effects is found when Ni is added at a rate of 3-5% of the contents.

Examples of applications/examples of intended purpose: This material may be used as the construction material not only for the antenna but also for other high-frequency elements such as the inductance elements.

●Matters requiring caution

(1) Defects that can occur in relation to the scope of claims

In some cases, making the scope of rights (scope of claim) broader can lead to an application being judged as not describing the invention “to the extent that it could be carried out by a third party.”

Example: For the process of production (scope of claims) for a molded product using “synthetic resin,” if the distortion processing which is essential for the procedure for manufacturing the molded product is enabled via hardening of the resin through heat because the invention was implemented using a “thermoplastic resin,” this will be considered a detailed explanation of the invention. “Synthetic resin” includes “thermohardening resin,” but as the distortion process which is essential for production cannot be carried out through heat treatment for thermohardening resin and as no method of redressing the distortion is described in the detailed explanation of the invention, all cases of inventions using the synthetic resin will be judged as not being described “to the extent that it could be carried out by a third party.”

(2) If the invention is an idea only

If the idea is described only in abstract, functional terms, with no description of the materials, equipment or procedures etc. that are necessary to realize it, and cannot be understood based on common technical knowledge, the specification will be judged as not describing the idea “to the extent that it could be carried out by a third party.”

(5) How to write the abstract

The abstract gives a clear and succinct description of the invention as a whole in technical terms. Use consistent terminology across the specification and the whole of the abstract. The description of the abstract cannot be used in the interpretation of the scope of patent rights, so it is important to write it in a way that ensures that it is easy to understand in technical terms.

Example of Japanese application

Name of document:
Abstract

Issue: Providing a quiet electrical vacuum cleaner in which the noise generated from the fan motor is minimized.

Means of solving problem: In the structure of the vacuum cleaner, the exhaust gas pathway located at the rear of the main body of the vacuum cleaner comprises a grid consisting of 19 ribs and 20 spaces set in an approximately oval configuration, with the cross-sectional configuration of the 19 ribs on the upper side of the center of the oval being set at a sloping angle to the upper surface of the oval and the outer section being thinner in form, with the oval cross-sectional configuration thus aligned causing the flow of air from the fan motor which comes from the 20 spaces between the 19 ribs to be concentrated towards the central axis of the oval, thus distributing the flow of noise and air and preventing it from reaching the user.

Representative diagram: Fig. 3

Give a concise (less than 400 Japanese characters or, for U.S. application, 50-150 words) description of the problem and the means by which the invention solves it.

Select the diagram which is the most appropriate for illustrating the key points of the invention, and describe it in the form "Fig. 1" etc., without using brackets. Do not give a description of the diagram itself. If no diagram is required, put "None."

4. Procedures for patent applications

This chapter will describe how to undertake the procedures at the Patent Office for filing the patent application you have drafted.

(3) Timing of the application

Even in the case of your own invention, once you have announced an invention publicly in the form of a research article or similar format the research article etc. will itself be considered prior arts that are now publicly known, meaning that if you try to file a patent application after publicly announcing the invention you will probably not be able to patent it. Although there are certain special exceptions which can redress this situation, these involve many restrictions and disadvantages in terms of obtaining patent rights. You should complete the patent application first, and then publicly announce your research article afterwards.

*As Japan follows the first-to-file system, the application date is given considerable weight in the patent application process.

Following the 16 March 2013 amendment in the law, the United States has been gradually moving away from the first-to-invent principle and towards the first-to-file principle.

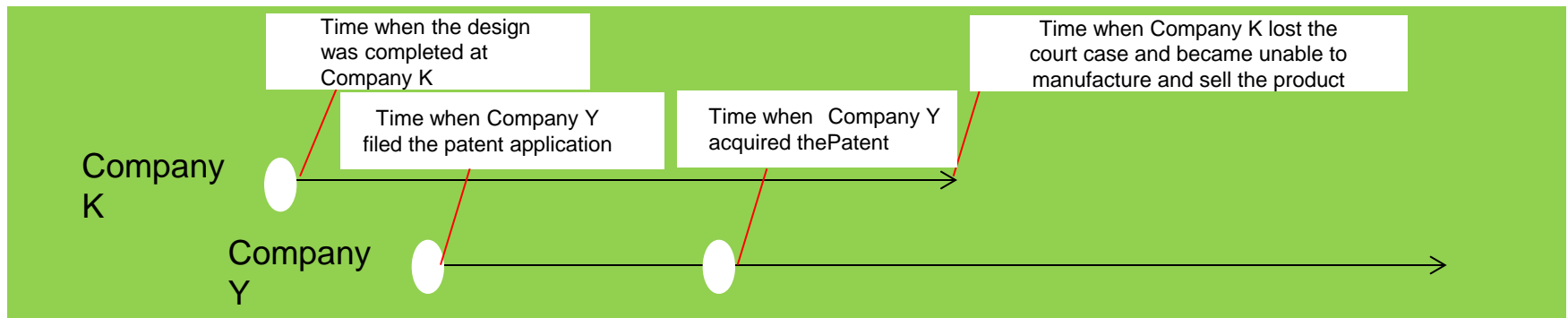
- Applying even one day earlier makes a difference (First-to-file principle)

Filing a patent application for an invention requires as much time and effort as creating a research article. However, delaying your application can have a negative impact on the establishment of a patent. In particular, if you are working in a research theme where competitors are likely to be working as well, you must complete your patent application earlier than your rivals, if only by a single day. (First-to-file system)

In your working activities, the need to maintain a balance between the completion rate of the invention and the date of application should be borne in mind. One tactic which is sometimes used when time is pressing is to undertake the application right away even when the invention itself is not fully complete, and then augment any incomplete areas at a later date by making use of application procedures which emphasize the priority claim in Japan.

You cannot create a patent without filing a patent application.

In the case shown below, Company K was ultimately unable to use the invention that it had invented in-house and completed to the design diagram stage in spite of having invented it because, following Company K's failure to file a patent application, another company (Company Y) undertook the patent application at the Patent Office for the same invention and acquired the patent of the invention.



Relationship between publication of a research article and patent application

Publishing a research article is an important task for an inventor. If you plan to file a patent application and publish a research article on the outcomes of your research, you need to coordinate the contents and timing of both skillfully; otherwise, your efforts may end in failure.

- **File the application before publishing the research article**

If the contents of the invention are publicly known before you file the application, you will not be able to get it patented. As a general principle, an invention cannot be patented if the contents of the research paper and the application either (1) are the same, or (2) are within the scope that could readily be considered the same, even when the research paper is published by the inventor him/herself.

- **Exceptions to lack of novelty**

In cases where the actions of the inventor him/herself or publication by another person etc. against the wishes of the inventor him/herself causes a loss of novelty prior to the patent application, the action which caused the loss of novelty will not be treated as a publicly known art if the inventor applies for application of the exceptions to lack of novelty within six months of the publication etc. by following the relevant procedures (submission of an application form and certificates). The “exceptions” whereby a published research article will not be treated as a known art are as follows:

Acts which enable the exception to be applied	Procedural requirements for application of the exception
Actions of the inventor him/herself (1) Publication through implementation of tests (2) Publication in a printed publication (3) Publication through an electric telecommunication line (4) Publication through a presentation at a meeting (5) Publication through displays (6) Publication through sale or distribution (7) Publication through press conferences, television or radio	(1) Apply within six months of publication (2) Submit certificates within 30 days of the application (3) Appear in person at the time of the application.
If another person published the invention against the wishes (in the strict sense of the phrase) of the inventor him/herself	Apply within six months of publication

(4) Submitting the patent application documents

Once the scope of claims, specification and diagrams are completed, you need to draft the application document and abstract and submit all these documents together as the patent application documents to the Patent Office. Once you have filed these patent application documents, the application procedures are complete.

• Documents required for the patent application

To file a patent application, you need one copy of each of the following five documents: “Application document,” “Scope of claims,” “Specification,” “Diagrams” (not required in cases where diagrams are not considered necessary, such as methods for synthesizing chemical compounds), “Abstract.”

<p>Name of document: Request for patent</p> <p>This document states the name of the inventor and the name of the applicant etc.</p>	<p>Name of document: Scope of claims</p> <p>This document describes the technical scope where patent protection is sought.</p>	<p>Name of document: Specification</p> <p>This document describes the contents of the invention.</p>	<p>Name of document: Diagrams</p> <p>Diagrams are useful for understanding the contents of the invention.</p>	<p>Name of document: Abstract</p> <p>This document gives a concise description of key points of the invention as a whole.</p>
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5. Procedures following the application

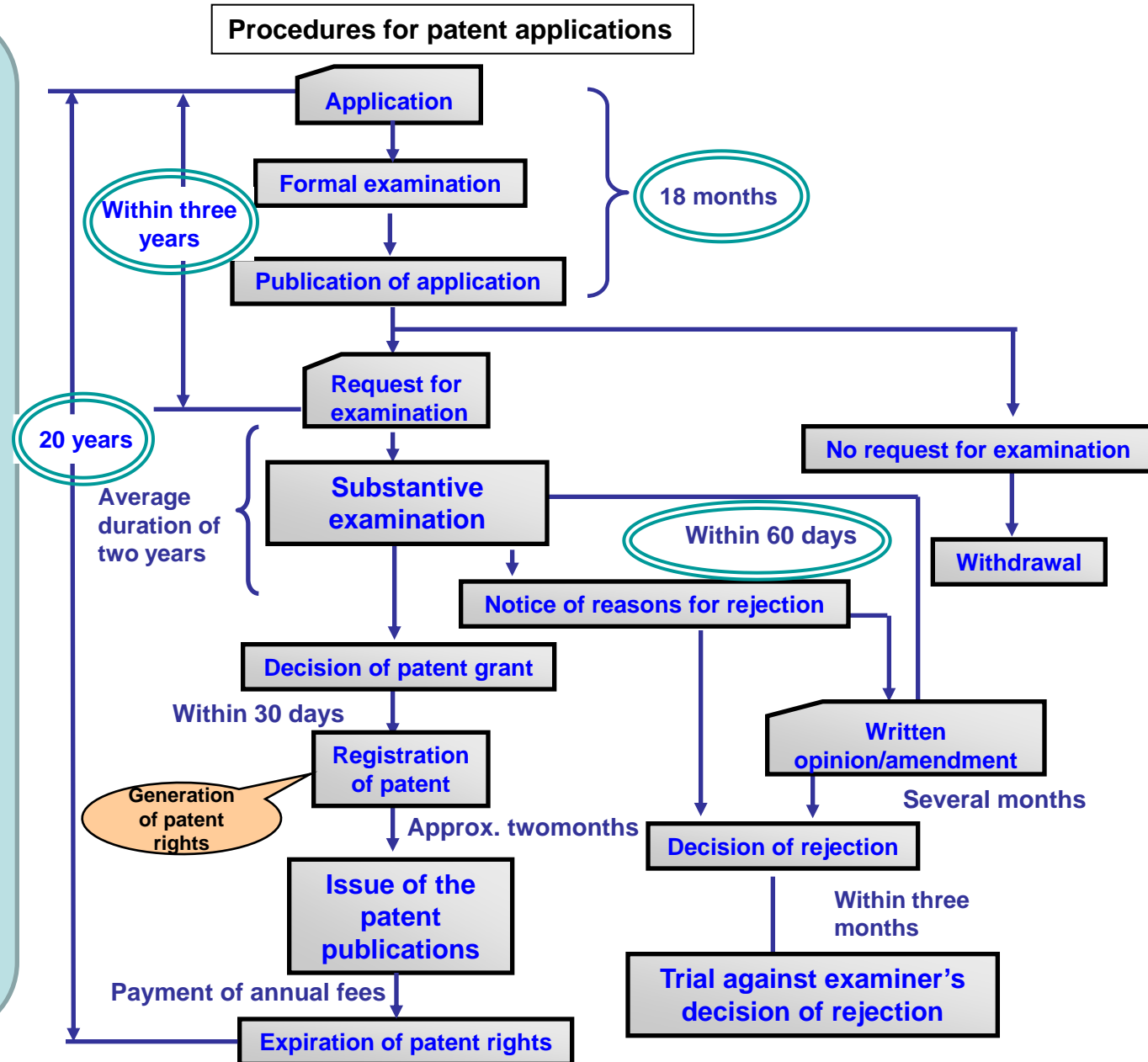
This chapter will describe the procedures you will undertake after filing the patent application.

(1) Procedures following the application

Just filing a patent application will not in itself give you patent rights. After you have filed the application, a formal examination will be carried out; if there is a request for further examination, this will then be followed by the substantive examination. If the application fulfills the criteria for patenting and passes the examination, a decision of patent grant is given; the patent is registered and patent rights are generated. Applications which do not fulfill the criteria for patents are rejected.

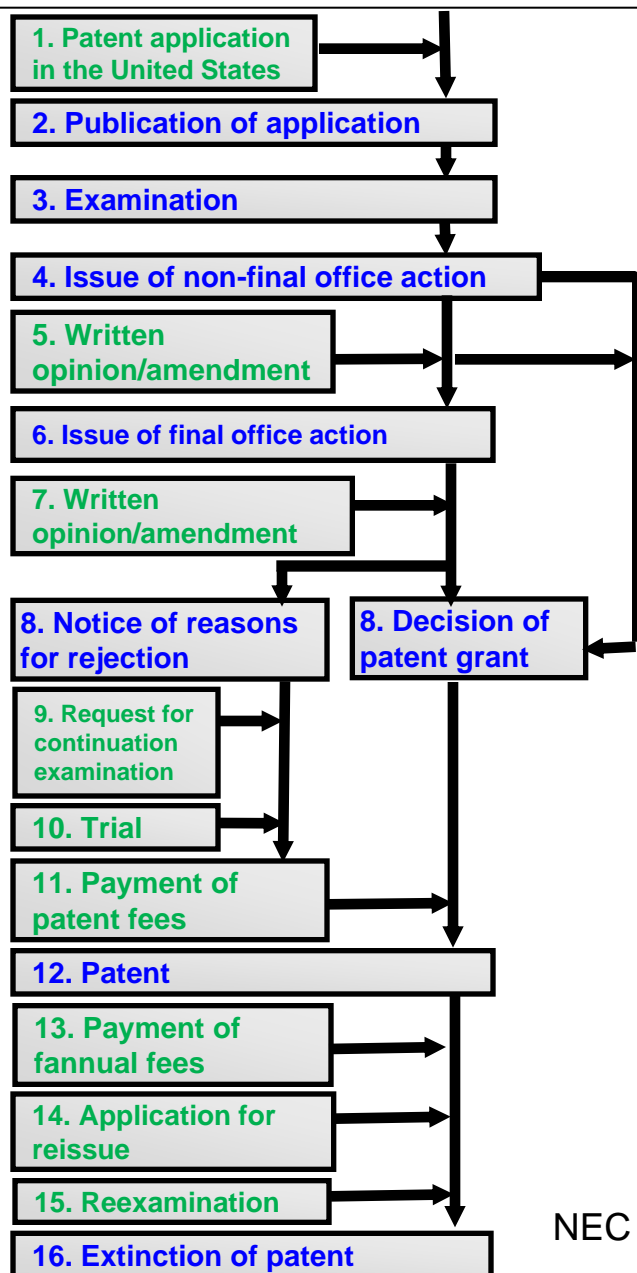
●Request for examination

If the procedures for requesting an examination are carried out after the patent application is filed, the application will undergo an examination. If no request for examination is put in within three years of the application being filed, the patent application will be considered to have been withdrawn. This means that the invention cannot be patented.

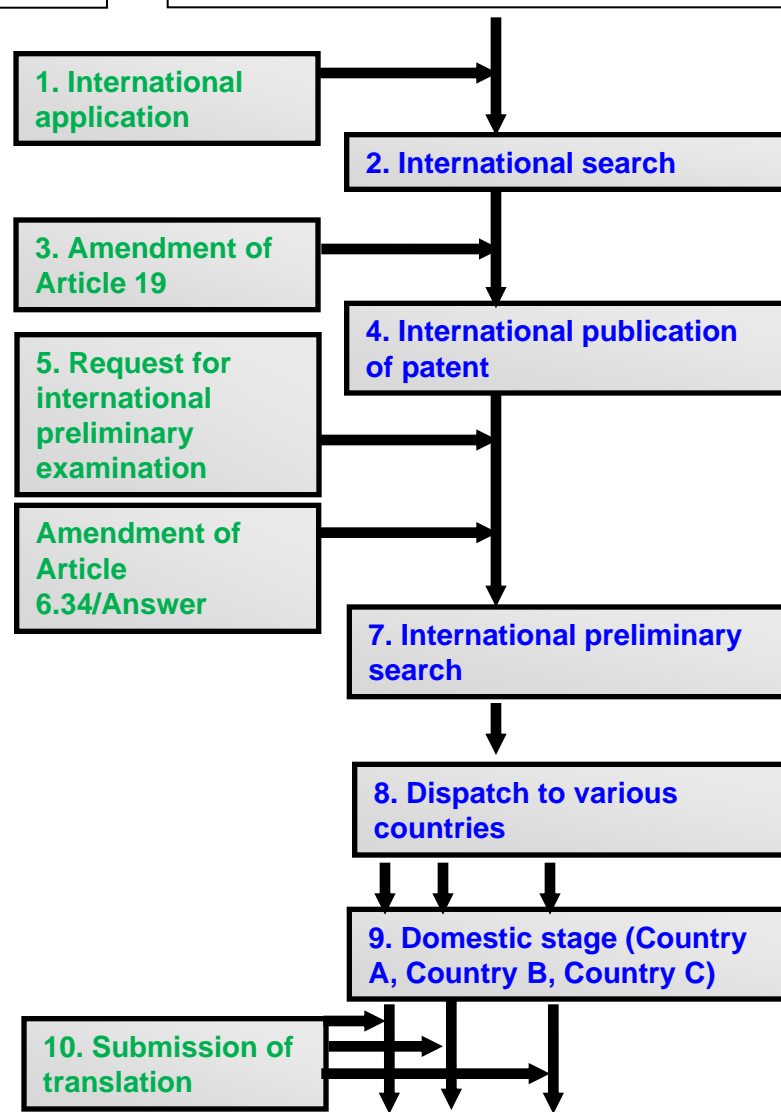


(1) Procedures following the application

Procedures for patent applications in the United States



Procedures for international application



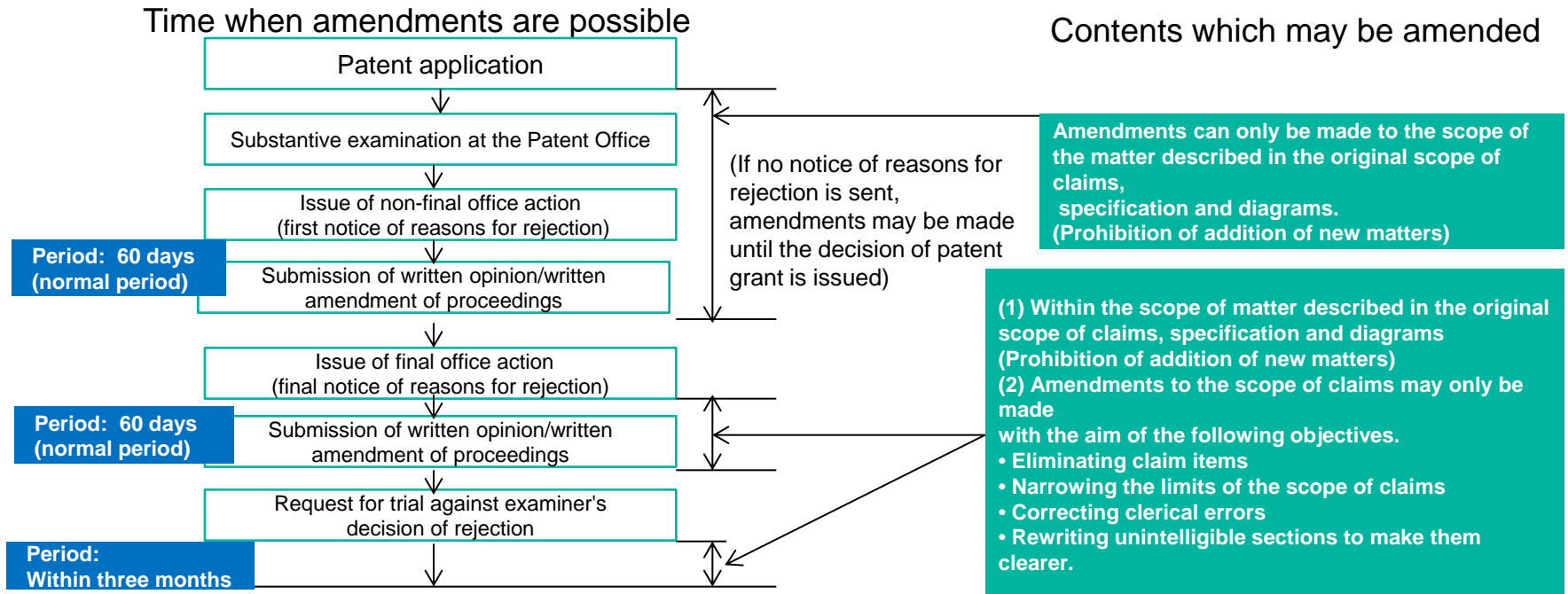
(2) Amendments

If during the process of the examinations held at the Patent Office the decision is reached that “a patent cannot be granted for this invention” on grounds such as the scope of claims being too vague or there being clerical errors in the specification etc., a notice of reasons for rejection is sent to the applicant. If this happens, the applicant is given the opportunity to submit a written opinion and an amendment in which the specifications and diagrams are amended. In addition, the applicant may also choose to voluntarily submit a written amendment if, following the application, he or she notices any inadequacies in the language used to indicate the scope of claims at the time of application.

• Limitations on amendments

Allowing limitless amendments to be made after application would go against the principle of first-to-file and would engender delays in the examination. Therefore, amendments are limited by rules which allow them to be recognized only when they meet certain conditions in terms of timing and content, and the kind of amendments that are permitted also varies depending on the timing. In all cases, the basic principle is that the scope of amendments must not deviate from the scope that is written at the time of filing the application, so it is important to keep this at the forefront of your mind at the time of application and write a well-thought-out specification when first applying.

Example of Japanese application



Prohibition of addition of new matters

Adding new matter is prohibited in all cases, regardless of the timing of the amendment. This is because adding new matter goes outside the scope indicated by “matters obvious from the statement in the originally attached description” in the original specification, scope of claims or diagrams (items whose meaning is obvious to a person skilled in the art in question using his/her common technical skill, and which are understood to be identical with those described in the text). As shown in the following examples, there are strict criteria for judging whether material constitutes “new matter,” so when making the original application it is a mistake to adopt the attitude of “I probably don't need to include this part...”

• Examples of new matter

(1) Amending matter described as a generic concept into a subordinate concept not described in the original specification, scope of claim or diagrams

Example: Changing “elastic body” into “rubber,” or adding “rubber.” Even though it is generally known to persons skilled in the art in question that rubber is an “elastic body,” such changes are considered to constitute the addition of new matter.

(2) Amending matter describing a specified functional component into another component (which is not described in the original specification, scope of claim or diagrams) with an identical function

Example: Changing “spring,” given as an example of an “elastic body,” into “rubber,” or adding “rubber.”

(3) Adding combinations of component elements which were shown as multiple examples of options for component elements but which were not described as combinations in the original specification, scope of claims or diagrams

Example: In a case where A1 and A2 are given as examples of A (in a composition comprising A and B), even if a combination of A1 and B has also also given, adding a combination of A2 and B (not described in the original description) would be considered to constitute new matter.

(4) Addition of or changes to “problems to be solved by the invention” or “effects of the invention” which were not described in the original specification with the aim of clarifying differences with the prior arts cited in the notice of reasons for rejection are also considered to constitute the addition of new matter.

(5) Amendments which aim clarify technical discrepancies described in the original specification are also considered to constitute the addition of new matter.

(6) Amending the limitation “0.001-2% by weight” to “0.1-1% by weight” is considered to constitution the addition of new matter in the event that neither of the figures “0.1% by weight” and “1% by weight” are described in the original specification or scope of claims, nor any description which suggests limitations.

(7) In cases where matter is non-obvious, such as inferring metal from the description “copper,” changing “copper” to “metal” is considered to correspond to the addition of new matter.

(8) Even assuming that adhesive tape is a commonly-used means of fixing objects, in cases where it is not clear from the description in the original specification, scope of claims or diagrams that the description “means of fixing” means only “adhesive tape,” amending “means of fixing” to “adhesive tape” is considered to constitute the addition of new matter.

(3) The substantive examination

If an application passes the formal examination and a request for examination is made, the substantive examination will be carried out by the examiner to test whether the invention will be patented.

- Notice of reasons for rejection

Example of Japanese application

At the stage of the substantive examination, if the examiner gets a negative impression of the application and feels that the application in question may correspond to the reasons for rejection set out above, he/she will not proceed to issue a rejection at once, but rather will notify the applicant him/herself in advance to inform him/her of this. This is known as the notice of reasons for rejection.

Most reasons for rejection that are notified constitute the following: a document describing prior arts (technology publicly known at the time of the application) is disclosed as a citation; the invention is not new; problems relating to “lack of novelty/inventive step” making this an invention that is easy to invent; problems relating to “insufficient description,” meaning that the expressions used in the specification were unclear.

If the reasons for rejection are notified, the applicant will be given an opportunity to express his/her opinions within a certain period (60 days, or, in the case of applicants not living in Japan, three months); in such cases, you should submit an amendment as necessary, and should not give up. All due care should be taken, since a failure to put in the required efforts at this stage nearly always leads to rejection of the patent.

- Submitting the written opinion

The written opinion is a document wherein the applicant may express his/her opinion and attempt to argue against the examiner’s reasons for rejection.

For example, in most cases where a lack of novelty/inventive step is cited as the reason for rejection in the notice, patent publications which were published prior to the patent application are cited as the primary reasons for this. The applicant could therefore order copies of the publication(s) in question, and, based on this, describe in logical and specific terms the ways in which his/her invention differs from the invention described in the the publication(s). Alternatively, if it is claimed by the examiner that the invention in question consists of a combination of prior arts, you could counter this by arguing that the notion of creating such a combination is not inevitable and would not occur readily to an expert, and that your invention has superior operations and effects that have never been seen before.

If you have amended the scope of claims and the specification, you should clarify in the written opinion your grounds for amending the descriptions in the scope of claims/specification from the original application, and state your opinions based on the invention as set out in the amended scope of claims.

The substantive examination

Example of Japanese application

- Amendment procedures

If a notice of reasons for rejection is issued, you may need to amend the scope of claims, specification or diagrams in order to eliminate the reasons for rejection. For example, if the scope of claims is too broad, you will need to remove from the scope of claims any inventions which are described in the document that is cited in the reasons for rejection. If insufficiencies (clerical errors etc.) are pointed out in the description given in the scope of claims or the specification, you will need to amend these documents by correcting the errors.

As amendments which consist of adding new matter are not recognized, you will need to amend these documents in a way that avoids deviating from the scope described in the scope of claims, specification or diagrams that were originally submitted. In addition, even if you amend the documents in a way which avoids the initial reasons for rejection, a second notice of reasons for rejection will be sent if other prior arts exist. Reasons for rejection issues from this second round onwards are referred to as the “final office action”; once this has been sent, any amendments to the scope of claims are limited by the fact that amendments must be kept within the limits of what can effectively use the results of the examinations already carried out. Since the amendment to the law in 2006, it is prohibited to make amendments to an invention described in one scope of claims that turn the invention into a different invention with different technical features after a notice of reasons for rejection has been received.

- Decision of patent grant

If the application is recognized as fulfilling patentability requirements in the results of the substantive examination, the transcript of the patent decision is dispatched to the applicant. The applicant is required to pay the patent fees for the period from the first year to the third year (as a lump sum) within 30 days of the dispatch of the transcript of the patent decision. (It is also possible to pay the fees for several years as a lump sum.) If the patent fees are not paid within this period, the patent application will be dismissed.

- Letters patent (registration)

Once the payment procedures are complete, the letters patent with the patent number and registration of application date are dispatched, giving the applicant patent rights over the invention. However, if the patent fees for the next several years after the fourth year are not paid prior to the previous year, the patent rights will cease to exist. The initial date of reckoning for the payment deadline is the registration of application date.

- Certified copy/transcript of examiner's decision of final rejection

If, even after examining the written opinion and written amendment submitted by the applicant, the examiner still finds that the application does not fulfill patentability requirements (i.e. the reasons for rejection have not been resolved), the certified copy/transcript of examiner's decision of final rejection is dispatched.

In response to this decision of final rejection, an applicant may request a trial against examiner's decision of rejection within three months of the date of dispatch, whereby he/she may request a hearing with the examiner. At the same time as requesting a trial, the applicant may make further amendments to the specification and diagrams, and may also divide the inventions into the inventions for which a trial is requested vs. other inventions.

END