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Structure and Function of the Patent Specification

The structure of a patent specification is described below, with some explanations of underlying patent law concepts that the specification is designed to address. At the end of this note is a section which guides applicants in checking a specification that we prepare on their behalf.

General Purpose

The purpose of the patent specification is to fulfil the patentee's part in the contract that a patent constitutes. In return for a full disclosure of the invention, the patentee can have a time-limited monopoly for the invention. During that time, the patentee has the right to stop others working the invention without permission. The monopoly generally lasts for twenty years, although annual renewal fees are usually payable. After the patent expires, the invention enters the public domain and cannot be patented again.

A patent is enforced if necessary against infringers by action brought before the court. A patent specification is a legal document. Third parties and the court must be able to understand it, so that the limits of the protection it affords can be determined precisely.

Structure of the specification

A patent specification normally has the following parts in the order given:

- A title to identify the invention.
- A statement as to the field to which the invention relates.
- An explanation of the background "state of the art" – what was already known prior to the invention.
- A statement of an objective technical problem which the invention seeks to solve, or an objective the invention is aimed at achieving.
- Statements of invention which correspond in scope and content to the claims, including any statements of technical advantages achieved by the invention.
- A list of any drawings and brief summary of what they show.
- A description of specific examples of the invention, often with reference to any drawings.
- The claims.
- An abstract.
- The drawings.
- A sequence listing (in cases involving nucleotide and amino acid sequences).

The title

This may be relatively uninformative if it is desired to maintain secrecy for as long as possible (the whole specification is usually published after 18 months, but the fact that an application has been filed, by whom and with what title, is usually available soon after filing from the UKIPO).

The field of the invention

The start of the specification is a brief paragraph summarising the field in which the invention lies. This is usually framed as broadly as possible and helps the reader to appreciate the greatest extent of the invention as described and claimed in the rest of the specification.

The background art

This section mentions relevant "prior art" documents known to the applicant and summarises the state of the art in the field before the invention was made. The function of this section is to set the backdrop against which the invention is to be contrasted, thereby highlighting non-obvious technical contributions to the state of the art. Statements of objective technical problems arising in the art before the invention was made are of assistance.

Statement of the objective of the invention

Generally, this is simply a statement that the invention seeks to overcome or at least mitigate the problems identified with the prior art in the previous section. The stated objective should not be too ambitious.

Statements of invention

The objective should be achieved by the invention set out in this part. The statements of invention generally correspond in structure, breadth and scope to the claims (see below). Sometimes there may be a simple reference to the claims rather than

separate statements. There are main statements of invention corresponding to the language and scope of each of the independent claims. These recite only the essential features of the invention. Then there are subsidiary statements of invention. These correspond to the language and scope of the dependent claims and recite preferred or optional features of the invention. There may also be statements of advantage summarising useful technical effects associated with each statement of invention, typically corresponding with the objective(s) and explaining how these are achieved. Some statements will explain the range of variations and modifications which are possible. See also the comments on the claims below.

The list of drawings

This merely identifies the drawings used.

The specific description

This part of the specification is by convention non-limiting as to the scope of the claimed invention. In this section, the applicant provides a description of one or more examples of the invention. The description is with such depth and precision that an average skilled reader of the specification is enabled to work the invention. This applies not just to the specific example, but should apply substantially across the entire range of different options. Consequently, the fullest possible technical details of specific examples of the invention should be set out here. For example, it might be an essential step in the claimed invention that element A is heated to somewhere between 50°C and 100°C. Outside of these limits, the invention does not work. Specific examples might be given which show that 75°C is best, but other examples will show that at 55°C and 95°C (or thereabouts) reasonable results are also achieved. Examples may also be given showing that heating to 40°C or above 110°C simply do not give acceptable results. A similar approach can be taken to many of those aspects of different inventions where variations on a theme are possible. As many embodiments or aspects of the invention as practicable should be included, and specific modifications and variations that can be accommodated should be described.

The laws of some countries, in particular the USA, require a patent specification to disclose the “best mode” known to the inventor of performing the invention. If the best mode is not included in a patent specification, a patent could be refused.

The claims

These set out the scope of the patent monopoly being sought by the applicant. Occasionally, with a first patent application, claims are not filed immediately, but they must be filed eventually.

The claims are a series of numbered paragraphs, each containing a single sentence. The first claim is independent but second and subsequent claims generally refer to and include the contents of the first (and perhaps subsequent claims) so that they are narrower in scope because they contain more limitations. There may be more than one independent claim.

Each independent claim serves two conflicting purposes. The first is that they must define something that is new and inventive compared with the prior art, otherwise no patent will be granted. They must have sufficient specific detail to distinguish from the prior art. Often, during examination of an application, an examiner maintains that the wording of the claim reads onto prior art. Sometimes amendment needs to be made that adds detail. Amendment is frequently made by incorporating features of dependent claims into the independent claim, which is thus restricted in its scope.

The second purpose of the independent claims is to define the scope of protection afforded by a patent. Thus such claims should be as broad as possible with as few limitations as possible. Using the example above, if a claim states that item A should be heated to between 70 and 80°C, then, if a third party does everything else that the claim requires but only heats item A to 60°C, there will be no infringement of any claim that contains this limitation. Consequently, it is important that every feature of an independent claim is essential to the working of the invention.

From this it can be seen that an independent claim strikes a balance between a broad breadth of scope and defining something new.

The dependent or subsidiary claims refer back to earlier claims, whether dependent or independent and usually the claims form a “nested” structure. The subsidiary claims recite preferred or optional features which can be used to further limit and thereby narrow the scope of protection afforded under the independent claims. A function of the dependent claims is to try and provide some useful fallback positions in case the independent claims turn out to be unpatentable for any reason. Subsidiary claims attempt the very difficult task of anticipating prior art whose existence is not yet known. Some subsidiary claims should be directed to expected commercial embodiments of the invention.

The claims must be clear and concise. The claims must also be supported technically by the description in the sense that the extent of the claimed invention must be reasonably credible from the specific description and the exemplification of the invention.

Abstract

If present, the purpose of the abstract is to assist in the official classification of the application on publication and to provide text by which third parties may locate the application when carrying out searches. The abstract may be brief and simply requires summarising in general terms what the specification is about.

The Drawings

These may be relatively crude so long as they are clear and show the required information. Known as “informal” drawings, they are used to keep initial filing costs under control. Replacement “formal” drawings, often prepared by a draughtsman, may be required in due course at additional cost in order to meet Patent Office requirements prior to publication of the application.

Please check that the drawings are correct technically and contain all of the necessary information. You should advise us of any corrections or additions required prior to filing.

Sequence listing

This is required in connection with biological inventions where nucleotide and/or amino acid sequences are present. It is presented as a text document with a particular format to enable patent offices to extract the information and facilitate searching of prior art documents during examination of this application, and of it, in due course, when it in turn constitutes prior art against subsequent applications.

Preparation of Patent Specifications

The following provides guidance as to what our clients should focus on in reviewing a patent specification prepared by us for approval before filing in the patent office. Please let us know before the application is filed of any changes that appear necessary in the light of the following comments and the purpose of the specification as set out above:

Prior Art

If we are aware of all known prior art of relevance to the invention, this helps us formulate an appropriate “objective” problem that the defined invention overcomes. It enables us to draw out the distinctions of the invention. Patent law assumes that all prior art is known to the inventor at the time of making the invention. It is likely that relevant prior art, if it exists at all, will ultimately come to light at some stage and be applied to judge an invention in a patent or application.

In the United States, there is an onerous duty of candour to disclose to the Patent Office any documents that a reasonable examiner would consider material in deciding whether to grant a patent. Failure to do so might invalidate a patent right, even in the circumstance where a document would not necessarily have caused a different outcome in the examination procedure. If any such documents come to light at any stage while a US application is pending, it is essential that these are drawn to the attention of the US Patent Office at least. For other jurisdictions, such requirements do not exist, but it will be in the interest of the applicant for any suspected new prior art to be addressed promptly and in the most appropriate way to safeguard opportunities for valid rights.

Objectives and Achievements

Let us know of any adjustment you think might be needed to the way the objective is stated or the extent to which they are actually achieved by the invention.

Best Mode

Please check and ensure that we have been provided with an example of the best currently known embodiment of the invention.

Enablement

The sufficiency or “enablement” requirement of a patent means that the invention must be disclosed in such complete terms that a person of average skill in the art (i.e. the notional person created by the law as being someone who knows the state of the art and has all relevant common general knowledge, but no inventive capacity) can work the invention in substantially all the claimed areas. In doing this, the

average skilled person must not be left in the position of facing an undue burden due to missing technical information. However, routine trial and error to a reasonable degree is permissible.

Whilst we can suggest whether or not a patent specification might be sufficient, we are not a “person skilled in the art”. We have to defer on this issue to technical experts as to factually whether or not the specification provides a sufficient description. Please have the inventor or technical expert carefully review the specification to ensure that it is in fact comprehensive of the technical details required.

Claims

Please check these carefully. The independent claim or claims define the invention in its broadest and most generic form. The independent claims should only recite essential features, and not optional or preferred features. Let us know if you think the independent claims contain a feature that is not essential. A useful approach is to put yourself in the position of a third party wanting to use the invention, but without infringing the claim: what feature could such a person omit without losing the essential functionality of the invention?

Likewise, if there any technical features which could be used to limit the scope of the independent claims (whether now or in the future), which might still be of commercial value, and which are not already covered by a subsidiary claim, then please let us know.

As mentioned above in relation to enablement, it is the invention as defined in the claims that must be enabled, and this must be across substantially the entire range of the claimed features.

Sequence Listing

We will normally use sequence information as provided by you and without amendment. Please therefore check to ensure that the sequences and their descriptors are correct. There are often errors in sequences. Such errors are not always spotted or do not become apparent until more sequencing work has been carried out. You should let us know of any clerical errors prior to filing. Also, please let us know immediately of any revisions or updates to the sequences arising because of further sequencing work.

Drawings

If there are better drawings available, or that we should have used, let us know.