

How to read a patent

In this section, we provide a roadmap of a U.S. patent with explanatory text of the purpose and goals of each section. The U.S. patent is used as a model because of its well-laid out form and because its format is similar to patents in other major jurisdictions (*e.g.*, Europe). The annotated patent presented here is intended to provide a common ground for the patent analyses provided in other chapters.

By way of brief introduction, a patent for an invention is a grant to an inventor of a property right for a limited time by a Government, generally acting through a Patent and Trademark Office. The right conferred by a patent grant is, by explicit statutory language or by implication, an exclusionary right, which is granted for a limited period of time. The exclusionary right in the United States is expressed as “the right to exclude others from making, using, offering for sale, or selling” the invention in the United States or “importing” the invention into the United States. It is important to keep in mind that what is not granted is the right to make, use, offer for sale, sell or import the invention. The time limit of the patent grant is required under the TRIPS agreement to be at least 20 years. Most countries allow a 20 year term clocked from the date on which the application for the patent was first filed. In some cases, extensions of the patent term may be available for regulatory delays in commercializing a product. An additional important limitation of a patent grant is that the right extends only throughout the country that awarded the grant (*e.g.*, United States and its territories and possessions).

In Appendix A, the complete text of [U.S. Patent 5,723,765](#) is presented. A cursory review of this patent reveals that it has three¹ main sections: (i) a [cover page](#) which presents bibliographic information, (ii) a [specification](#), which describes the invention, and (iii) [claims](#), which define the metes and bounds of the patentee's right. On our walk-through of this patent, we begin at the cover page.

Cover Page

The cover page presents information that is mainly bibliographic in nature. None of this information, including the abstract, has any legal import for interpreting the patent. The data provides notice mainly of historical facts and identifying elements, such as application filing date and serial number. A bracketed number is found adjacent to each data sub-section on the cover page and refers to a specific field that the Patent Office uses for internal identification purposes. For ease of discussion, the same numbers are referred to in this primer.

At the very top of the cover page, vital identification of the patent is displayed:

[19] This field identifies the nature of the publication (*e.g.*, U.S. Patent) and underneath, the first inventor's² name.

[11] The patent number is provided. In the U.S. the patent number is sequentially assigned and is synonymous with the publication number³.

¹ More typically, patents contain four sections: the fourth section being the drawings.

² In the U.S., a patent application must be filed for in the name of the inventors. In most of the rest of the world, patent applications can be filed for in the name of the inventors or in the name of the assignee(s).

³ In the U.S., patent applications are not published until issued as a patent. Thus, the publication number and patent number are identical. In most of the rest of the world, patent applications are published, generally at 18 months from the earliest priority application date. As such, the publication number may differ or be the same as the ultimately issued patent. Generally, if the numbers are the same, a suffix is used to denote the status of the application. For example, in Europe, the publication and patent numbers

[45] The date the patent is issued is presented. This date has two primary significances: (i) it signifies the date at which the patent becomes publicly known and thus prior art for non-U.S. jurisdictions⁴; and (2) in the case of applications filed prior to enactment of the GATT treaty in the U.S., it signifies the date from which patent term⁵ is initiated. For this particular patent, the patent term is 17 years from the issue date – 3 March 2015.

On the remainder of the front page the main bibliographic data is presented:

[54] The **title** of the patent is contained in this field. The title, which is supposed to be representative of the content, is written by the inventors or their attorney and has no impact on the interpretation of the patent. In many cases, the title is wishful thinking and should not be a cause of a myocardial infarction in the reader.

[75] The **inventors** names and place of residence are listed in this field. There is no significance to the order of the inventors for patent purposes. The order of inventors is solely determined by the inventors and so represents meaning only to them. In the U.S., as in other jurisdictions, the inventors (and by proxy, their assignees) have an undivided interest in the patent. Thus, each inventor can independently practice or license the entire patent rights.

[73] The **assignees** and their place of business are found in this field. Assignment documents are recorded in the patent office in the U.S. These documents can be accessed by the public, even prior to issuance of the patent. Patent offices in other countries also generally record assignment documents. Be aware though that the assignees may have licensed some or all of their patent rights and that these documents are not necessarily publicly available.

[21] This field displays the **application number**, which is assigned by the patent office.

[22] The **filing date** of the subject patent application is presented here. For the U.S. a determination of patent term may not always be determined from this date. Unlike the vast majority of, if not all other, countries, the U.S. allows applications to be refiled, either with or without new disclosure. Such new applications are called continuations generically and called a continuation-in-part if new disclosure is added. Thus, to determine the filing date from which patent term initiates, field [63] containing related U.S. application data must be consulted.

[63] As discussed above, this field contains information about **related applications** that the subject patent is claiming priority from. In the U.S. Patent shown, there was an earlier application filed (serial number 283,604) on 1 August 1994, which contained at least some of the disclosure of the subject patent. Thus, the earlier application is called a 'continuation-in-part.'⁶

are the same, so that after the publication number the letter "A" is used for an application and the letter "B" is used for an issued patent.

⁴ In the U.S., inventions that are disclosed in the specification, but not claimed, are prior art against other U.S. applications and patents as of their filing date. 35 U.S.C. § 102(e).

⁵ Until the GATT treaty implementation on 8 June 1995, the patent term in the U.S. was 17 years from the date of issuance. Under GATT, the patent term is 20 years from the earliest claimed priority date. Special transition rules apply to applications filed pre-GATT; the patent term is the longer of 17 years from date of issuance or 20 years from the earliest priority date.

⁶ In addition to determining the patent term, priority applications affect what prior art can be applied in a patent examination. A particular claim has a priority date as of the earliest application that contains the patentable subject matter. Art available after the priority date cannot be cited against the claim. In practice, U.S. examiners rarely determine the priority date of a claim, whereas European examiners frequently review priority applications to determine priority dates of claims.

[51] Int. Cl. refers to "International Classification," which is also known as the "**International Patent Classification** (IPC)." IPC⁷ is a hierarchical classification system administered by the World Intellectual Property Organization (WIPO). In the IPC, technology is divided into eight sections and more than 67,000 subdivisions represented by letters and numbers. The IPC symbols are allotted by the national or regional patent office that publishes the patent document. The IPC is indispensable for the retrieval of patent documents in the search for "prior art." Such retrieval is used by patent-issuing authorities, potential inventors, attorneys and others concerned with the application or development of technology. The bolded IPC code on the cover page is the most relevant classification.

[52] Although seventy other countries use the IPC system, the United States Patent Office adheres to its own classification system. The **U.S. classification** codes that the patent relates to are presented in this field. The bolded code is considered to be the most relevant classification.

[58] The **Field of Search** contains the codes for the U.S. Classification system where the Examiner performed prior art searches.

[56] **References** cited contain all the references made of record in the application process for the patent. 'Of record' means that the Examiner has considered patentability of the claimed invention in light of these references. References are either submitted by the inventors⁸ or are cited by the Examiner of the patent application. The references are subdivided into U.S. Patent Documents, Foreign Patent Documents, and Other Publications.

[] Following the references, the names of the Primary **Examiner** at the Patent Office, the Assistant Examiner (if any), and the Attorney, Agent or Firm of record are listed.

[57] The **Abstract** is a short description of the invention and is written by the applicants. The stated purpose of the abstract is to enable the Patent Office and the public to quickly determine the gist of the technical disclosure. More importantly, the "abstract shall not be used for interpreting the scope of the claims."⁹

[] Finally, at the bottom of the cover page, the number of claims and drawings in the patent are displayed. In this patent, there are 55 claims and 0 drawings.

Specification

The specification of the patent is also called the disclosure. It contains a description of the invention that must satisfy certain writing requirements for patentability (see ___below). In the U.S., the statutory provision that sets forth the requirements of the specification is found in 35 U.S.C. § 112¹⁰. The four requirements are commonly referred to as (i) written description, (ii) enablement, (iii) best mode, and (iv) definiteness. While best mode requirement is peculiar to the U.S., patent laws in other jurisdictions have counterpart requirements.

⁷ For more information on the IPC, see WIPO's web site at www.wipo.org.

⁸ In the U.S., each individual associated with the filing and prosecution of a patent application (e.g., inventor, patent attorney, assignee) has a duty to disclose all material information to the Patent Office.

⁹ 37 CFR 1.72(b)

¹⁰ 35 U.S.C. §112, first and second paragraphs, state:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The Patent Office has issued guidelines specifying a preferred layout of the specification and its content. Briefly, a specification contains (a) title of the invention; (b) cross-reference to related applications; (c) statement regarding federally sponsored research [not applicable in the '765 patent]; (d) [background of the invention](#), including the field of the invention and description of related art; (f) [summary of the invention](#); (g) description of the drawings [not applicable for the '765 patent]; (h) [detailed description of the invention](#); (i) [sequence listing](#); and (j) [claims](#). The specification has particular value as an aid to interpreting the scope of the claims. Thus, a patent specification is drafted both to satisfy the written requirements for patentability as well as to define claim scope. With this in mind, we will examine each major section of the specification and analyze what purpose is being accomplished.

Background of the Invention

The background is typically drafted for a jury audience. Selected art in the field is discussed to emphasize differences with the current invention and although not well developed in the subject background, to point out the needs for the current invention. The background in the '765 patent mostly explains the technologies of several key relevant references.

Summary of the Invention

The summary of the invention, which is distinct from the abstract, is meant to discuss the invention (i.e., the claims) rather than the disclosure as a whole. Often, the summary will discuss advantages of the invention or how it solves the problems existing in the art, such as those presented in the Background of the Invention.

The summary of the '765 patent follows his format. The invention as embodied in the claims is generally discussed. Specific advantages of the invention are presented as well, such as in col. 1, lines 61-64, col. 2, lines 1-6, and col. 2, lines 51-54. Briefly, the inventors believe that the advantages include: a positive control of gene expression by an external stimulus without the need for continued application of the stimulus; ability to grow plants under various conditions with expression of different phenotypes; and for developing seed where a trait is only desirable in the first or in subsequent generations. A careful reading of the summary indicates that genetic copy protection is not indicated as a specific advantage.

Detailed Description of the Invention

The Detailed Description of the Invention is the meatiest section of a patent. Its purpose is to adequately and accurately describe the invention. As indicated above, this section is the main support for meeting the writing requirements of written description¹¹, enablement¹², and best mode¹³.

¹¹ The written description requirement is intended to show that the inventor has the invention in mind [QUITE LILLY]. Although this requirement historically came into play when claims were amended after the initial filing to examine whether the new claims had support in the disclosure of the original application. More recently, breaking with the traditional the Federal Circuit has held that for a claim to a gene must disclose the entire sequence in order to meet the written description requirement.

¹² The enablement requirement requires the inventor to describe the invention clearly enough so that one skilled in the art can understand it, make it, and use it without undue experimentation.

A cursory glance at the Detailed Description reveals two sections: the first section [col. 2 line 58 to col. 8 line 40] contains a general explanation of the invention and how to practice it; the second section [col. 8, line 43 to col. 20, line 33] contains specific examples of how to practice the invention. Many new readers find the purposes of these two sections confounding and assume that the examples set forth how the invention will be practiced. The Examples are provided. Most patent applications recite a statement to the effect of "the following examples are meant to illustrate, but in no way to limit, the claimed invention." Examples, however, are not necessary to satisfy any of the patentability statutes, although in practice for biotechnology inventions, the enablement requirement is difficult, if not impossible, to satisfy without examples.

A summary of the disclosure in the specification is now discussed with an overview of the purpose behind each section.

In ¶¶ 1 and 2, the inventors generally describe their invention in terms of the DNA constructs used to create transgenic plants and then describe how the invention works to control gene expression. These two paragraphs are intended to acquaint the reader with the overall gist and context of the invention. The invention is described in its broadest sense, indicating that the inventors have a broad view of the scope of the elements.

Paragraphs 3-11 (col. 4, lines 1-39) set forth definitions of some key terms. In U.S. patent law, an inventor may be her own lexicographer as long as the meanings are not antithetical to commonly understood usage (*e.g.*, an inventor may not define a repressor as a gene product that activates a gene). Definitions are extremely important in interpreting the scope of the claims. For example, in this patent the term "plant active promoter" is defined as "any promoter that is active in cells of a plant of interest." Thus, any promoter would include promoters other than plant-derived. Indeed, the inventors go on to disclose that plant-active promoters can be derived from viruses, bacteria, fungi, and so on. The manner in which the definition is written, however, does not limit the promoters to the laundry list provided; the list is merely a list of examples.

Proceeding on, the next three paragraphs describe preferred embodiments of the invention. Embodiments are generally more limited versions of the broadest concept (disclosed in ¶¶ 1 and 2). Preferred embodiments are provided for several purposes: to set a fall-back position if the broader concept is not patentable, to

Thus, in ¶ 12 the embodiment recites a "transiently-active promoter" limited to a promoter that is active only in late embryogenesis and a "gene linked to this promoter" that is a "lethal gene." Paragraph 13 discloses an embodiment in which a pair of transgenic plants are crossed to produce progeny that display an altered phenotype. Paragraph 14 discloses an embodiment in which the recombinase is linked to an inducible promoter. In addition, a limited number of examples of inducible promoters are provided.

¹³ An inventor must disclose the best mode for practicing the claimed invention. The Patent Office does not query applicants whether best mode has been disclosed. Generally, disclosure of best mode becomes an issue only in litigation.

The next several paragraphs (¶¶ 15-19) disclose information about various elements found in the claims, including transiently-active promoter, genes whose expression results in a detectable phenotype, including a lethal gene, blocking sequence, repressor and repressible promoters, and recombinase/excision sequences. The purpose of these paragraphs is to provide support for claim scope and forestall arguments about claim scope, such as those that might arise during infringement litigation. The disclosure in the '765 patent is relatively thin, with very few examples of the elements. As an example, in col. 6, lines 47-60, the inventors discuss lethal genes. After providing a definition of a lethal gene, they illustrate the class by only citing one lethal gene, saporin-6, which acts by cleaving the large ribosomal RNA molecule and thus inhibiting protein synthesis. The reader is left wondering what other types of lethal genes the inventors envision.

The next five paragraphs (¶¶ 20-24) discuss how transformation of the target plant can be carried out. The inventors mention a variety of techniques (col. 7, lines 62-65). This is a very classic style of patent drafting and clearly indicates that the actual method used for transformation is not critical. Other, more esoteric methods of introducing the DNA constructs are elaborated on in ¶¶ 21-24.

Finally, the specification discusses in ¶ 25 the types of plants that are suitable for the present invention. The laundry list of plants indicates that the inventors do not believe that the plant species itself should be limiting.

The next paragraph is extremely important and so is recited here in full with added emphasis:

The following examples are meant to illustrate, but in no way to limit, the claimed invention.

It cannot be stressed too much that the examples are merely illustrative. A patent application does not require examples, however in practice, examples can often assist in showing patentability (*e.g.*, enablement). The examples may or may not have been performed by the inventors; when performance is complete, the examples are called "working" examples, when performance has not been completed, the examples are called "prophetic" examples and are always written in the present or future tense. Typically, the examples show practice of one or more specific embodiments of the invention. In the '765 patent, examples 1-6 demonstrate cloning of three DNA sequences, (i) a lethal gene, saporin-6, under control of a late embryogenesis promoter, and separated by a blocking sequence, LOX; (ii) a tet repressor gene under control of a CaMV 35S promoter; and (iii) a CRE (recombinase) gene under control of a tetracycline-derepressible 35S promoter. Examples 7-10, which describe the introduction of the constructs into plants and activation of the system are prophetically written, *i.e.*, have not been performed as of the filing date of the application.

Sequence Listing

The sequences listing includes every disclosed nucleic acid molecule that is 10 nucleotides or longer and every disclosed protein that is 4 amino acids or longer. The listing is meant to assist the patent examiner in searching sequences for novelty. As

such, it would make sense to confine the listing to sequences presented in the claims, however, the rules require all molecules of specified length to be included.

Claims

The fourth requirement of the specification is the claims. There must be at least one claim. The claims must "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention."¹⁴ Thus, the claims define the metes and bounds of the patentee's right. The basic concept is that the inventor must clearly delineate the precise boundaries so that possible infringers can understand what is protected and what is not protected.

Each claim must be written and be only a single sentence. A claim is presented in two parts, the preamble and the body, with a transition word or phrase between them.

The preamble is an introductory statement that names the thing that is to be claimed. For example, the preamble of claim 1 recites: "A method for making a genetically modified plant."

The body of a claim defines what the elements or steps of the named thing are. In claim 1, the body of the claim consists of the steps of "stably transforming..." and "regenerating..."

The transition words or phrases commonly used are "comprising,"¹⁵ "consisting of" and "consisting essentially of." "Comprising" means "including the following elements but not excluding others."¹⁶ As such, the claim is an "open-ended" type. In claim 1, "comprising" is used in two instances: in the preamble, "A method ... comprising" and in the body, "a ...DNA sequence comprising..." Thus, in claim 1, an individual that adds steps to the method or adds elements to the DNA sequence will still be encompassed by the claim and be infringing.

In contrast, the transitions "consisting of" and "consisting essentially of" have more limited meaning. "Consisting" means that the device (or method) has the recited elements (or steps) and no more. The meaning of "consisting essentially of" is intermediate to the other two transition terms and excludes additional ingredients that would affect the basic and novel characteristics. "Consisting essentially of" is not often used. Generally, both of these transitions are used only when the art requires limitation or in the case of DNA claims, because the patent office requires it.

Claims also come in two flavors: independent and dependent. An independent claim (e.g., claims 1, 10, 19, 28, 37, 46, and 55) stands alone. It includes all the necessary limitations and does not depend on or include limitations from any other claim. Curiously, independent claim is not defined in patent rules but dependent claim is. Rule 75(c) defines a dependent claim as one that "refer[s] back to and further limit[s] another

¹⁴ 35 U.S.C. § 112

¹⁵ Equivalent words include "having" and "including" but most practitioners use "comprising" because it has become a standard term of art.

¹⁶ *Moleculon Research Corp. v. CBS, Inc.*, 229 U.S.P.Q. 805, 812 (Fed. Cir. 1986).

claim or claims."¹⁷ Moreover, a dependent claim "shall be construed to include all the limitations of the claim incorporated by reference."¹⁸

Claim 4 of the '765 patent is an instructive dependent claim. In claim 4, which depends upon claim 1, the transiently active promoter is limited to the LEA promoter. All other elements of claim 1 remain intact and are not further limited.

Dependent claims serve very important purposes. One purpose is for a concept called claim differentiation. By claiming the LEA promoter in claim 4, the transiently-active promoter claim 1 must encompass more than the LEA promoter because otherwise claims 1 and 4 would have the same scope. In patent law, two claims must have different scope. Dependent claims are also written to protect specific embodiments of an invention. Should the main claim fail in a court case, a dependent claim may still stand. In addition, it is easier for a jury determining infringement to have the alleged infringing activity clearly spelled out rather than have to infer it.

DISCLAIMER

THE CONTENTS OF THESE PAGES ARE INFORMATIONAL ONLY AND SHOULD NOT SUBSTITUTE FOR COMPETENT LEGAL ADVICE

These pages are provided by CAMBIA Intellectual Property Resource (CIPR) as a service to the public.

CIPR provides the information herein to enable readers to learn about and comprehend intellectual property issues that may affect them. CIPR does not offer legal advice. As legal advice depends upon the specific circumstances of each party, nothing provided herein should be used as a substitute for the advice of competent counsel.

In addition, please be aware that intellectual property law varies considerably from country to country, so some information in these pages may not be applicable to your situation.

Although we make every attempt to provide current information, we cannot promise that everything on this web site is complete or up to date. Furthermore, links to other web sites are provided for convenience only. We have no control over the content of such web sites and cannot be responsible for their content.

¹⁷ 37 C.F.R. 1.75(c)

¹⁸ Ibid.