

# Understanding Patent Preparation and Prosecution

*Matthew S. Rudd, JD, and William E. McCracken, JD*

---

*Matthew S. Rudd, JD, is an associate and William E. McCracken, JD, is the managing partner at McCracken & Frank LLP in Chicago.*

---

## Introduction

A patent can be a useful tool for protecting intellectual property. A well-written patent can keep competitors from copying successful products and can also help lure potential investors. At the same time, rattling the proverbial patent saber may lead to royalty income from licensing agreements. Successfully litigating a claim for patent infringement can cripple a competitor, solidify your market position, bring in significant awards from damages, and even lead to further licensing agreements.

It is important for those seeking patent protection to understand what goes into a well-written patent application. Of particular importance is the tension between the standards for patentability and the desirability of maintaining a range of coverage that is adaptive to meet future needs. While it may be relatively easy to produce a patent application that scrupulously complies with statutory and judicial guidelines, following these guidelines while, at the same time, building in interpretative adaptability and breadth may be a far less trivial matter.

## Claim Drafting

The crux of any patent lies in its claims. Patent claims define, in technical terms, the extent of the protection conferred by an issued patent or the protection sought in a patent application. Claims are often compared to the recitation of boundary lines in a deed for land because both identify the property that the owner has the right to exclude others from. In order to enforce a patent in court, the patent owner or patentee must demonstrate that what the other person is using falls within the scope of a claim of the patent.

The claims of a patent appear at the end of the patent document, immediately following the written description of the invention. The claims are set forth as separately numbered paragraphs in a single-sentence format. The first claim of an issued patent is always numbered “1,” with each claim thereafter following in an ascending numerical sequence. Most patents contain about ten to twenty claims, although there are some patents with only one claim and others with hundreds of claims.

## Claim Format

There are two basic claim formats: independent claims and dependent claims. Whereas *independent* claims stand on their own, *dependent* claims depend on another claim and generally are directed to particular embodiments as fall-back positions. The rules of claim drafting also permit *multiply dependent* claims that are dependent upon two or more claims.

### *Independent Claims*

Each independent claim consists of three parts: the preamble, a transitional word or phrase, and the body. The preamble generally sets the stage for the rest of the claim and may define the general technical environment of the invention. For example, an independent claim directed to an improved type of telephone may have the preamble: “A telephone ...” Alternatively, an independent claim for the same invention may have the preamble: “An apparatus for improved telecommunication ...” The preamble is not usually considered to be a legally limiting constraint on the invention and, therefore, preambles tend to vary widely—even within the same industry.

Next, the transitional word or phrase is used. There are basically three transitions: “comprising” or “which comprises,” “consisting of,” and “consisting essentially of.” “Comprising” is an open term; construed by the courts as being a shorthand way of saying “including the following elements but not excluding others.” For example, a claim to a combination comprising A + B also covers a combination having A + B + C. On the other hand, the term “consisting of” is a closed term. Returning to the example, a combination consisting of A + B does not cover the combination A + B + C. The final term, “consisting essentially of,” is part open and part closed in the sense that such a claim covers the recited elements alone or such elements plus any other elements that are not directly related to the claimed invention. In general, patent attorneys use the open term “comprising” in order to cover

the invention as broadly as possible. A “consisting” transition is usually only used in the context of a chemical composition.

The body of the claim follows the transitional word or phrase and lists the main elements of the invention. It is here, in the body of the claim, that an invention’s novel and non-obvious characteristics are particularly claimed. Because claims must be written in single-sentence format, punctuation is also important. Modern claims typically follow a set format whereby the preamble is often separated from the transitional term by a comma while the transitional term is separated from the body by a colon. Each element of the invention in the body of the claim may be set forth in its own separate paragraph, which may, in turn, be set apart from other paragraphs by a semicolon or comma. The functional connections and interoperation of elements are also described in the body, either in a separate dedicated paragraph or in each of the element paragraphs.

### *Dependent Claims*

Dependent claims add additional limitations to the claim from which they depend or further define one or more elements of such claim. Dependent claims may depend on an independent claim or another dependent claim. Dependent claims that depend upon more than one claim are generally referred to as “multiply dependent claims,” which are discussed in more detail below.

In practice, dependent claims are often used to focus in on the inventor’s preferred embodiment of the invention (e.g., the actual product design that the inventor intends to use). In a typical patent application, claim 1 is an independent claim that broadly describes the invention, and claim 2 is a claim dependent on claim 1 and that adds one or more limitations to claim 1 or further defines one or more elements of such claim.

Subsequent dependent claims may introduce different or additional limitations that correspond to different embodiments of the invention. Indeed, the expressions “in one embodiment,” “in a preferred embodiment,” “in a particular embodiment,” “in an advantageous embodiment,” or the like often appear in the descriptions of patents and patent applications and are used to identify a particular implementation or method of carrying out the invention. These alternative embodiments may correspond to a set of dependent claims or could conceivably form the basis of an independent claim. It is not uncommon to have

many more dependent claims than independent claims in order to protect the preferred embodiment(s) of the invention as well as any possible variations.

### *The Advantages of Dependent Claims*

Each dependent claim is, by law, narrower than the independent (or parent) claim upon which it depends. Accordingly, it might appear that there would be little purpose to the dependent claim. However, dependent claims do have their advantages.

First, dependent claims provide valuable fallback positions for patent attorneys, both when negotiating with patent examiners and in litigation. Because it is difficult, if not impossible, to know with a fair degree of certainty if a patent claim is valid (because of unknown prior art), there is always some risk that an independent claim will be found invalid. Nevertheless, even if the independent claim is determined to be invalid, a dependent claim may still survive and may still be broad enough to bar competitors from valuable commercial territory.

Second, a dependent claim may clarify and/or further limit independent claim language. Independent claims are typically written with very broad terms—sometimes too broad or sometimes a bit vague or unclear. Broad terms in independent claims that appear ambiguous or vague may be clarified by dependent claims that further define those terms. Also, under the *doctrine of claim differentiation*, a claim is presumed to cover different subject matter than each other claim. In the case of a term that could be construed broadly or narrowly, a dependent claim specifically drawn to a narrower interpretation should result in a determination that the scope of the parent claim is directed to the broader interpretation. As construed by the courts, the doctrine of claim differentiation dictates that it would be “improper for the courts to read into an independent claim a limitation explicitly set forth in a dependent claim.”<sup>1</sup>

### *Multiply Dependent Claims*

While the United States patent laws allow for multiply dependent claims, they are generally disfavored because of cost considerations. Multiply dependent claims typically reference more than one other claim (e.g., “The method of claims 1 or 2, further comprising...”). In this regard, specific claims must be referenced and not merely some unspecified set of other claims. A claim reciting “the method of any of any other claim” or “the

method of all previous claims” is incorrect. Also, claims must be referenced in the alternative, using “or” rather than “and” (e.g., “the method of claims 1 and 2” is incorrect). Such a claim is counted for filing-fee purposes in the United States according to the number of other claims that are referenced. Thus, if the claim depends from three claims, such claim is counted for fee purposes as three dependent claims. In light of the excess-claim fees currently imposed by the U.S. Patent and Trademark Office (USPTO), this claim strategy can quickly become expensive. Multiply dependent claims are, however, commonly used in other jurisdictions, including Europe.

### **Claim Categories (or Types)**

Claims can be categorized in terms of what is being covered. The most common claim types are apparatus (or product, device, system, article, or composition) and method (or process). However, there are quite a few different claim categories that may be used to patent an invention.

#### *Apparatus Claims*

Apparatus claims typically refer to a physical entity—i.e., an apparatus, product, device, system, article of manufacture, or composition. Many apparatus claims use these terms in the preamble to identify the claimed subject matter as such. For instance, the preamble of an apparatus claim for an improved telephone might read: “a telephone apparatus ...” or “an apparatus for telephone communication ...” Alternatively, the preamble may refer to a telephone product, system, device, article, etc. Still further, the preamble of an apparatus claim may simply recite: “a telephone ...”

Apparatus claims typically focus on the structure of the invention in the body of the claim. For example, the size, orientation, and/or location of physical components may be recited. Apparatus claims also describe how each component connects to, and interacts with, the other components of the invention. Of course, the overarching aim of apparatus claims, as with all other claims, is to specify the invention in such a way as to clearly demarcate its novel and non-obvious features.

### *Method Claims*

Method (or process) claims typically recite some novel and non-obvious activity. The activity may refer to a method of manufacturing a device or a method of using a device. However, under *In Re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (*certiorari* granted), a method must transform an article or be tied to a particular machine in order to be patentable. Methods that do not meet the machine-or-transformation test (e.g., certain types of software or business methods) may not be patentable in view of the *Bilski* case.

Method claims are identified by the preamble. Method claims recite: “a method ...” or “a process ...” Additionally, the transitional phrase may refer generally to the steps of the method—e.g., “a method for making a telephone, the method comprising the steps of: ...” The novel and non-obvious steps of a claimed method are recited in the body of the claim.

### *Claim Considerations*

Each claim type has its own pros and cons. The drafter must consider carefully the advantages and disadvantages of a particular claim type while preparing the patent application. For example, from a practical standpoint, it may be much more difficult to determine whether a manufacturer is infringing a method claim than an apparatus claim. To determine infringement of the apparatus claim, one may only need a sample of the final manufactured product, but to evaluate infringement of the method claim, it may be necessary to have access to the actual manufacturing facility.

On the other hand, apparatus claims generally protect against all uses of a claimed product, while a method claim may only protect against one particular method of use. Still further, products protected by apparatus claims must be appropriately marked with the patent number in order to obtain damages before actual notice of the patent is provided to the infringer. Marking may be a nontrivial expense in some cases—potentially making it a worthwhile endeavor to avoid the requirement entirely by relying on method claims alone. While courts have been inconsistent in their application of the marking statute when a combination of claim types is present, courts generally agree that patents with only method claims are not subject to the marking statute. These are just a few examples of the considerations that go into deciding on types of claims to pursue.

## Claim Coverage and Claim Validity

Claim coverage and claim validity are two competing considerations in claim drafting. Ideally, an independent claim is drafted broadly to cover the current invention as well as foreseeable variations and trivial improvements, so that the patent claim cannot be easily designed around. However, the broader a claim is, the more likely it is that the claim may be found invalid under statutory requirements of novelty and non-obviousness.

### *Claim Coverage*

The breadth of coverage offered by a patent claim generally depends on the elements the claim recites. In general, the broader the claim coverage, the fewer elements, or steps, required to prove infringement. For instance, a broad claim might cover a telephone with the elements x and y, while a narrower claim may only cover telephones containing the elements x, y, and z. Likewise, a claim for a method of making a telephone that recites the steps a, b, and c will be broader than one reciting the steps a, b, c, and d. In essence, broad claim coverage enables the patent to be asserted against a wider range of devices or processes, because fewer elements or steps are needed to find infringement.

### *Claim Validity*

Unfortunately, patents with broader claim coverage often face significant obstacles regarding claim validity. The validity of a claim refers to its compliance with applicable statutory and judicial guidelines. Of particular importance in the United States are the statutory requirements of novelty and non-obviousness.

Novelty requires that patent claims present new improvements over known devices or methods, inventions, patents, and publications—collectively termed the prior art. In order for a claim to be considered novel, there must be no single item of prior art that teaches all of the claimed elements. Thus, a claim for a telephone with elements w, x, y, and z may be considered novel over an item of prior art teaching a telephone with elements x, y, and z. Likewise, the telephone claim may be considered novel over an item of prior art disclosing a telephone with elements v, w, x, and y. However, the claim would not be novel over an item of prior art teaching elements w, x, y, and z (or v, w, x, y, and z).

In addition to being novel, a claim must meet the statutory requirement of non-obviousness. An obviousness inquiry seeks to determine whether the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the claimed subject matter pertains. Obviousness is similar to novelty in that it compares the elements found in the prior art with the elements in the invention being claimed. Unlike novelty, however, obviousness is not restricted to considering the elements taught in a single item of prior art; instead, the teachings of multiple items of prior art may be combined to invalidate a claim.

In practice, obviousness and novelty go hand in hand in the USPTO. Generally, claims are first analyzed by an examiner for novelty and may be rejected if a prior art reference teaching all the elements of the claim can be found. Assuming a claim can overcome the novelty hurdle (meaning there is no single prior art reference teaching all of the elements of the claim), an obviousness inquiry may then commence, wherein the claim may be rejected if there are multiple prior art references that can be combined to teach all elements of the claim.

## The Specification

By law, sufficient detail must be provided in the written description, or specification, of the patent to support the claims. Specifically, under 35 U.S.C. § 112, “[t]he 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 patent specification is the portion of a patent application that describes the invention for which patent protection is sought. The specification generally consists of a background section, a summary of the invention, a summary of any figures or drawings, and a detailed description of the invention. In the United States, an abstract section that summarizes the disclosure is also required to aid in searching. By law, the specification must set forth a description sufficient to enable one of ordinary skill in the art to which the subject matter pertains to practice the “best mode” of the invention without undue experimentation.

The specification section is important because it is the first place a court looks when construing a patent claim. Courts recognize that, “the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.”<sup>2</sup> Because courts so often look to the specification to illuminate the meaning of claims, often the claims are drafted first, and the specification afterwards, so that the drafter already knows what claim terms must be included in the specification.

Also, unlike the claims of a patent, the specification section usually cannot be modified once it is filed (subject to a few narrow exceptions). Consequently, it is important to include all relevant information the first time around. Practitioners may also describe several different variations, or embodiments, of the invention that correspond to different dependent or independent claims. However, references to the “invention” should be limited, in favor of allusions to “embodiments” or “aspects.” Additionally, the specification should avoid disclosing embodiments that are not claimed, as the resulting dedication to the public of this subject matter may later hamper efforts to stop infringers.

## Prosecuting a Patent

Patent prosecution refers to the negotiation process between a patent applicant (and his/her representative) and a patent examiner at a patent office. Patent prosecution is distinct from patent litigation, which relates to the legal action relating to patent infringement. However, actions taken by patent applicants in the prosecution process can have significant effects on subsequent litigation.

### The Prosecution Process

At a high level, patent prosecution can be divided into pregrant prosecution and postgrant prosecution. Pregrant prosecution involves negotiations with the patent office for the grant of patent claims. Postgrant prosecution involves issues such as opposition proceedings and postgrant amendments. This article focuses on pregrant prosecution.

There are several phases of pregrant prosecution. First, the patent application is prepared, which includes the drawings, the specification, the claims, and usually some associated paperwork. Next, the application is filed with the appropriate patent office. This may

be the USPTO, the European Patent Office, or some other patent office. Once the application is filed, the applicant officially has a patent pending. At about eighteen months after initial filing in a patent office, the patent application is usually published and becomes publicly available. At around the same time, the patent office in question will begin to search for applicable prior art and examine the patent application to determine if it should issue as a patent. The bulk of pregrant prosecution issues arise during the search and examination phase.

During a patent examination, the examiner will compare the prior art results obtained in the search to the claims filed in the application to determine whether the claims are allowable. In the case of the USPTO, if the examiner finds that the application does not comply with the statutory requirements of novelty and non-obviousness or that the application is objectionable for some other reason (e.g., deficiencies in the specification), the examiner may prepare and send the applicant an office action requesting that the applicant address particular issues. The applicant may respond to the office action by arguing in support of the application and/or by making amendments to the application.

Alternatively, the applicant may decide to abandon the application. If the applicant does respond to the office action, the examiner may then consider the applicant's arguments and/or amendments and reply with the same grounds for rejection, different grounds for rejection, an allowance granting some or all of the claims, or with some combination of the above. This negotiation process between the patent office and the applicant is repeated until the patent issues, or the application is abandoned.

### **Prosecution History Estoppel**

Prosecution history estoppel refers to a legal presumption concerning concessions in the scope of claim coverage. Generally, estoppel attaches during the course of prosecution because of arguments or amendments made in response to an office action. In particular, "a patentee's decision to narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claims."<sup>3</sup> Once the applicant has narrowed his or her claim through argument or amendment, an estoppel is presumed that prevents enforcement of a broader claim version.

A narrowing amendment, if made for a reason related to patentability, will give rise to a presumption that the claim does not cover certain devices or methods. Presumptions arise when: a preexisting claim limitation is narrowed by amendment, a new claim limitation is added by amendment, or a dependent claim is rewritten into independent form to include all of the limitations of the original independent claim and the original independent claim is cancelled.<sup>4</sup>

For instance, if a claim reading: “a telephone comprising: element a and element b, wherein a is attached to b by a screw,” is amended to read “a telephone comprising: element a and element b, wherein a is attached to b by a Phillips head screw,” then a court may presume the applicant has conceded claim coverage of telephones that attach a to b by a non-Phillips head screw. However, the presumption of surrender may be rebutted if the patentee can demonstrate certain facts that prevent the estoppel from being applied.<sup>5</sup> “The scope of the patentee’s concession is determined on a limitation-by-limitation basis.”<sup>6</sup>

While it is almost impossible to avoid creating some sort of prosecution history estoppel, there are several strategies applicants may undertake to minimize estoppel effects. In this vein, practitioners often adhere to the old adage “less is more.” A practitioner will typically limit amendments defining a term in one claim that may illuminate the meaning of a term in another claim. Also, it is advisable to avoid acknowledging that different claim terms are synonymous, as is often tempting when arguing that claims distinguish over the prior art.

Likewise, you should minimize as much as possible comments that interpret the claims or describe what the invention is. Where feasible, it is desirable to indicate to the examiner that any amendments being made are being made to better define the invention, not to overcome the prior art. Practitioners are also well-advised when distinguishing over the prior art to recite the exact language of the claims and do not paraphrase. Also, you should not comment regarding distinctions over prior art unless absolutely necessary. Gratuitous comments defining over the prior art can limit the scope of the claims.

## Conclusion

While it may be relatively easy to produce a patent application that scrupulously complies with statutory and judicial guidelines, following the guidelines while, at the same time, building in interpretative adaptability and breadth may be a far less trivial matter. There are numerous issues related to preparing and prosecuting a patent application that can have ripple effects on the patent's viability in downstream litigation or licensing negotiations. A well-prepared and prosecuted patent may be used to attract investors, prevent competitors from copying valuable products or processes, negotiate fruitful licensing agreements, or obtain damages for patent infringement.

On the other hand, patent applications that are thrown together quickly and prosecuted poorly, without an eye toward future litigation, may result in nothing more than a waste of valuable time, energy, and resources. Thus, it is of paramount importance for applicants seeking patent protection to understand what goes into a well-written patent application and to make sure their patent counsel understands as well.

*For more information about patents, see Volume 3 of the 3rd Edition of the Association for University Technology Managers Technology Transfer Practice Manual.*

## Notes

1. *Environmental Designs Ltd. v. Union Oil Co. of California*, 713 F.2d 693, 699 (1984).
2. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005).
3. *Honeywell Int'l, Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1143 (Fed. Cir. 2004).
4. *Id.* at 144.
5. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1369-70 (Fed. Cir. 2003).
6. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1369-70 (Fed. Cir. 2003).