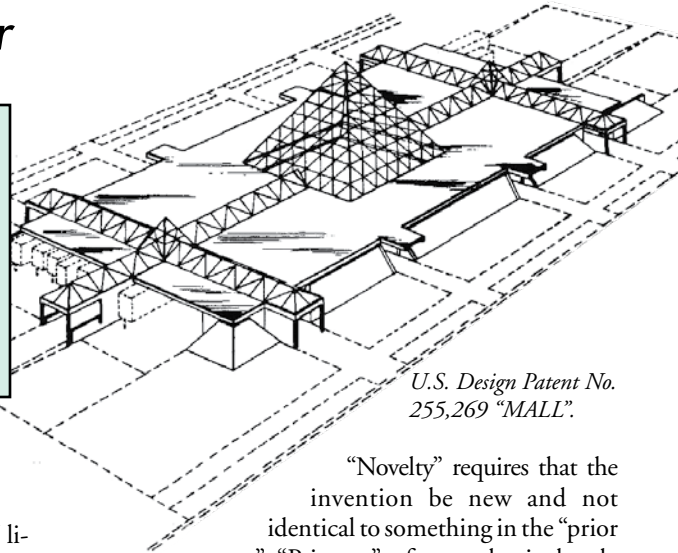


# Patent Basics for the Innovative Engineer

By Christopher A. Rothe, Esq.

If your company is like most businesses, you probably compete with several other companies in the same line of work. To remain competitive, you might devote significant time to improving the quality of your work product or adapting to new engineering standards. These types of efforts can lead to valuable inventions that advance the profession and the state of the art. However, many businesses fail to extract full value from them, because they are either unaware of their value or unsure of their options for protecting them. This article provides general information on protecting intellectual property through patents, and discusses some common issues that may help you decide if patent protection is appropriate for your business.



U.S. Design Patent No. 255,269 "MALL".

## What is a Patent?

A patent is an official document issued by a governmental body that gives the owner the right to exclude others from practicing an invention. In the U.S., a patent gives its owner the right to exclude others from making, using, selling or offering to sell the invention within the U.S., or importing the invention into the U.S. In exchange for these rights, the patent owner must fully disclose the invention to the public in the patent document. There are two types of U.S. patents that are relevant to structural engineering: utility patents and design patents.

Utility patents and design patents protect specific categories of inventions. Inventions must fall into one of the categories to be eligible for patent protection. Utility patents protect machines, processes, articles of manufacture and compositions of matter. Design patents protect the ornamental appearance of articles of manufacture. Structural engineers have obtained utility patents for bridge structures, stadium roof systems and tube rolling processes, and design patents for suspension bridges, mall complexes and prefabricated structures. Although some patents protect new innovations, many patents protect improvements to existing technology and designs.

The term of a utility patent is 20 years from the date the application is filed. In contrast, the term for a design patent is 14 years from the date the application is filed. When a patent's term expires, the patentee's "right to exclude" also expires, and the invention enters the public domain. The public does not need permission from the patent owner to make, use or sell the invention after the patent expires.

## Why Obtain a Patent?

There are many rationales for obtaining patents. A common objective is to gain a competitive advantage over other businesses. A company that offers its customers patented technology and excludes others from

doing the same has an obvious advantage if the technology is in demand. Patents can also be a source of licensing revenue from other parties that are interested in practicing the invention. In addition, patents can be used for bargaining purposes. For example, a patent owner can negotiate a cross-license agreement with another patent owner that allows both parties to use each other's patented technology. Furthermore, patents represent intangible assets that can add value to a business. In fact, the value of a patent portfolio can be a major factor that drives the sale of a business.

## Contents of a Patent

A patent document contains three parts: (1) a specification, (2) one or more drawings, if drawings are necessary, and (3) one or more "claims". In utility patents, the specification usually contains a background section describing existing technology, a summary of the invention and a detailed description of one or more examples of the invention. The claims describe what the inventor considers to be the "metes and bounds" of the invention covered by the patent. Utility patents conclude with one or more claims expressed in paragraph form. Design patents contain a single claim expressed in the form of one or more drawings that illustrate the design.

## Requirements for a Patent

Each claim in a patent application must satisfy requirements for "statutory subject matter", "novelty", "nonobviousness" and "definiteness."

To qualify as "statutory subject matter", the claims must fall into one of the categories described above for utility and design patents. For the most part, the "statutory subject matter" requirement is easy to meet, and is not seen as a major obstacle for most inventions related to structural engineering.

"Novelty" requires that the invention be new and not identical to something in the "prior art". "Prior art" refers to what is already

known in the field prior to the invention, and may include any subject matter that is patented, published or otherwise on display to the public before the date of invention.

A claimed invention must also be "nonobvious". An invention will be denied a patent, even if it is novel, if a person of ordinary skill in the art would find the invention to be obvious at the time the invention was made. Deciding whether an invention is obvious can be a difficult question, because it is based on the viewpoint of a "person having ordinary skill in the art" existing at the time of the invention, who has not seen the claimed invention.

Claims are also examined for "definiteness." Under this requirement, the claims must clearly point out and define the metes and bounds of the subject matter that will be protected by the patent. This allows the public to assess the scope of the claims and determine what they are free to do without permission from the patent owner.

As the name implies, a utility patent further requires that the invention have some usefulness. Utility requires that the invention have some basic function and be capable of performing that function.

## The Examination Process

The patent examination process begins with the filing of a utility application or design application in the U.S. Patent and Trademark Office (USPTO). During examination, the claims are evaluated to see if they meet the statutory requirements discussed in the previous section. The application will be rejected on one or more grounds if the requirements are not met. Depending on the rejection(s), the applicant can amend the claims or other parts of the application, submit evidence or

## Patent Strategy

There are many options available for pursuing patent protection. Below are some common questions that help applicants determine the best patent strategy for their businesses.

### *Do you want to investigate patentability first?*

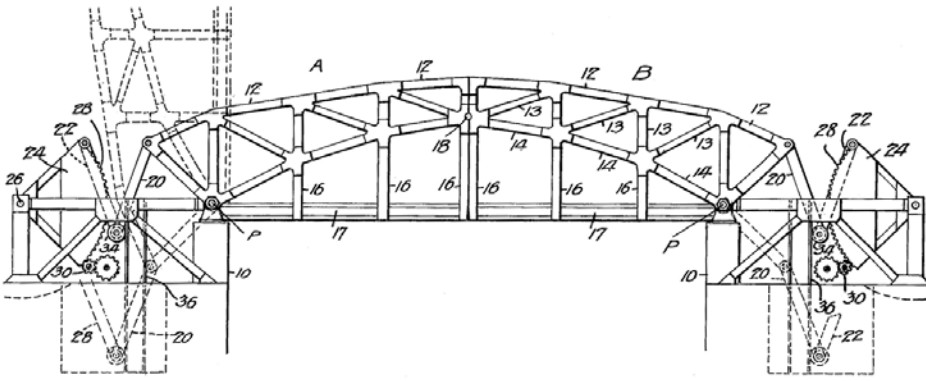
A patent application can be a significant investment in terms of time and expense. If your invention is in a technology area that is well developed, there may be a number of patents that already exist on similar technology. A patent can be very difficult to obtain in such cases, and the value of a patent that issues may be diminished by the presence of other closely related patents. Therefore, you may wish to look at the patent landscape before investing in a patent application. This can be done by performing a state-of-the-art search of patents and published patent applications in the field of your invention. The USPTO's website provides full-text and full-page image databases containing issued patents and published patent applications that are searchable. These databases are fairly easy to use with a little practice, and provide a good starting point for the curious inventor who desires to investigate patentability of an invention.

### *Where do you want to protect the invention?*

Patent rights that are granted in the U.S. are not legally enforceable against infringing activity occurring outside the U.S. Therefore, a patent application must be filed in each country where patent protection is desired. If you are only interested in patent protection in the U.S., you can simply file an application with the USPTO. If you wish to obtain patent protection in multiple countries, however, your choices include filing an application separately in each country, or filing a single application under the Patent Cooperation Treaty (PCT). Many countries, including the U.S., are members of the PCT, which is an international treaty that allows applicants to file a single patent application and obtain examination of the application in multiple member countries. If you are interested in protecting the invention in several countries, a PCT application may be the most cost-effective option.

### *Has there been a public disclosure?*

Another factor that can influence your strategy is whether the invention has been publicly disclosed. A public disclosure can take one of many forms, such as an open use of the invention, an offer for sale of the invention, or showing the invention to others without a confidentiality agreement.



U.S. Patent No., 1,412,327 "BASCULE BRIDGE".

provide explanations as to why the claimed invention is patentable. When all requirements are met, the claims are allowed, and a patent will issue after government fees are paid.

## Best Practices for Pursuing Patent Protection

If your company is interested in pursuing patents, the following practices can be invaluable. The first step is to adopt a policy of documenting the invention and its development with an "invention disclosure form." A good invention disclosure form will describe the invention, especially aspects that are believed to be improvements over the prior art. The form should also identify every inventor and each one's specific contributions. Moreover, the form should be signed and dated by all inventors to indicate their agreement to its contents. In addition, the form should identify the first time the invention was publicly disclosed, or if the invention is not disclosed, the earliest planned date of public disclosure. This date can be extremely important for reasons that will be explained

below. The invention disclosure form may need to include other information, depending on the nature of the invention, the applicant's business practices and any internal policies for record keeping.

If appropriate, your company should arrange to secure ownership in the invention as early as possible. This includes securing ownership in any patent applications or patents. U.S. patents are issued in the name(s) of the inventor(s). Each inventor listed on a patent is presumed to be an owner of the patent, unless there is a valid assignment that transfers ownership of the patent from the inventor to another entity. If an inventor does not assign his or her patent rights to his or her employer, the inventor is free to exercise his or her patent rights without consent from the employer. In many cases, employees are contractually obligated to assign inventions to their employer. This obligation alone does not transfer ownership. If the company is to own the patent rights, then every inventor must sign a document that transfers all patent rights in the invention to the company.

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If you disclose your invention to the public, the U.S. provides a one-year grace period, during which time you must file a U.S. patent application. With a few exceptions, failure to file an application within this time period forfeits the opportunity to obtain a U.S. patent on the invention. Most countries do not provide a grace period, and deny patent protection for any publicly disclosed invention. Therefore, your ability to obtain patent protection on your invention may be limited, or even precluded, if there has been a public disclosure.

#### What are your time constraints?

A utility patent application may take a considerable amount of time to prepare, especially if the description requires a large number of drawing figures and examples for illustration. If there has been a public disclosure, or if a public disclosure is planned to take place soon, you may wish to file what is known as a "provisional application" in the U.S.

A provisional application is a fast way to submit your invention disclosure to the USPTO in cases where you have very limited time to file an application. The primary purpose for filing a provisional application is to obtain a filing date, also referred to as a "priority date", as early as possible. The application need not include an extensive description or claims, and can be prepared in a relatively short amount of time as compared to a utility application. A provisional application is not examined, however, and it expires one year after its filing date. Therefore, you must still file a utility application to receive an examination and obtain a U.S. patent.

At this point, you may wonder what is to be gained from filing a provisional application if it is not examined, and can not be the sole basis for a patent. The answer lies in the provisional application's filing date. If two or more parties file separate patent applications in the USPTO on the same invention, a patent will only be awarded to the first inventor(s). The first individual to file his application (or group of individuals filing the same application) is presumed to be the first inventor and will get the patent. This presumption can be difficult to overcome. With this in mind, a party that files a provisional application can later file a utility application and reach back to claim the filing date of the provisional application. This can be done so long as the utility application is filed within one year of filing the provisional application. In such a case, the filing date of the provisional application is treated as the effective filing date of the utility application. The ability to claim the earlier filing date of the provisional application allows the inventor to establish "priority of invention" over others who file

applications on the same invention at a later date. The one year period after the filing date of the provisional application allows the applicant up to one year to evaluate the invention, assess the market's demand for the invention, and develop refinements that can be included in the utility application. ■

### For More Information

The above sections are very general and only scratch the surface of many patent issues. For more information, there is lots of helpful information on the USPTO website, [www.uspto.gov](http://www.uspto.gov).

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