

# Patenting pitfalls ... and their avoidance

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Scientists, engineers, or basement tinkerers who decide to patent an invention venture into the patent jungle, a territory located between the land of technology and the land of legal practice. This is where useful ideas are transformed into patents that protect the inventor's control of their commercial exploitation. Inventors who journey into the patent jungle are exposed to dangerous pitfalls at every turn.

Even before they decide to get a patent, inventors are in danger of losing the right to a patent if

- their idea is not the kind of invention that can be protected by a patent
- the invention was not kept secret
- the invention was used commercially, or
- they were not the actual inventors.

In the United States, a patent must be granted to the original inventors, but only on condition that they have not published a description of the invention or used it publicly more than a year before filing the application, and many useful inventions are not patentable under the law.

As it travels toward becoming a patent, an idea goes through a number of stages: The embryonic idea is developed, a patent application is filed, and the application matures into a patent. Then, after protecting the idea from unauthorized use for a limited term, the patent eventually expires. In Figure 1, I map the evolution of a patent as it travels through the patent jungle. The invention in question is made in the United States and develops into a U.S. patent. (An invention made somewhere else would follow a slightly different path.) Moreover, I'm illustrating the path followed by a new product or a process, which results in a utility patent. A patent for a plant or a design would follow still another path.

Like any other organism, a patent begins its life with its conception. In the United States, the first inventor of a product or process, not the first person to file a patent application claiming it, is entitled to a patent. The date of conception is used to settle interferences between two applications that claim the same invention. In U.S. patent law, the term "conception" refers to the mental formulation of the entire invention; if the invention is a new chemical compound, conception is complete only

when the inventor has figured out how to synthesize the compound and what it can be used for. The date of conception is taken as the earliest date that can be corroborated. That's why good record-keeping is so important. Researchers should keep their notes in ink in a bound notebook and have a colleague sign every page with a notation that the notes have been read and understood. (For more tips on keeping the perfect research notebook, see "Your notebook," by C. Kenneth Bjork of the ACS Committee on Patents and Related Matters, on p. 135.—Editor)

## The proper way

Following conception, the inventor must reduce the invention to practice. Actual reduction to practice can be accomplished by preparing and testing a new compound, by building a working model of a machine, or by practicing a process successfully in the lab or workshop. Constructive reduction to practice is accomplished by filing a patent application that claims the invention.

Most inventors will probably also engage a patent attorney or agent. Although inventors may file and prosecute their own patent applications in the United States, it is much safer to hire a guide before starting on a safari through the patent jungle. Patent law is constantly being reinterpreted by the courts, and there are occasional changes in the patent statutes, *Title 35 of the United States Code*, and in the *Rules of Practice* for patent cases, *Title 37 of the Code of Federal Regulations*. A major revision of the patent law occurred in 1982, and Congress has made several less drastic changes since then. Patent fees are adjusted every three years; the fees that I quote here took effect in 1985.

The filing of a patent application requires a written specification that teaches a person skilled in the relevant field of technology how to make and use the invention. The specification must disclose the best way to practice the invention and must be detailed enough that the invention can be practiced without too much additional experimentation. At the end of the disclosure, the invention to be protected is defined by one or more claims. The various claims in a patent application can be directed to different aspects of the invention, such as a compound

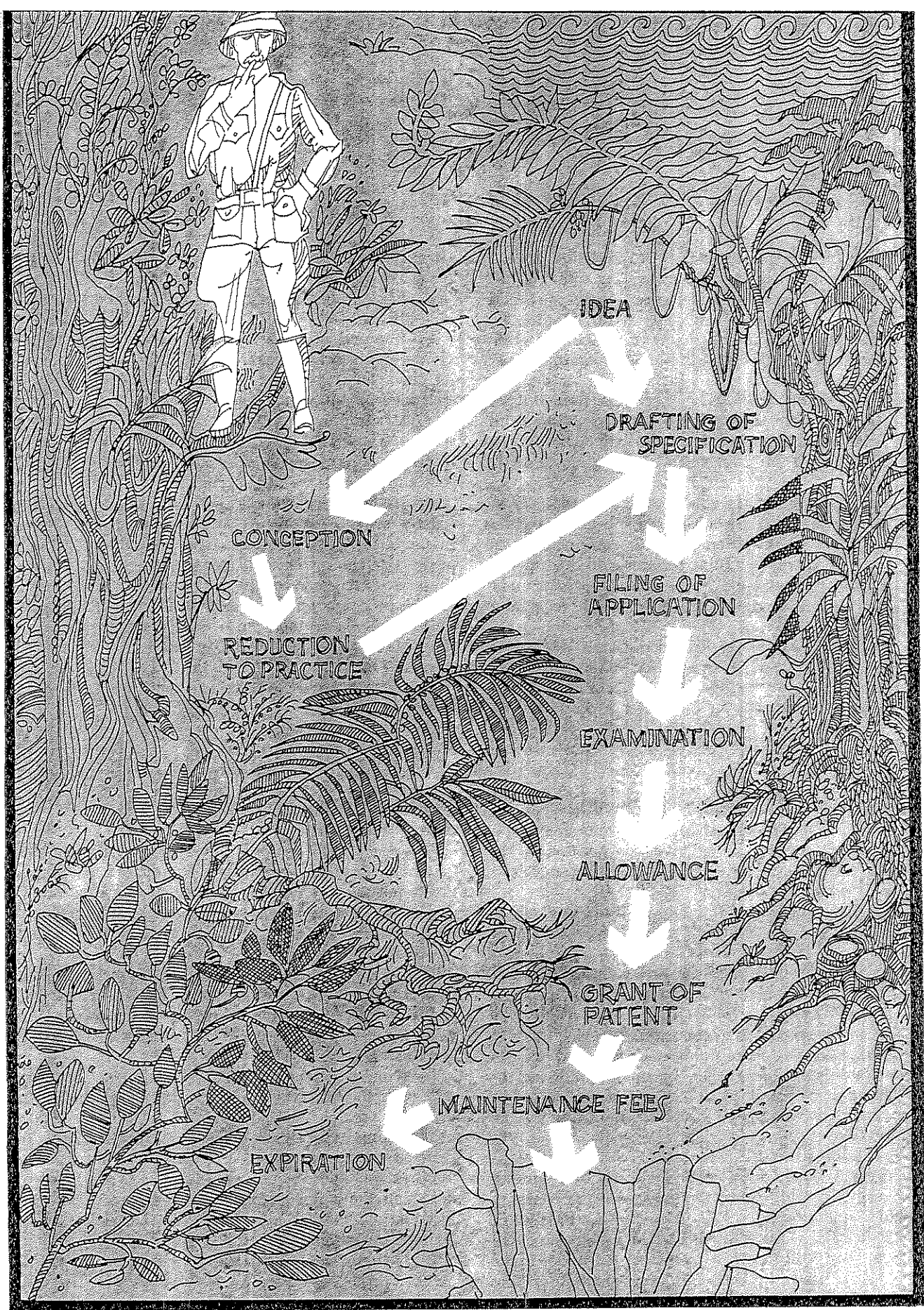


Figure 1. The fantasy route through the patent jungle

and the method for synthesizing it. Or the claims can be of different breadths, the first claim covering a class of new compounds, for example, and the rest covering specific compounds. If diagrams are required to describe the invention fully, the application must contain carefully drafted drawings. The application must contain a signed oath or declaration in which the inventor or the joint inventors state that they believe themselves to be the first and original inventors of the product or process they claim. The application also includes a filing fee of \$340 for up to 20 claims. If more than 20 claims are desired, an additional fee is paid.

In the United States, the actual inventor must apply for the patent, but patents are considered to be property, and the rights to the invention are often assigned to the inventor's employer. The filing fee and most other patent fees are reduced by one-half for persons who are not under obligation to assign rights to the invention to a large company.

After the application has been filed, an examiner of the Patent and Trademark Office checks it for conformity with the formal requirements of the law and for the patentability of the invention. Patent examiners are scientists and engineers who have been trained by the Patent and Trademark Office to analyze inventions in light of the patent law. The examiner searches the technical literature, to find out whether the claimed invention is new and nonobvious, and studies the application documents to be certain that they conform to statutory requirements. If the invention defined by the claims is found to be patentable, the examiner issues a Notice of Allowance.

Before the patent is granted, the applicant must submit an issue fee. The fee is \$560 for a patent assigned to a large company and \$280 for a patent issued to an individual, a nonprofit organization, or a company with less than 500 employees. The patent specification is printed for distribution to the public (at \$1.50 a copy), and a copy of the specification bound in a certificate of grant is issued to the inventor on the date of publication. The patent grant entitles the patentee to sue others who make, use, or sell the product or process defined by the claims and to sell or license the rights to practice the invention during the life of the patent.

The statutory life of a U.S. patent is 17 years. In 1980 the United States joined most other countries in requiring payment of periodic patent maintenance fees. The fees are \$450 to keep the patent in force for more than four years, \$890 to keep it in force for more than eight years, and \$1340 to keep it in force for more than 12 years. If the patent has not been assigned to a large company at the time the maintenance fee is paid, the fee is halved. The fees introduce a serious new pitfall into the patent jungle. If the fee is not paid six months before the fourth, eighth, or

twelfth year ends, the patent lapses, although—as with most deadlines under the current patent law—an extension for late payment can be obtained by paying another fee.

At the end of 17 years, the patent expires and the invention enters the public domain. No renewal of the original patent is possible, although the product or process the patent protected may be covered by a later patent that claims an improvement over the invention in the original patent. Those later patents can be another pitfall for the patentee or they can be a windfall, depending on who owns the patents on the improvements and whether the patentee has rights to the improvement patents. Having a patent on an invention does not give one the right to make, use, or sell it unless there are no other patents that cover aspects of the invention. The owner of a patent on an improved process for making a drug, for example, cannot use his process to produce the drug if someone else owns a patent that claims the drug substance per se unless he or she obtains a license from the original patentee, and the owner of the patent that claims the drug substance cannot use the improved process without a license from the second patentee.

#### **Pitfalls on the way**

Provided that the fees are paid, the journey from conception to expiration would seem to follow a fairly simple route. But in the real world, things are seldom that simple (Figure 2).

The first pitfall is the possibility that the invention is not patentable to the inventors. If a patentability search turns up a published reference that teaches or suggests the invention, there is no point in filing a patent application. This does not necessarily mean that the inventor cannot continue to use the invention commercially. The invention can be practiced either openly or as a trade secret, or, if the search turned up an existing patent on the invention, it may be possible to negotiate a license with the owner of the patent or to modify the invention so that it will not infringe the existing patent.

Even if a patentability search finds no prior art reference to the invention, it is likely that the patent examiner's search will find a basis for rejecting some or all of the claims in the patent application. In fact, claims are rejected in the examiner's first action on most patent applications. The rejection may be based on a technical defect in the claim language or on the existence of a reference in the published literature that describes the claimed invention or something similar to it.

If the examiner understands the relationship of the claimed invention to the prior art correctly, the claims can often be amended so that they are distinguished from the cited references. The claims or disclosure can also be amended to correct informalities in the application,

What happens if another inventor has filed an application on the same invention? In most countries, a patent is given to the first applicant to file, with priority based upon the date claimed under the Paris Convention. In the United States, the patent is granted to the earlier inventor, regardless of who first filed a patent application. To identify the earlier inventor, a formal procedure called interference is established after the patent claims have been determined to be allowable. Evidence for priority of invention is presented to the Board of Patent Appeals and Interferences (along with the necessary fees, of course). The applicant judged by the board to be the last to invent loses the right to a patent on the disputed subject matter unless he successfully appeals to the CAFC or the federal district court.

Interferences can be declared even after a patent has been issued if the subsequent patent application makes the interfering claims less than a year after the patent issues. If the original patentee is adjudged to have been the second inventor, the claims in his patent are void unless the decision is overturned on appeal.

#### Finally

It is possible to escape from some of the pitfalls along the road to a patent by refileing the application and abandoning the original application. If the application is in danger because the wrong arguments or amendments are made, the specification can be refiled as a continuation of the original application, and the examination of the application can begin again. If it is discovered after the application is filed that additional information should have been included in the specification, a continuation-in-part application can be filed. A great many abandoned patent applications eventually result in patents based on continuing applications.

If mistakes in prosecuting the patent application are discovered after the patent is issued, the patentee still has a chance to correct them. Where patentees inadvertently claimed more or less than they were entitled to, a reissue application can be filed. When a prior art reference is discovered to have been missed during examination, the patentee (or anyone else, for that matter) can file a request for reexamination of the patent. In either case, the patent is examined again, claims can be rejected, and rejections can be appealed. A reissue patent or a reexamined patent expires 17 years from the issue date of the original patent.

The average pendency time for a U.S. patent application is 25 months, although some patents issue less than a year after they were filed, and a few exceptional applications have taken closer to 20 years. Almost two-thirds of the patent applications on which proceedings were completed by the U.S. Patent and Trademark Office in 1984 were issued as patents, but that figure ignores the many applications that were abandoned in favor of

continuing applications and will eventually issue as patents. If one prepares the patent application carefully and avoids the pitfalls on the road through the Patent and Trademark Office, there is an excellent chance that the inventor will emerge from the safari in the patent jungle with a trophy.

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