

Chapter 11

-- Working With a Patent Attorney --

As previous chapters have probably demonstrated, patent law can be very complicated and missteps can have a significant impact on the value of patent rights that are granted, or on whether a patent is granted at all. In particular, the drafting of the claims in a patent application must be done with an understanding of both the technology of the invention as well the relevant law and legal principles.

Consequently, the overwhelming majority of patent applicant's engage a patent attorney or patent agent to assist with the preparation and prosecution of the patent application. "Prosecution" is a term used to describe the process of shepherding a patent application through the examination process at the U.S. Patent Office to issuance as a U.S. patent.

-- Becoming a Patent Attorney --

A description of the process required to become a patent attorney will help us understand the unique role that patent attorneys play in the patent system. A patent attorney must have an undergraduate degree in a scientific or technical subject, for example, some form of engineering, physics, chemistry, biology, etc.

In addition to a scientific or technical undergraduate degree, a patent attorney must also complete law school. In law school, a patent attorney will take all the same classes required of every law student and future attorney. However, a patent attorney will likely take elective courses in the various subjects of intellectual property law.

After law school, like any other law school graduate, a future patent attorney must select the state where he or she wishes to practice and take the examination given in that state for admission to the state's bar. A patent attorney must take and pass the same state bar exam as an attorney specializing in any other area of the law, such as bankruptcy, criminal, personal injury, or corporate law.

In addition to going to law school and then passing a state bar exam like any other attorney, a patent attorney must also take and pass a registration examination given by the U.S. Patent Office. This exam is colloquially referred to as the "patent bar."

The patent bar tests an applicant's knowledge of U.S. patent law and patent office procedure. The exam is very difficult with a pass rate that has averaged historically around 30-40%. In order to sit for the patent bar, an applicant must have a technical or scientific undergraduate degree or demonstrate that he or she has taken enough equivalent course work. Without such a background, an applicant would not even be allowed to sit for the patent bar.

Upon passing a state bar exam, the attorney is allowed to practice law, meaning that the attorney can represent clients, for example, in contract or settlement negotiations, in a court of law, etc. Upon passing the patent bar, an attorney is allowed to represent inventors and assignees in proceedings within the U.S. Patent Office, such as patent application examination and interferences.

An attorney who has passed a state bar exam, but not the patent bar, cannot represent another party in proceedings with the U.S. Patent Office. When an attorney passes the patent bar, he or she is issued a registration number and can advertise that he or she is a “registered patent attorney” or simply a “patent attorney.”

-- Patent Agent v. Patent Attorney --

It is not necessary to have gone to law school or to have passed a state bar exam in order to sit for the patent bar. The principal requirement for taking the patent bar is having the requisite technical or scientific background. Thus, an engineer with an engineering degree can study U.S. patent law and practice, and take and pass the patent bar exam without having any other legal or law school training.

In such a case, the engineer is obviously not a patent “attorney.” Rather, the engineer is referred to as a “patent agent.” A patent agent can represent inventors and assignees at the U.S. Patent Office in the same way that a patent attorney can.

However, a patent agent is not a lawyer and cannot represent clients outside the Patent Office. For example, a patent agent cannot represent a patent owner in court who is suing an alleged infringer. A patent agent cannot represent a patent owner in licensing negotiations and draft a licensing agreement between the patent owner and licensee. The patent agent can only represent clients at the Patent Office including, for example, drafting patent applications and responding to actions taken on those applications by the Patent Office.

It is quite common for someone, on the road to being a patent attorney, to take and pass the patent bar just before or during law school. The person can then practice as a patent agent until he or she completes law school and is admitted to the bar of some state. At that point, the patent agent becomes a full-fledged patent attorney.

-- Power of Attorney --

In order for a patent attorney or agent to represent an inventor or assignee at the U.S. Patent Office, the attorney or agent must be formally engaged by the patent applicant. This is done by having the inventor or assignee sign a document which grants the agent or attorney a Power of Attorney to act in behalf of the represented party.

A Power of Attorney document can be very brief, a single page. It must simply state that the signer is giving a designated attorney or agent, or group of attorneys and/or agents, the power to represent the signer in a specified matter, e.g., prosecution of a particular patent application, at the U.S. Patent Office.

For example, a Power of Attorney might identify a particular patent application and read as follows:

I hereby appoint (Name of Patent Attorney(s)), Reg. No. _____, jointly, and each of them severally, my attorneys and attorney, with full power of substitution, delegation and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent and to transact all business in the Patent and Trademark Office connected therewith, I hereby direct that all correspondence and telephone calls in connection with this application be addressed to the said (Name of Patent Attorney).

Power of Attorney in a patent application can only be granted to a registered attorney or agent, i.e., someone who has passed the patent bar exam.

Once the Power of Attorney is obtained, it is filed with the U.S. Patent Office in connection with the applicant's patent application. The Patent Office will then recognize the attorneys or agents as having authority to prosecute that patent application.

Just as the Power of Attorney is granted in writing, it must be revoked in writing. If the applicant wishes to fire his or her patent attorney or to switch patent attorneys, the applicant or applicants must file a written and signed revocation of the Power of Attorney granted previously. If a new attorney or agent is being engaged, a new Power of Attorney must be granted. The revocation of the previous power and the granting of a new Power of Attorney can be done in a single document. Again, the revocation of Power of Attorney is filed with the U.S. Patent Office.

The U.S. Patent Office will only discuss a patent application with an applicant or an attorney or agent who has been granted Power of Attorney for that application. If anyone else calls or asks about that application, no information will be provided. An attorney or agent who has Power of Attorney in an application is called an attorney or agent "of record" in that application. The U.S. Patent Office will only send letters or phone calls regarding a patent application to the attorney or agent of record.

If no attorney or agent is granted Power of Attorney, the Patent Office will assume that the application is being prosecuted by the inventor or inventors without the assistance of an attorney or agent. In those circumstances, the Patent Office will direct phone calls and correspondence to the first-listed inventor in the application and will only accept and answer phone calls about the application from one of the listed inventors.

The only exception to this is when an inventor has assigned his or her rights to an assignee and then refused to cooperate in making the patent application. Under those

circumstances, the assignee can demonstrate its ownership of the invention and be given authorization to proceed without the uncooperative inventor or inventors. When this occurs, the assignee steps into the shoes of the inventor(s) and can communicate with the Patent Office regarding the application and grant Power of Attorney to a registered attorney or agent.

-- Limitations of a Patent Attorney --

As explained, the purpose of a patent attorney is to bridge the gap between the technical information describing an invention provided by the inventor(s) and the legal description of the invention for the patent application. A patent attorney must have a technical or scientific background so as to be able to understand the invention as explained by the inventor. However, the real expertise of the patent attorney is his or her legal training and patent drafting experience.

With the current pace of technology, no one person can stay current on the developments in each of the myriad of technical fields. Thus, an inventor should expect and anticipate that a patent attorney will not be fully informed in the field of the invention. The inventor is the patent attorney's resource to understand both the context and the details of the invention. The patent attorney should be able to understand the descriptions provided by the inventor by virtue of his or her technical background. The patent attorney can then apply the legal expertise necessary to obtain the best possible protection for the invention.

Consequently, it is very important for an inventor to provide sufficient background information for the patent attorney. By outlining the technical field of the invention and the developments that preceded the invention, the inventor can get the patent attorney ready to understand and write about the invention.

In general, the process of working with a patent attorney begins with the inventor or inventors providing the attorney with a description of the invention. This is referred to as a disclosure or disclosure documents. As indicated, the disclosure preferably provides the patent attorney with a background primer for understanding the invention.

The patent attorney will then study the disclosure information and draft a patent application describing the invention. As mentioned previously, the patent application will include both drawings and a written description of the invention.

Typically, the draft patent application is then provided to the inventor or inventors for review. It is important for the inventors to comment, particularly, on the technical accuracy of the application as written by the patent attorney. The inventors should note and correct any inaccurate statements made by the patent attorney regarding the invention or the relevant technology.

Additionally, if the inventors are aware of any components or methods for implementing the invention that are particularly advantageous, these should be disclosed to the patent attorney. The patent laws require that the inventors disclose the best way they know of to make or use the invention. This is referred to as the “best mode” requirement. Consequently, each inventor should review the draft application and contribute to making the application an thoroughly accurate description of the best known manner of practicing the invention.

As you might expect, a patent attorney may frequently have questions about an invention or technology when drafting a patent application. It is a common practice for the attorney to embed such questions in the first draft of the patent application at appropriate points. Inventors should take great care to note and respond to these questions.

If the inventors do not comment on embedded questions, and simply indicate that the application read well, a careless patent attorney may forget that such questions were asked and might proceed with the patent application without addressing those items. In a worst case scenario, the patent attorney might file the patent application with the embedded questions still in place. It is even possible, though extremely bad form, that a patent could issue with embedded questions still in place.

Below are excerpts from U.S. Patent No. 6,107,147 issued August 22, 2000, and entitled “Stacked poly/amorphous silicon gate giving low sheet resistance silicide film at submicron line widths.”

Gate electrode 102 comprises a stack of polysilicon 102a and amorphous silicon 102c with a very thin layer over oxide 102b in-between. The total combined thickness of the polysilicon 102a and amorphous silicon 102c is approximately equal to the total thickness that would be used for the polysilicon alone in a prior art approach. For example, polysilicon 102a may be on the order of 2000 .ANG. thick and amorphous silicon 102c may be on the order of 500 .ANG. thick. Amorphous silicon 102c may be created by a pre-amorphization implant (PAI) of either a deposited amorphous silicon or a deposited polysilicon. As will be discussed further below, a top portion of the polysilicon layer 102a may also be amorphized by the PAI implant. **CAN THE BOTTOM POLY BE DEPOSITED AMORPHOUS SILICON AS WELL?**

Thin oxide layer 102b is a very thin layer generally less than 8 .ANG.. In fact, thin oxide layer 102b may be a sub-monatomic layer. The function of the thin oxide layer is to “poison” the surface or, in other words, disturb the grain growth. By disturbing the grain growth, the grain size remains relatively small. The oxide layer blocks, or at least delays, the re-crystallization of the amorphized region propagating from the unamorphized region **DURING THE SILICIDE PROCESS?** Smaller grain size has been shown to result in a higher percentage of C54 phase silicide (i.e., low resistance silicide). **ARE THERE TWO ADVANTAGES OF THE OXIDE LAYER--1--SMALLER GRAIN**

**SIZE OF THE UPPER SILICON LAYER DURING DEPOSITION AND--2--
-PREVENTING RE-CRYSTALLIZATION DURING SUBSEQUENT
PROCESSING, E.G. SOURCE/DRAIN ANNEAL AND SILICIDE REACT?**

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Referring to FIG. 2E, a PAI is performed to create an amorphous region in gate electrode 102. **IS THE PAI BLOCKED FROM THE SOURCE/DRAIN REGION? I NEED A BETTER DESCRIPTION OF THE PAI IMPLANT--N-TYPE? DOPANT AT WHAT ENERGY AND DOSE?** The energy and dose of the PAI are chosen such that the crystallinity of the silicon is damaged. The PAI extends into the gate electrode 102 to a depth preferably at or below the interface between layers 102a and 102c.

The PAI has been known to adversely affect the transistor off-current scatter. However, employing the interface between the polysilicon 102a and silicon material 102c according to the invention may allow for the implant to be decreased. **DECREASED HOW--LESS FAR INTO THE POLYSILICON?** In that case, the damage to the transistor can be minimized or even eliminated while maintaining the benefits of a PAI to silicide formation.

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In the resulting structure, no trace of oxygen is found at the former interface after silicidation. **IS THERE ANY TRACE OF THE INTERFACE IN THE FINAL STRUCTURE--SOMETHING THAT WOULD MAKE THE INVENTION DETECTABLE?** An advantage of the invention is that the sheet resistance becomes more uniform. Uniform sheet resistance is an advantage even if the average sheet resistance increases. FIG. 3 shows the poly-silicide sheet resistance of a 0.18 μm gate electrode for three processes. The first is a base line process (B.L.). There are many individual instances where the sheet resistance is above 10 ohms/[]. Variation in the sheet resistance is a problem. The second process uses a top amorphous layer (corresponding to 102c) of 1000 \AA . There is less variation in the sheet resistance. The third process uses a top amorphous layer (102c) of 500 \AA . Much less variation is observed. This process yielded the highest uniform distribution of sheet resistance.

Presumably, the highlighted questions embedded in the text of this patent were placed there by the drafting patent attorney or agent and then ignored by the inventors and everyone else throughout the prosecution of the patent application. As might be expected, these questions, having been left unanswered, could present significant problems if the patent owner ever desires to enforce this patent. In effect, these questions are a statement by the patent attorney who drafted that application that the patent *does not* contain all the information that it should.

Finally, in addition to a careful review of the technical description of the invention in the patent application, an educated inventor can also review the claims as drafted by the patent attorney. In Chapter 6, we discussed how one would design around the claim of a patent, by finding something in the claim that could be changed or omitted.

The inventor may be in a much better position than the drafting patent attorney to note recited features or elements in the claim that could be omitted or that could be substituted. Bringing these to the attention of the drafting patent attorney will help the attorney to craft claims that provide the broadest possible protection for the invention.