



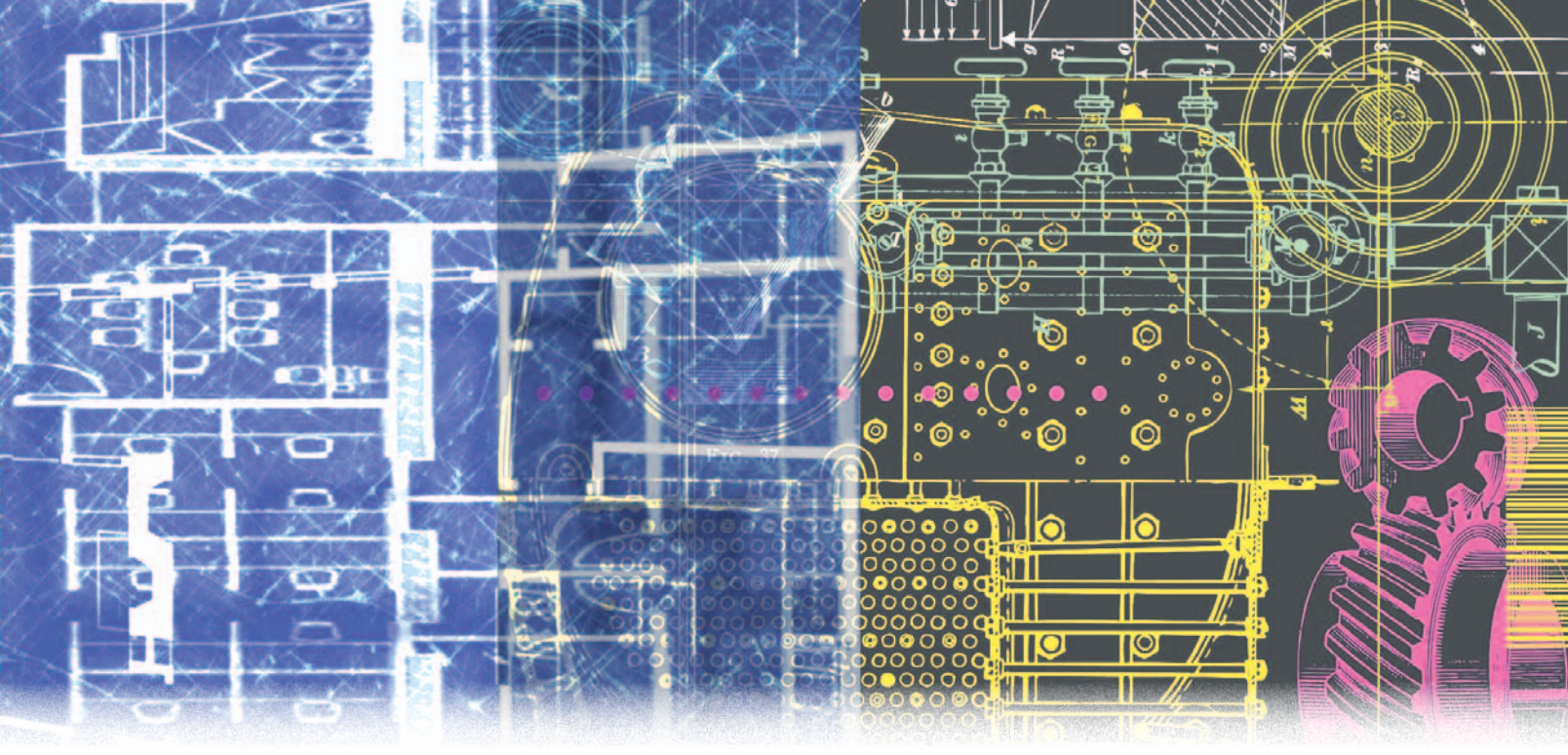
Patent work: The other side of invention

Tamara Dillon

In popular culture, the inventor is often portrayed as a lone tinkerer who emerges from a workshop with some magnificent new device. In reality, most inventions are the collaborative effort of scientists and engineers—usually researchers affiliated with a college or corporation—that result in the discovery, creation, or improvement of either products or processes.

But how do inventors know if their idea is original? And how do they preserve their right to a stake in its success? Answering those questions is at the core of what patent workers do. Patent examiners, agents, attorneys, and technology specialists help inventions advance from concept to conclusion while ensuring proper credit and compensation for the inventors.

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This article describes the jobs of patent workers. The first section provides a brief overview of the patent system. The second section describes the work, wages, and training for each of the occupations. A final section suggests sources of additional information.

Invention and patents: An overview

An invention is a type of intellectual property—that is, a product of original, creative thought. If an invention has not yet been publicly disclosed or recorded as unique, it might be eligible for legal protection in the form of a patent.

Patents are awarded for the creation or discovery of processes, machines, manufactured articles, or chemical compounds. New improvements of any of these can also be patented. But not everything is eligible. To be awarded a patent, a creation, discovery, or improvement must meet certain criteria. Specifically, it must be new, useful, and not obvious to someone with ordinary knowledge in the subject area.

Inventors don't automatically receive patents for their work, of course; in the United States, they must file an application with the U.S. Patent and Trademark Office, part of the U.S. Department of Commerce.

An applicant must provide a detailed description of the creation or discovery being claimed as an invention. Successful applications result in a patent for the inventor. But if an application fails to show that the creation or discovery meets the required criteria, it is rejected. The inventor then can either appeal the rejection decision or amend the application and resubmit it for consideration.

A patent gives its holder the right to exclude others from making, using, selling, or importing the invention for a limited period. Without this exclusive right, inventors' work could be financially exploited by others. Inventors would therefore be reluctant to take on the effort and cost of inventing, or they would be unwilling to disclose their inventions. Governments grant patents to encourage scientific and technological research and to ensure that the results of this research become part of the public record.

Occupations in patent processing

Patent examiners review inventors' applications and decide if a patent should be awarded. To help navigate the application process, inventors may hire a patent agent or patent attorney. And patent technology specialists

advise patent attorneys on the technical or scientific details of an invention.

Patent examiners

A patent examiner reviews patent applications and determines whether they meet the approval criteria. The examiner first verifies that an application is for a single invention, not a combination of inventions. Next, the examiner searches internal patent databases, as well as published scientific and technical literature, for any public information related to the inventor's claim.

The purpose of this search is to establish that the discovery or creation is "new and inventive." If those criteria are not met, the application is rejected. It is common for an examiner to initially reject many parts of an application, usually because he or she feels that a prior discovery too closely matches a claim in the application. Applications, or parts of applications, may also be rejected because the examiner determines that the invention is not useful, or that it is obvious to someone with ordinary knowledge in the technical subject area.

The examiner communicates his or her findings to the applicant or, more often, to the applicant's patent agent or patent attorney. (The job descriptions for patent agents and attorneys begin on the facing page.)

In the course of their work, patent examiners also consult legal and technical documents to evaluate claims. They often collaborate with other patent experts before making a final decision. And they write reports that detail the results of their research.

Employment and wages. Most patent examiners work at the U.S. Patent and Trademark Office near Washington, D.C. This agency employed about 6,000 examiners in 2008, accounting for nearly two-thirds of total employment at the Office. Depending on its budget, the Office expects to hire many more examiners through 2013. The additional examiners will help process a significant backlog of patent applications.

Wages of patent examiners are based on a specialized version of the Federal general schedule (GS) pay system. Examiners are recruited at grades GS-5 through GS-9. In 2009, annual wages for entry-level examiners

Patent examiners
use research skills in
reviewing applications.



in these grades start at \$41,350 at the GS-5 level to almost \$59,970 at the GS-9 level. The grade at which examiners are hired is based on both the applicant's experience and the scientific discipline in which he or she will work.

Qualified applicants also may be eligible to receive a recruitment incentive of up to \$9,900 per year for a maximum of 4 years. The incentive amount and duration are determined by title and grade level, as well as budget constraints.

With satisfactory job performance, examiners receive a one-time accelerated promotion to the next grade after 6 months. Annual promotions follow to the GS-13 level, at which wages are between \$93,920 and \$122,100. Examiners may then be promoted to "primary examiner" positions at the GS-14 level (about \$110,990 to \$144,280), following a rigorous evaluation program and testing. Positions at the GS-15 level (\$130,550 to \$153,200) are usually supervisory, and examiners must compete for open vacancies.

Training. Patent examiners need solid communication skills to confer with other patent practitioners and with applicants. They also must have knowledge of patent law; science, including advances in scientific research; and the technical processes used in industry. Because examiners make judgments in reviewing applications, they must be decisive. And patent examiners, like most Federal government employees, must be U.S. citizens.

Most patent examiners have a bachelor's or master's degree in engineering or science. After they are hired, patent examiners attend the U.S. Patent and Trademark Office Patent Training Academy, an 8-month program that provides comprehensive training in the procedural, legal, and technological aspects of patent examination. Students learn the research tools and methods they will use as examiners and develop the writing and interpersonal communication skills they need in their work.

The academy also creates an individual development plan for each examiner, based on his or her skills, knowledge, and experience.

This plan includes 2 years of ongoing training and developmental assignments. Examiners receive additional on-the-job training from an experienced supervisory patent examiner when they complete their academy study. And examiners keep their training current by periodically taking U.S. Patent and Trademark Office courses in legal and scientific topics.

Full-time permanent employees with at least 2 years of continuous service can participate in a special legal studies program, provided that the legal education is related to their mission at the Office. Upon acceptance to an accredited law school, participants are reimbursed for a specified number of credits within a 6-year period. In return, participants commit to working at the Office for a certain amount of time after completing their studies. (Like all incentive programs, however, this one is also subject to funding.)

Patent agents and attorneys

Because the patent application process is complex, many inventors rely on the expertise of patent agents and patent attorneys. Agents and attorneys—collectively referred to as patent practitioners by the U.S. Patent and Trademark Office—have essentially the same role in preparing patent applications and acting as a liaison between inventors and patent examiners. But attorneys perform additional tasks related to protecting inventors' patent rights, including negotiating licenses and defending against infringement.

Either agents or attorneys can represent clients in proceedings with the U.S. Patent and Trademark Office. The goal of practitioners is to smooth the progress of patent examination, so much of their work is similar to that of patent examiners: They search for prior art—public information that is relevant to the patent—and ensure that there is a legal and scientific rationale for an applicant's claims. Patent practitioners also talk with other inventors, or those who own rights to an invention, to understand both the science or technology behind the invention and ways in which the invention is new and unique—and, thus, eligible for a patent.

The practitioner drafts the patent application, describing the invention and claiming legal protection for it. The description must be written in a way that will enable others to use the invention; the claims must explain precisely what the patent would exclude others from making, using, or selling without permission. In preparing the application, patent practitioners try to anticipate the questions or objections examiners might raise.

The application is then prosecuted, which means that the practitioner submits it and sees it through to conclusion. This includes preparing responses to an examiner's rejection, either by amending the application, appealing the examiner's decision, negotiating with one or more examiners, or any combination of these.

Both patent agents and patent attorneys can prepare and prosecute patent applications. But only patent attorneys may give advice on legal matters or represent clients in legal proceedings.

Patent attorneys negotiate and draft legal documents that license use of inventions. Licensing documents detail the specific uses that are allowed and prohibited, as well as the compensation to be paid to the holder of the patent. Patent attorneys represent patent holders or those seeking permission to use an invention.

Patent attorneys also represent clients who feel that their patent has been infringed or who are accused of infringing the patent rights of others. In arguing that patent rights have been infringed, an attorney may request that the infringement be stopped or may seek monetary damages. When defending clients against accusations of patent infringement, an attorney compiles evidence to show that infringement has not occurred or challenges the validity of the patent itself.

Employment and wages. The U.S. Bureau of Labor Statistics (BLS) does not collect employment data on patent agents. Although BLS does collect data on attorneys, it does not collect data specifically on patent attorneys. However, according to the U.S. Patent and Trademark Office, there are about 9,400

active patent agents and about 29,000 active patent attorneys with licenses to practice before the Office.

Patent agents and attorneys work primarily in the private sector. Most work for intellectual property law firms, but they may also work for corporations, universities, or other organizations that research and develop inventions or purchase the rights to inventions. A small percentage of patent agents and attorneys are self-employed and seek clients who want to apply for patents. Patent attorney positions are also available with the Federal Government.

Patent attorneys may work for law firms that specialize in intellectual property law or for general practice firms that have an intellectual property law department. Patent attorneys usually have a scientific or technological specialty and often work for a firm focusing on that specialty. Law firms' patent attorneys handle most intellectual property litigation.

Many corporations hire patent attorneys as in-house counsel. These lawyers develop expertise in the corporation's technology and are often involved in business decisions related to intellectual property. When outside counsel is required, such as in matters of litigation, corporate intellectual property lawyers frequently work with attorneys in law firms who have additional expertise.

In the Federal Government, the U.S. Patent and Trademark Office is the principal employer of patent attorneys. These attorneys usually focus on analysis related to developing public policy concerning patents. They might create legislative proposals seeking changes in patent law, for example, or make recommendations on the intellectual property aspects of trade agreements. Other Federal agencies may employ patent attorneys to advise or represent them in intellectual property matters.

Colleges and universities occasionally employ patent attorneys to advise them on matters concerning research conducted at the university. Law schools also employ patent attorneys in teaching positions.



Unlike patent agents, patent attorneys may advise or represent clients in legal matters.

BLS does not have wage data for patent agents. According to the American Intellectual Property Law Association's 2009 report, however, the annual income for patent agents in 2008 ranged from \$110,000 to about \$121,800. Wages vary and depend on factors such as the agent's educational level and scientific discipline. Also contributing to wage differences is the type of organization in which the agent works, with law firms usually paying the most. And, just as in most other occupations, wages vary with experience and by geographic location.

BLS does collect wage data for attorneys, although not specifically for patent attorneys. Median annual wages for all attorneys in May 2008 were about \$110,590. But it is likely that the complexity of patent law, and the scientific knowledge it requires, places patent attorneys among the highest earning 10 percent

of lawyers, whose median annual wages were \$166,000 or more in May 2008. The American Intellectual Property Law Association study showed that members who were partners in private law firms had an annual income of \$415,000 in 2008.

Training. Both patent agents and patent attorneys must be organized, detail-oriented, and able to meet deadlines imposed by the patent office. In addition to having a thorough understanding of the technical and scientific areas in which they work, patent practitioners should also understand how patent law applies to this science. Interpersonal skills are important for negotiating with patent examiners, clients, and others involved in the patent process; oral and written communication skills are a must.

Patent attorneys need additional expertise and skills related to intellectual property

and the practice of law. They must be experts in intellectual property, able to analyze and resolve patent prosecution, litigation, copyright, and related legal issues. And although patent attorneys must be capable of arguing in court, the most common—and preferred—solution is to settle a case without going to trial.

Patent practitioners need a bachelor's degree in science or engineering. Additionally, patent attorneys must have a juris doctor degree from an accredited law school and be admitted to a State bar.

To represent clients before the U.S. Patent and Trademark Office, both patent agents and patent attorneys must be licensed with the Office. Licensure requires achieving a passing score on the Office's registration exam, also known as the patent bar. However, patent examiners with 5 years of continuous service at the Office may register as patent agents without taking the registration exam.

Patent technology specialists

Patent technology specialists usually work as technical or scientific advisers under the supervision of patent attorneys. Because of their expertise, specialists perform research and deal directly with inventors to better understand an invention, how it operates, and

its patentability—as well as the likelihood that the invention may infringe other patents.

After gathering facts about an invention, patent technology specialists analyze the information and communicate findings to a patent attorney. They might also draft, or help to draft, patent applications and may be involved in the technical aspects of defending a client's patents or challenging patent applications for similar creations or discoveries.

Employment and wages. BLS does not collect data on the employment or wages of patent technology specialists. Industry sources suggest that, like patent agents, patent technology specialists usually work for intellectual property law firms or for the intellectual property departments of large general practice law firms. And their wages are similar to those of patent agents.

Training. Patent technology specialists need at least a bachelor's degree in a technical or scientific discipline. An advanced degree may be required to work at some firms and in certain technological and scientific areas. The emphasis on scientific training underscores the technical expertise that specialists provide.

Working as a patent technology specialist is often a path to obtaining a law degree and becoming a patent attorney. Because most law firms expect technology specialists to attend

Patent technology specialists have expertise in the scientific details of inventions.



law school, firms encourage and frequently subsidize specialists' legal education.

For more information

Learn more about the job of patent workers by visiting your local library or searching online for information about patent, trademark, and copyright law.

In your research, you might come across information from BLS. The *Occupational Outlook Handbook*, available in many libraries, includes a profile of lawyers that describes their job duties, training, wages, outlook, and more. And the Career Guide to Industries has similar information about occupations in the Federal Government, where most patent examiners work. (Online, see www.bls.gov/oco/ocos053.htm and www.bls.gov/oco/cg/cgs041.htm, respectively.)

For information about opportunities in the U.S. Department of Commerce Patent and Trademark Office, call its contact center at (571) 272-1000 or toll free, 1 (800) 786-9199. To find job postings in the Office, visit its search page at USAJobs online:

<http://jobsearch.usajobs.opm.gov/a9pto.aspx>.

For information about patent technology specialists, patent agents, and patent attorneys, including requirements for taking the patent bar exam, contact:

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