Chapter 1 Basic Principles of the U.S. Patent System

The principles of U.S. patents have their genesis with the founding of the United States of America, starting with a basic provision in the original version of the U.S. Constitution. Over the centuries, the patent system has been developed and refined continuously to what is now a complex, highly developed system for obtaining and enforcing patents. In view of the interaction of all branches of the U.S. government in developing and maintaining the patent system, in order to better understand the patent system, a general overview of the U.S. government is first set forth below. By better understanding how the U.S. government is set up and operates, one can better understand the U.S. patent system.

1.1 General Principles of the U.S. Legal System

1.1.1 Dual System: Federal and State

The legal system in the United States operates on a dual-track system, wherein the Federal government and the fifty state governments operate in parallel. The various responsibilities of the Federal and state governments, and the interaction therebetween, are set forth in and defined by the Constitution of the United States of America.

1.1.2 Responsibilities of State Government

According to the Tenth Amendment to the U.S. Constitution, all powers not specifically delegated to the Federal government of the United States, are reserved for control by the individual States. Although the individual state systems govern the basic rules of conduct of society, the Federal government guarantees minimal protections of due process. For example, the Fourteenth Amendment to the U.S. Constitution provides that no state shall deprive any person of life, liberty, or property without due process of law. Another limitation on state power is the Federal government's responsibility of managing commerce between the states, i.e., interstate commerce. See Article I, section 8, of the Constitution.

1.1.3 Responsibilities of Federal Government

The foundation of the Federal system is the U.S. Constitution. The Constitution is the ultimate source of all legal authority in the United States. As set forth in the preamble of the Constitution, the purpose of the United States Federal government is to ensure domestic tranquility, provide for a common defense, promote the general welfare, and to secure the blessings of liberty. The Constitution assigns several powers and responsibilities to the Federal government. Among

such powers and responsibilities are the power to lay and collect taxes, to borrow money on the credit of the United States, to regulate commerce with foreign nations and between the several states, to establish post offices, to raise and support armies, and "to promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries". See Article I, section 8, of the Constitution. The complete text of the U.S. Constitution may be found at http://www.law.cornell.edu/constitution/constitution.overview.html.

1.2 The Federal System

1.2.1 Three Branches of Government

A. Legislative Branch (Congress)

Article I of the Constitution defines the powers and responsibilities of the legislative branch. In the United States, the U.S. Congress, which includes the House of Representatives and the Senate, forms the Legislative Branch. All Federal statutory law must be approved by both houses of Congress.

B. Executive Branch (President and Related Government Offices)

Article II of the Constitution provides that the executive power of the Federal government is vested in the President of the United States. The Executive Branch of the government is responsible for enforcing the laws of the United States. The U.S. Patent and Trademark Office is one section or department within the Executive branch of the United States government.

C. Judicial Branch (Courts)

Article III of the Constitution vests the judicial power in one Supreme Court and in such inferior courts as the Congress may establish. The system of courts is referred to as the Judicial Branch of the U.S. government. The Judicial Branch is charged with the responsibility of interpreting the laws of the United States. In an important decision dated in 1803, the Supreme Court determined that it had the power to review acts of Congress, as well as resolving cases and controversies between various parties. The Judicial Branch is comprised of a complex system of courts, which is explained below in greater detail.

1.2.2 Specific Courts For Dispute Resolution

A. U.S. District Courts

In the Federal judicial system there are ninety-four District Courts, many of which have multiple divisions. The District Courts are situated throughout the United States, and are responsible for conducting trials to resolve controversies brought before them. In order to resolve a controversy, the District Court is responsible for resolving not only any factual disputes between the parties, but also interpreting and applying the relevant law to such fact situations. In other words, the District Courts determine issues of fact and issues of law.

A trial in a District Court can be in front of a Judge in a proceeding known as a "bench trial". Or, in certain situations, if either or both parties desires, a jury can be impaneled. A trial with a jury is referred to as a "jury trial". In trials involving juries, the jury is responsible only for determining issues of fact. Even in a jury trial, a judge determines the relevant issues of law.

B. Courts of Appeals

In addition to the numerous District Courts, there are also thirteen Federal Circuit Courts. The Circuit Courts are also situated geographically around the United States, and are appellate courts authorized to handle appeals from any of the District Courts within the jurisdiction of the respective Circuit Court. In general, a Circuit Court will review a determination of a District Court for errors of law. The Circuit Courts do not overrule or reverse factual determinations from a District Court, unless such factual determinations are clearly erroneous.

Currently in the United States, there are twelve regional circuits, each of which has its own Circuit Court of Appeals. In addition to the twelve regional circuits, there is the United States Court of Appeals for the Federal Circuit. The United States Court of Appeals for the Federal Circuit has exclusive jurisdiction over all appeals from the U.S. District Courts relating to patent actions, as well as matters appealed from the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences and matters appealed from the International Trade Commission relating to unfair practices in import trade brought under 19 U.S.C. § 1337. The full jurisdiction of the United States Court of Appeals for the Federal Circuit is set forth in 28 U.S.C. § 1295.

As used herein, and in formal legal documents, a section of the U.S. Code is typically written in the following format: 19 U.S.C. § 1337. The first number indicates the title of the code in which the section can be found. The second number indicates the section. Accordingly, 19 U.S.C. § 1337 refers to section 1337 of title 19 of the United States Code.

In addition to the District Courts and the Circuit Courts of Appeal, there is also one Supreme Court, referred to as the Supreme Court of the United States. The Supreme Court of the United States hears appeals from the Circuit Courts of Appeals. In addition, there are a limited number of cases or controversy that have original jurisdiction before the Supreme Court of the United States, such as a dispute between two states.

Statistically, the Supreme Court of the United States only considers a very small percentage of the cases that are appealed to that court. A case will only be considered by the Supreme Court of the United States if it is of exceptional interest, or meets certain other criteria which may require its consideration by the Supreme Court.

In view of the small number of cases heard by the Supreme Court each year, it is rare for an intellectual property dispute to be resolved by the Supreme Court of the United States. The Supreme Court of the United States will typically render a decision affecting intellectual property only once or twice a year.

C. State Courts

Like the Federal System, each state has its own system of courts. Each such system includes trial level courts and typically two levels of appellate courts. And, like the Federal system, a trial level court may or may not include a jury, depending upon the circumstances of each case.

Although most disputes can be brought in state court, by Federal law, the Federal U.S. District Courts have exclusive jurisdiction of any civil action arising under any act of the U.S. Congress relating to patents, plant variety protection, copyrights, and trademarks. See 28 U.S.C. § 1338. Thus, a patent dispute cannot be settled in a state court.

D. International Trade Commission

Federal law defines "unfair practices in import trade" as including, among other acts, the importation into the United States of articles that infringe a valid and enforceable United States patent. 19 U.S.C. § 1337(a)(1)(B)(i). The International Trade Commission is vested with the jurisdiction to investigate such violations, and where appropriate, issue orders excluding the entry of such infringing articles into the United States. 19 U.S.C. § 1337(d).

1.2.3 Legislative or Statutory Law

As provided by Article II of the U.S. Constitution, the Legislative Branch of the United States is charged with the responsibility of creating Federal statutory law. In exercising this responsibility, the United States Congress issues a large number of statutes every year. These laws are referred to as statutory laws. The statutory laws affecting U.S. patents are codified in Title 35 of the United States Code, simply called "Patents". For example, section 101 of Title 35 defines what type of subject matter may be protected by a patent. And, section 102 defines what type of technology is considered to be prior art.

1.2.4 Judicial or Judge-Made Law

As may be expected, in some situations it is difficult to apply a particular statutory law to a particular fact situation. In those cases where the application of a particular statutory law is not clear, the pertinent court will issue a written opinion setting forth its interpretation of the law, and setting forth an explanation as to how such interpreted law is applied to a particular fact situation.

The U.S. legal system operates under a principle known as stare decisis. According to the principles of stare decisis, opinions written by the various courts create what is known as judicial law. Under the principles of stare decisis, the courts are required to give deference to certain earlier decisions.

Thus, under the principles of stare decisis, a certain level of predictability can be found by studying earlier court decisions. Such a system provides some indication of how a particular court should rule in a particular case. This complex body of legal decisions is sometimes referred to as judicial law or case law.

1.2.5 Application to Intellectual Property

In summary, the Legislative Branch of the United States, i.e., the Congress of the United States, generates all statutory or written laws concerning Federal issues, including interstate commerce and patents. The Executive Branch, including the President of the United States and the U.S. Patent and Trademark Office, is charged with the responsibility of enforcing the laws issued by Congress. In so doing, the U.S. Patent and Trademark Office receives applications for patents and, when appropriate, issues U.S. patents. The third branch of the United States government, the Judicial Branch, is charged with the responsibility of resolving disputes concerning patents. Specifically, a dispute concerning the enforcement of a U.S. patent is resolved in a U.S. District Court. In addition, disputes between a patent applicant and the U.S. Patent and Trademark Office may be resolved in either a U.S. District Court or a Circuit Court of Appeals, depending upon the circumstances.

In any case, the laws written by Congress must conform with the requirements of the U.S. Constitution. Thus, the Judicial Branch, not only resolves disputes concerning patents, but also ensures that the patent laws are consistent with the requirements of the U.S. Constitution.

1.3 Sources of Patent Laws:

1.3.1 Constitution

The drafters of the U.S. Constitution recognized the importance of intellectual property, and

included a specific provision in the Constitution to protect inventors. Specifically, the Constitution requires Congress "to promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries". See Article I, section 8, of the Constitution. Thus, all Federal law concerning patents finds support in the U.S. Constitution.

1.3.2 Laws Made By Congress

In accordance with the provision discussed above in Article I, section 8, of the Constitution, Congress has passed numerous laws concerning the origin and power of U.S. patents. These laws are codified in title 35 of the United States Code. The name of title 35 of the United States Code is "Patents". A booklet containing all of title 35 of the U.S. Code can be purchased from the U.S. Government Printing Office, as well as from some private publishers. In addition, the complete text of title 35 of the United States Code may be found at http://www.uspto.gov/web/offices/pac/mpep/consolidated_laws.pdf.

1.3.3 Rules Made By The Patent Office

In addition to the statutory law passed by Congress, the U.S. Patent and Trademark Office has enacted numerous regulations governing the procedures to be followed by the U.S. Patent and Trademark Office and patent applicants. Those regulations are collected in title 37 of the U.S. Code of Federal Regulations, titled "Patents, Trademarks and Copyrights". A booklet containing all of title 37 of the Code of Federal Regulations can be purchased from the U. S. Government Printing Office, as well as from some private publishers. In addition, title 37 can also be downloaded from the U.S. Patent & Trademark Office website: http://www.uspto.gov.

Examples of rules made by the Patent Office and included in title 37 of the Code of Federal Regulations include the timing and specific requirements of information disclosure statements, 37 C.F.R. § 1.97 and 1.98, as well as requirements and procedures for making claims of priority for foreign and provisional applications. 37 C.F.R. § 1.78.

As used herein, and in formal legal documents, a section of the U.S. Patent and Trademark Office regulations is typically written in the following format: 37 C.F.R. § 1.98. The first number indicates in which title of the Federal Regulations the section can be found. The second number indicates the section. Accordingly, 37 C.F.R. § 1.98 refers to section 1.98 of title 37 of the Code of Federal Regulations.

The regulations of title 37 are enacted in accordance with a formal set of rule-making procedures. As a result, the regulations therein are entitled to the force of law. In addition to the Federal Regulations in title 37, the U.S. Patent and Trademark Office has a Manual of Patent

Examining Procedure, sometimes referred to as the MPEP. The MPEP includes guidelines for the patent examiners, and provides useful information for patent applicants. However, the MPEP is informal in nature, and is not entitled to the force of law. Nevertheless, a court may find the guidelines in the MPEP to be persuasive and may be inclined to give some weight to such guidelines.

The Manual of Patent Examining Procedure can be purchased from the U. S. Government Printing Office, as well as from some private publishers. In addition, the MPEP can also be downloaded from the U.S. Patent & Trademark Office website: http://www.uspto.gov.

1.3.4 Judicial Law

In addition to the statutory and regulatory law discussed above, a certain amount of intellectual property law is based on judicial law. Important doctrines that have a significant impact on the patent laws, including the doctrine of equivalents and obviousness-type double patenting, were created by judges, not statute.

1.4 Types of Intellectual Property

1.4.1 Patents

A. What Are Patents?

Patents are legal documents issued by the governments of almost every industrial country in the world. The scope and term of a patent may vary from country to country. A United States patent provides its owner with the legal right to prevent the unauthorized making, using, selling, and offering for sale in the United States, and the importation into the United States, of the invention set forth and claimed in the patent.

Patents granted on applications filed after June 7, 1995 have a term equal to twenty years from the first effective filing date of the application. Patents granted on applications filed on or before that date have a term of seventeen years from the date that the patent issued. In some circumstances, the patent can have either a shorter or longer life.

A patent is considered a contract between the inventor and the government. In exchange for the patent rights, the inventor must disclose his invention in sufficient detail so that those of ordinary skill in the art would be able to practice the invention.

B. How Patents Differ From Other Intellectual Property

It is important to understand the differences between patent protection and other forms of

intellectual property. Other forms of intellectual property are discussed briefly below in order to get a better understanding of patents.

1.4.2 Trademarks

A trademark is a word, symbol, color, sound, or device that is used to identify a product or service and to distinguish that product or service from those of others. Trademarks are used to identify the source of a product or service. They do not protect the product or service itself. For example, trademark laws cannot be used to prevent a competitor from copying a product or service, they can only be used to prevent a competitor from marketing a similar product or service with a confusingly similar mark or name.

1.4.3 Copyrights

Copyrights generally protect the particular expression of an idea, rather than the idea itself. Copyrights generally protect literary or artistic expressions, such as books, art works, sculptures, computer software, plays, and musical recordings.

1.4.4 Trade Secret Protection

Trade secret protection is similar to patent protection in that it can be used to protect products and methods of making or using them. Unlike patent protection, trade secret protection originates simply by taking the necessary steps to keep the trade secret confidential. No prior approval from a government agency is required. In addition, trade secret protection lasts as long as the owner of the trade secret is able to keep the trade secret confidential. For that reason, a product or method that could be discovered by reverse engineering does not lend itself to trade secret protection.

1.4.5 Mask Work Protection

A mask work fixed in a semiconductor chip product is protected by statute from copying. A "semiconductor chip product" is defined as the final or intermediate form of any product having two or more layers of metallic, insulating, or semiconductor material, deposited or otherwise placed on, or etched away or otherwise removed from, a piece of semiconductor material in accordance with a predetermined pattern, and which is intended to perform electronic circuitry functions. A "mask work" is defined as a series of related images having or representing the predetermined, three-dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product, and in which series, the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

1.4.6 Contractual Obligations

Within the confines of the antitrust laws, competing businesses can enter into contractual obligations with each other concerning a wide variety of issues, including the ownership and treatment of intellectual property. Similarly, employees and employers can enter into contracts which define who will own the intellectual property developed by an employee during the employee's employment.

1.5 Patent Protection

1.5.1 Types of Patents

A. Utility patents

Utility patents are the most common type of patent issued by the U.S. Patent and Trademark Office, and are usually the type of patent that one intends when they simply refer to "a patent". A utility patent may be issued for a process, a machine, products of manufacture, and compositions of matter, as set forth in the following table:

- Process: A process or method, including a new use of a known process, machine, composition of matter, or material;

- Machine: Includes various mechanisms, mechanical elements, and new and useful combinations or improvements thereof;

- Manufacture: Includes the products of physical labor or machinery; and

- Composition of Matter: Includes chemical compounds, mechanical or physical mixtures, alloys and compositions, or unions of several ingredients.

A utility patent has a term that usually expires twenty years from the first effective filing date of the application. However, in some situations, depending upon when the application was filed, the term of the utility patent may be equal to seventeen years from the date of issue. In addition, in some circumstances, the term of the patent may be extended, e.g., if the Patent Office caused delays during prosecution of the patent application.

B. Provisional patent applications

A provisional patent application is a simple, inexpensive way to obtain an early effective

filing date for a disclosure in the United States. However, there are potential drawbacks, as well as benefits, associated with provisional patent applications.

An obvious benefit of provisional patent applications is the low filing fee, e.g., only $160 ($80 for a small entity) as opposed to $740 ($370 for a small entity) for a utility patent application. That feature of provisional patent applications will make them especially attractive to individual, i.e., noncorporate inventors, who need an extra year to raise capital and test market their invention before laying out the additional funds needed to properly prepare and file a utility patent application.

Another feature of provisional patent applications is that, unlike utility patent applications, their filing does not start the 20-year patent term. Thus, provisional patent applications provide a benefit to applicants from the United States which is similar to that afforded non-U.S. applicants by way of priority under 35 U.S.C. § 119. This feature may be particularly beneficial for inventions whose revenue streams are expected to be substantially greater in the more distant future than in the near term.

Procedurally, the filing of a provisional patent application is straightforward. An applicant need only file a specification, the filing fee, and a cover sheet which designates the application as provisional and provides information pertaining to the inventor. It is desirable, however to draft and file claims with a provisional patent application. This ensures that the provisional application includes an adequate disclosure, since only those claims which are supported by the disclosure of the provisional patent application, as required by 35 U.S.C. § 112, will be entitled to the benefit of the filing date of the provisional patent application in a subsequent utility patent application. However, some strategists recommend filing provisional patent applications without claims, fearing that any narrowing of the claims in the ultimately issued patent may signal a surrender of intended subject matter.

Items required with an application for a regular utility patent such as a claim, an oath or declaration, and a computer readable form for DNA/RNA sequence submissions, are not required to be filed in a provisional patent application.

According to the Patent Office, a provisional patent application will be examined only if a subsequent utility patent application relies upon it to establish the filing date of the provisional application. In such cases, an Examiner will determine whether the subject matter claimed in the subsequent utility application was supported in the provisional application in the manner required by 35 U.S.C. § 112.

C. Design patents

Contrary to utility patents discussed above, a design patent protects an original and

ornamental design for an article of manufacture. In theory, a design patent should not be granted on an article of manufacture that is merely functional in nature and has no ornamental value. The scope of a design patent is determined solely by the drawings submitted with the application. Accordingly, the scope of a design patent is more subjective than that of a utility patent, which is defined by a carefully phrased description of the claimed subject matter.

A design patent has a term of fourteen years from the date of issue of the patent. This term may not be renewed or extended.

D. Utility models

A utility model is a form of intellectual property that is issued in many industrialized countries, including Europe and Japan. However, utility models are not issued in the United States. A utility model application is not examined as thoroughly as a utility patent application. In addition, the scope of a utility model may not be as broad as a utility patent. The advantage of a utility model is that it is less expensive to obtain and may be appropriate in situations where it is not possible to obtain a utility patent in view of the prior art, or the costs associated with procuring a utility patent are not justified by the economics of the situation.

E. International applications

In addition to the patents discussed above, there are a few different types of international patent applications. The international patent applications are not actually patents, but rather a type of patent application. For example, a Patent Cooperation Treaty (PCT) patent application is an application that is filed according to procedures governed by the World Intellectual Property Organization (WIPO). The application effectively extends the deadline for filing the application in individual countries. In addition, there is a mechanism for obtaining an examination of the subject matter in the application. However, before any enforceable rights can be obtained, the application has to be filed in the specific countries in which protection is desired. The European Patent Office also has a similar program for filing European patent applications, which are examined. Upon successful examination, the granted European application can then be registered in desired countries.

1.5.2 Recognizing Patentable Subject Matter

Most people that are not familiar with the U.S. patent process vastly overestimate the requirements for a U.S. patent. Not only do they fail to appreciate what types of inventions are patentable, they also frequently tend to overestimate the level of "technical complexity" required to obtain a patent.

By way of example, one patent was issued for "A Method of Swallowing a Pill". The

patented invention simply involves placing some water and a pill that floats in water in the mouth. The patented method then requires that the head be tilted forward so that the pill floats to the back of the mouth, near the throat entrance. The user then swallows so that the pill goes down the throat first, followed by the water.

Therefore, provided that there is at least some difference between an invention and the known technology previously available, and that some benefit or advantage can be attributed to the difference, it is likely that a patent can be obtained for the invention, provided the other requirements for patentability, discussed herein, are met. Thus, the question that should be considered in determining whether or not to apply for a patent is not whether the idea is patentable, but rather, whether it is economically worthwhile to apply for a patent.

In spite of the somewhat facetious example of patentable subject matter discussed above, there are statutory limits on the types of subject matter that can be patented. Section 101 of Title 35 of the U.S. Code states, "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title".

It is important to recognize that, in addition to authorizing patents for a new and useful process, machine, manufacture, or composition of matter, the statute also allows for patenting new and useful *improvements* within these categories.

A common misconception of patent law is that a combination of two or more *known* elements is not patentable. In fact, if the combination itself has not been previously known, and is not obvious to one skilled in the art in view of the prior art, then the combination may be patented, provided that the other requirements are met. This is the case, even if all of the elements of the combination are individually well known.

In addition to defining certain categories of patentable subject matter, Federal law also defines certain minimum requirements for patentability. These are defined in the following sections.

1.5.3 Statutory requirements

A. novelty

Section 101 of title 35 of the United States Code requires that the invention be new. Section 102 defines when an invention is not new and the inventor is therefore not entitled to a patent. The inventor and general legal practitioner should be conscious of the requirements defined in section 102 in order to avoid unintentionally losing potential patent rights.

Section 102 is defined in terms of three events: (1) the date of an invention; (2) the date an application for a patent is filed in the U.S. Patent and Trademark Office; and (3) the date an invention was placed in the public domain, either by the inventor or by another. The main requirements are that the applicant for a patent must be the first person to discover the invention, and that the invention was not published anywhere in the world or was not in public use or on sale in the United States for more than one year prior to the filing of the application. In practice, the actual requirements for determining patentability are far more complex than appear from the preceding sentence. The specific requirements, as excerpted from the Federal statute, are set forth below:

If the following events occurred before the *date of the invention*, the inventor will not be entitled to a patent:

- the invention was known or used by others in this country;
- the invention was patented or described in a printed publication in this or a foreign country;
- the invention was described in a patent granted on an application for a patent by another filed in the United States; and
- the invention was made in this country by another who had not abandoned, suppressed, or concealed it.

The following events pertain to the *date of filing the application* for a patent in the United States. The inventor will not be entitled to a patent if:

- the invention was patented or described in a printed publication in this or a foreign country more than one year prior to the date of the application for a patent in the United States;
- the invention was in public use or on sale in this country more than one year prior to the date of the application for a patent in the United States; and
- the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns, in a foreign country prior to the date of the application for a patent in this country on an application for a patent or inventor's certificate filed more than twelve months prior to the U.S. filing date.

The bars to patentability set forth in the preceding paragraphs relate specifically to situations where the technology in the public domain, i.e., that which has been known, sold, or published, is substantially identical to the claimed invention. In such a case, the claimed invention is said to be "anticipated" by the prior art. However, there are frequently situations wherein the identical invention was not in the public domain, but rather where technology was in the public domain that is similar to, but slightly different from the invention. Of particular interest is the situation where the prior art is so similar to the invention that the invention would have been obvious to one of ordinary skill in the art based on the known disclosed similar technology. In such a case, the claimed invention is said to be "obvious" in view of the prior art. This situation is covered by section 103 of the patent statutes and is discussed in the following paragraph.

B. nonobviousness (inventive step)

Section 103 prohibits the issuance of a patent if, when compared to the "prior art", the invention would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. The prior art includes the publications, sales, and public uses set forth above with respect to Section 102, with some exceptions.

For example, 35 U.S.C. § 102(e) prohibits the granting of a patent for an invention if a patent granted on an application for a patent by another was filed in the U.S. prior to the invention by the applicant and the application by another discloses the invention. However, an exception to this bar is made if the patent to "another" is assigned to the same entity as the application being considered. In such a case, the patent to "another", will not be applied as prior art under Section 103 to determine obviousness. Similarly, the above noted prohibition relating to the situation where the invention was made in this country by another who had not abandoned, suppressed, or concealed it, does not apply under Section 103 if the invention made by another and the subject matter of the application under consideration are assigned to the same entity.

Prior to 1952, courts in the United States had held that an invention was not patentable unless it resulted from a "flash of genius". However, this doctrine was countermanded by the 1952 Patent Act enacted by Congress, which provided that "patentability shall not be negatived by the manner in which the invention was made".

Although a precise workable definition of "obviousness" has never been developed, it is determined through four related inquiries: the scope of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, and secondary considerations useful in determining obviousness. Examples of such secondary considerations include commercial success of the invention and evidence that the industry long recognized the problem solved by the invention but was unable to develop a successful solution.

It is impossible to give a precise set of rules for determining whether an invention is obvious over the prior art. However, the following informal test may be useful. The first part of the test is to determine if there are any differences between the invention and the prior art. Of course, if there are no differences between the invention and the prior art, the invention is anticipated and is not patentable. If there are differences, a determination should be made as to the significance of the differences. As a general rule, if any advantage or benefit can be attributed to the differences, then it is likely that the invention is patentable.

C. usefulness

Section 101 of the Patent statutes requires that an invention be "useful". This means that a product, process, or other patentable subject matter must serve some identifiable purpose other than being an end product of a series of chemical reactions. However, an end product may be "useful" if it serves as a starting or intermediate product for producing other materials or articles which are themselves useful. In general, it is not difficult to meet the "useful" requirement in that a product does not need to be efficient or economical. In the past, it had been held that an invention that serves only an illegal or immoral purpose is not "useful" within the meaning of section 101. However, today patent applications are rarely rejected because they only fulfill illegal or immoral purposes.

A more common ground for a rejection under section 101 is that the invention simply will not work. Even that ground is usually only applied to inventions that claim to violate the second law of thermodynamics, i.e., perpetual motion machines.

D. applicant must be inventor

Sections 102 and 116 require that a patent be issued to no more and no less than all the inventors of the subject matter sought to be patented.

The exact parameters for determining who is or is not an inventor are difficult concepts in patent law. To claim inventorship is to claim at least some role in the final conception of that which is sought to be patented. One must be able to say that without his or her contribution to the invention, it would have been less efficient, simple, economical, or simply of less benefit. On the other hand, it is reasonably clear that a person who has merely followed instructions of another is not a inventor. Similarly, an agreement between the parties cannot make one an inventor who, in fact, is not an inventor.

It is not necessary that each inventor in an application has contributed to the subject matter of every claim in the application. It is only required that each inventor contribute to at least one claim in the application.

1.5.4 Determining Patentability

It should be emphasized that the above sections describing the statutory requirements for patentability are merely an outline of the relevant issues. The meaning of virtually every term in the patent statutes has been repeatedly litigated and defined by the Federal courts. The interpretations of these statutes often change over the years. Accordingly, it is beyond the scope of this manual to try to give a detailed definition of a patentable invention. With this in mind, when determining whether an invention is patentable, the above material should be interpreted broadly, giving the inventor the benefit of every doubt.

1.5.5 What is covered by a patent

Once an application is examined and approved by the Patent Office a patent will be issued for a term of twenty years from the first effective filing date of the application. Patents granted on applications that were filed before June 8, 1995 will have a term of seventeen years from the issue date of the patent or a term of twenty years from the first effective filing date of the application, whichever is longer. An otherwise valid patent will expire prematurely if the maintenance fees are not paid in a timely manner.

The patent itself consists of drawings, if necessary for understanding the invention, a specification comprising a detailed written description of the invention, and one or more claims. The claims are the true measure of the scope of the protection of the patent, and they must be precisely drafted. If a claim is too broad, it may be found to cover previously patented or other public material and thus declared invalid. On the other hand, if the claim is too narrow, the inventor will not be receiving all of the protection to which the inventor is entitled.

The patent owner has a remedy for infringement of the patent by civil suit in U.S. District Court. Possible infringing activities include the unauthorized making, using, selling, offering for sale, or importing of the patented invention within the United States during the term of the patent. In some cases, the importing of a product made in a foreign country by a method patented in the United States may also constitute infringing activity. Any person who contributes to the infringement of a patent or actively induces infringement of a patent may also be liable as an infringer.

A product or process infringes a patent only if it includes every element, or an equivalent thereof, of at least one claim of the patent. Except in limited circumstances, it does not matter that the infringing product or process includes other elements as well. For example, if the claim of a patent is directed to elements A, B, and C, then products comprising elements A, B, C, and D will infringe the patent. However, a product comprising elements A, B, and D will not infringe the patent claim because it is missing element C.

1.5.6 What is not covered by a patent

It is a fundamental principle of patent law that a patent may not cover or protect something that has previously been known or disclosed in the prior art. Accordingly, all patent applications must be carefully drafted to ensure that the patent does not claim as an invention something that is in the prior art. Similarly, a common defense to an accusation of patent infringement is to show that the accused product or process was known in the prior art prior to the "invention" thereof by the inventor of the patent at issue.

1.5.7 Interpreting the scope of a patent

Interpreting the scope of a patent is a difficult task, and cannot be done accurately without having studied the large body of case law that has evolved over the years. In fact, the United States Supreme Court has held that, in view of the difficult nature of interpreting the scope of a patent, such a task should not be left to a jury. In the event that an issue of patent infringement is tried in a court before a jury, the judge presiding over the trial must construe the scope of the patent. The court is not allowed to leave the interpretation or construction of the scope of the patent to the jury.

Rather than attempt to set out in detail all of the applicable principles to be used in construing the scope of a patent, a few of the more important principles will be set forth below.

The scope of a patent is determined by the claims, which are the numbered paragraphs at the end of the patent. In order to infringe a patent, the accused device or process need infringe only one of the claims of the patent. Of course, it can infringe additional claims, as well. To infringe a claim, the accused process or device must include every element of the claim, or an equivalent thereof.

In order to determine whether or not an element of a claim is found in the accused product or device, the terms in the claim are given their normal meaning unless the specification clearly indicates that the patentee intended another meaning to apply. However, if for some reason, the claim language is ambiguous, reference may be had to the specification or the file history of the patent in order to construe the term. When construing a patent, one must be careful to read the claim language literally and not to inadvertently read into the claim language limitations or details that might be set forth in the specification of the patent, but which are not included in the claims. In other words, a particular embodiment of the invention described in the specification should not be interpreted as a limitation on the claim language, when the claim language describes a broader concept of the invention. However, there are some situations in which the specification can be used to construe the meaning of a claim term. In some cases, under the guise of claim construction, certain limitations from the specification may be read into the claims.

Claims are to be construed as they would be by those of ordinary skill in the art. Accordingly, if a term in the claim of a patent has a specific meaning to those of skill in the art, such meaning should be used when interpreting the claim.

The patent statutes allow an inventor to describe an element in a claim as "means" for performing a particular function. For example, a "switch" may be defined as "means for connecting and disconnecting an electric circuit". Such terminology is referred to as a "means plus function" element.

When a means plus function element is used in a claim, the patent statutes limit the scope of that element. Instead of having that element cover any device or means that is capable of performing the recited function, the statute limits the scope of that element to the corresponding structure defined in the specification of the patent that performs the recited function, and equivalents thereof. The determination of whether structure in an accused device is equivalent to the corresponding structure recited in the specification of the patent is a difficult test. Factors to be considered include a comparison of the manner in which the recited function is performed and the results of the disclosed embodiments.

In view of the fact that amendments and arguments made during the prosecution of an application may not only be used to define means plus function elements, but other elements in a claim as well, any thorough interpretation of a patent should include a review of the file history of the prosecution of the patent.

1.5.8 Doctrine of Equivalents

Shortly after enactment of the first patent statute in 1790, the courts realized that the scope of a patent should not be limited to a literal interpretation of the language of the claims. The Supreme Court has observed that limiting enforcement of exclusive patent rights to literal infringement "would place the inventor at the mercy of verbalism and would be subordinating substance to form". Such a limitation, the court reasoned, would encourage potential infringers "to make unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to evade the reach of the law".

Accordingly, to protect patent owners from such unfair practices, the courts have created the doctrine of equivalents. The doctrine of equivalents is an evolving doctrine, which has been defined and changed over the years.

In summary, the courts have held that if the differences between an element of the accused device (or process) and the corresponding claim element are insubstantial, the accused device may nevertheless infringe the patent, even though it is not literally covered by the claim language. The courts have provided a test to help determine whether or not an accused device infringes under the doctrine of equivalents. The test, referred to as the function-way-result test, states that if an accused device performs substantially the same function in substantially the same way to achieve substantially the same result, infringement under the doctrine of equivalents may exist.

The courts have determined that other evidence may also be considered when determining whether there is infringement under the doctrine of equivalents. For example, an important factor to be considered is whether people reasonably skilled in the art would have known of the interchangeability of the claimed component and the corresponding component in the accused

device.

The application of the doctrine of equivalents is quite complex, and must take into account the scope of the prior art as well as the prosecution history of the patent. For example, the doctrine of equivalents cannot be applied so broadly as to enable a claim to cover subject matter that was in the prior art. In addition, the doctrine of equivalents cannot be applied so as to enable the patentee to cover subject matter that was surrendered during prosecution of the patent in order to secure allowance of the application. Accordingly, before a determination can be made under the doctrine of equivalents, the prior art and the file history must be studied.

There have been numerous attempts to define the application of the doctrine of equivalents so as to provide a clear test for determining whether or not an accused device or method will be considered an equivalent. However, all such attempts have been unsuccessful. For example, if a claim includes a numerical range, there is no rule or test indicating that an accused device or method must be within a specific percentage of the range in order to be equivalent. Accordingly, the doctrine of equivalents can only be applied after a careful analysis of the prosecution history, the relevant prior art, and the technology at issue.

Notwithstanding the previous paragraph, there are some guidelines or rules that should be considered in analyzing the doctrine of equivalents:

(1) The doctrine of equivalents cannot be used to enable a claim to cover a device or method that is in the prior art.

(2) The doctrine of equivalents cannot be applied so broadly so as to effectively eliminate an element from a claim. For example, if a claim includes a dimension or a temperature, the doctrine of equivalents cannot be applied such that any dimension or temperature would be covered by the claim. Such an application would essentially eliminate that element from the claim.

(3) The doctrine of equivalents cannot be used to cover subject matter that was surrendered during prosecution of the application. Subject matter can be considered to be surrendered if the claim was amended during prosecution to distinguish over such subject matter. In addition, subject matter can be considered to be surrendered if the applicant submitted remarks during the prosecution of the application which clearly indicate that the subject matter is not considered to be part of the claimed invention.

(4) In most cases, the doctrine of equivalents cannot be used to cover subject matter that does not pass the aforementioned function-way-result test.

Thus, a wide range of circumstances must be considered in analyzing the doctrine of equivalents, including the specific claim language, the scope of the prior art, the prosecution history, and the extent of differences between the claimed invention and the accused technology.

1.5.9 Computer Technology

A significant proportion of research and development expenditures in various industries results in computer-related inventions. From an intellectual property perspective, perhaps the most interesting of those inventions are those which result in software being created or developed. As the global economy becomes more and more competitive, companies are increasingly interested in protecting their investments in software to either prevent competitors from duplicating innovative techniques or to extract money from competitors in the form of royalties whereby the intellectual property of a company becomes a profit center.

Due to the limitations of trade secrets and copyrights, an increasing number of companies are turning toward patent protection as a way to more completely protect their investments in software. Patents provide the broadest scope of protection as compared with trademarks and copyrights, but are the most difficult form of protection to obtain. As compared with copyrights, patents provide protection against the independent replication of patented software as well as against literal copying. Moreover, the underlying functions of the software can be protected. Although patents are limited to a 20 year term from the date of filing, compared with the longer life of copyrights and a potentially indefinite term for trade secrets, the product lifecycle in the software industry is such that very few, if any, prospective products will outlast the patent's term.

Prior to the 1980s, software was generally considered by the courts to be unpatentable. Analogizing software to abstract ideas and in particular to abstract ideas under the label "mathematical algorithm", software was commonly considered to be an exception to the general rule that "everything made by man under the sun" was patentable.

However, the courts began to recognize the patentability of software under certain conditions. For example, in one case, the Court of Appeals for the Federal Circuit held that a data structure for providing structural and functional data optimization was patentable when claimed as part of a physical memory (e.g., a RAM) to be accessed by an application program being executed on a data processing system. Another case in this area dealt with claims drawn to a computer program encoded on a floppy disk. During the appeal of this case, the U.S. Patent and Trademark Office conceded that computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter.

Thus, the types of claims typically permitted begin with a preamble of the type:

A storage medium having stored thereon a computer program executable to perform the steps of:

which preamble is followed by the steps performed by the software when run on a computer. As is apparent from this type of claim, the manufacturer, distributor and retailer of the software itself are

all potential infringers of such a claim. This stands in contrast to "software" claims of years past which typically required the recitation of at least part of the computer itself as an element of the claim, thereby making it difficult to allege direct infringement of the claim by these types of entities.

In fact, the Patent Office has relaxed its standards further, and a more traditional preamble may even suffice in place of the preamble set forth above. However, to be conservative, it is recommended to use a preamble similar to that set forth above.

In conclusion, while it may have been true in the past that protecting software via patents was not possible, today patent protection for software is certainly an option. Additional thoughts and guidelines for drafting software and computer related patent applications may be found in chapter 3.

1.5.10 Business Method Patents

In 1999, the Court of Appeals for the Federal Circuit decided the *State Street Bank & Trust Co. v. Signature Financial Group* decision. That landmark case confirmed that business methods constitute patentable subject matter. Since that case, many patents have issued claiming business methods involving computer software and/or the internet. For example, Amazon.com received U.S. Patent No. 5,960,411 for its "one-click" ordering method. Netcentive received U.S. Patent No. 5,774,870 for its online rewards program, and, Priceline.com received U.S. Patent No. 5,897,620 for its online techniques for selling airline tickets.

There has been a lot of discussion about business method patents. And, as a result, there is some confusion in the patent community over what constitutes a business method claim. "Business method" is a term that has been used by many to describe various types of process claims. The Court of Appeals for the Federal Circuit has not yet defined what it is that specifically characterizes a business method claim and separates it from other process claims. Instead, the Court has stated that claims drawn to a method of doing business should not be categorized as a "business method" claim, but should be treated like any other process claim.

To fully appreciate the scope of subject matter that can be covered by a business method patent, claim 1 from Amazon.com's "one-click" ordering method patent is reproduced:

1. A method of placing an order for an item comprising:

under control of a client system, displaying information identifying the item; and

in response to only a single action being performed, sending a request to order the item along with an identifier of a purchaser of the item to a server system;

under control of a single-action ordering component of the server system, receiving the request;

retrieving additional information previously stored for the purchaser identified by the identifier in the received request; and

generating an order to purchase the requested item for the purchaser identified by the identifier in the received request using the retrieved additional information; and

fulfilling the generated order to complete purchase of the item whereby the item is ordered without using a shopping cart ordering model.

Although there is no absolute requirement that business method patents be tied to either a computer or the internet, most such patents do relate to either a computer system or the internet. In reality, the only true limitations on what type of business methods can be protected by patents are the prior art and the imagination of the patent attorney. Clearly however, the more abstract business methods will be more difficult to patent than those which are concretely tied to a computer system or the internet.

The claimed invention as a whole must accomplish a practical application, i.e., it must produce a "useful, concrete and tangible result." The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research.

The mere presence of a mathematical algorithm in a claim is not grounds for a rejection under 35 U.S.C. 101. If the claimed invention produces a " useful, concrete and tangible result", then the claimed invention has a practical application and will likely satisfy the utility requirement of 35 U.S.C. 101. Thus, it is important that the specification is complete and clearly identifies any practical application for the claimed invention.

A significant problem with business method patents is identifying the relevant prior art. Much of the relevant prior art is not in the form of patents, and is not well organized in any one easily searchable location. As a result, business method patent applications are typically subjected to greater scrutiny at the U.S. Patent & Trademark Office than other types of applications, and as a result, incur longer processing times. Business method patents are also subject to attack based on prior art that was not uncovered during prosecution and which was not considered by the examiner.

In view of the relatively long processing time, if an applicant is in a hurry to receive a business method patent, the applicant should consider filing a Petition to Make Special under 37 CFR 1.102. While new applications are not ordinarily taken up for examination out of the order of their effective United States filing dates, certain exceptions can be made by way of petition under 37 CFR 1.102, which may be applicable to business method applications. A petition to make special should expedite processing of the application.

The U.S. Patent & Trademark Office has a large amount of information on its website concerning business method patents. For further information, please see http://www.uspto.gov.

1.6 Resolving Intellectual Property Disputes

1.6.1 Litigation

A. Outline of a Lawsuit

By statute, all patent infringement lawsuits in the United States must be filed in a United States District Court. State courts do not have jurisdiction to hear a patent infringement dispute.

There are a hundred of U.S. District Courts around the country, and federal rules define which of the several courts are authorized to hear a specific dispute. Factors such as the location of the infringing activity and the places of business of both parties to the lawsuit must be considered when selecting the proper court. Although each of the U.S. District Courts must follow the Federal Rules of Procedure, each court also has its own set of "local" rules which govern some of the procedural aspects of a lawsuit. Because of the variations in local rules, the selection of a particular District Court may be significant. For example, some courts insist on an accelerated trial schedule, wherein it is not unusual for a full trial to be held within eight to twelve months after the filing of a Complaint. Other courts, however, particularly those in areas where there is significant federal criminal activity, do not follow such a strict schedule. In some courts, a trial on the merits may not be held until two or more years after filing the Complaint.

Once a Complaint is filed in a U.S. District Court, a copy of the Complaint must be served on the opposing party. After service of the Complaint, the opposing party must then prepare and serve an Answer, or a response to the Complaint. Typically, neither the Complaint, nor the Answer, contains significant details concerning the legal issues that will be raised at the trial. The Complaint and Answer merely serve to provide a rough outline of the issues.

After the Answer has been filed, both parties engage in "discovery". Discovery is the legal mechanism through which the parties obtain information from each other. During the discovery process, each of the parties will be required to turn over all documents in their possession or control that may be relevant to the issues of the lawsuit. In some patent infringement lawsuits, hundreds of thousands of documents are exchanged between the parties.

In addition to exchanging documents, the parties may be required to produce employees for depositions. During a deposition, lawyers for the parties ask the witness, referred to as the deponent, questions in order to gather information or evidence that may be used at trial. The questions and answers are recorded by a stenographer. Some depositions last one or two hours. However, a key

witness in a major lawsuit may be deposed for a couple of days.

In addition to exchanging documents and taking depositions, attorneys for the parties may be entitled to inspect or photograph machinery or plants of the various parties in order to gather useful information.

Furthermore, in addition to taking discovery of opposing parties, under certain situations, discovery may be had of non-party witnesses or business entities.

The discovery process may take anywhere from three months to more than a year, depending upon the particular court in which the lawsuit is being heard and the complexity of the subject matter. Discovery is a very expensive process and can be extremely disruptive to the employees of the litigating companies. Discovery is almost always more time consuming, disruptive and expensive than the trial itself.

After discovery has been completed, lawyers for the parties prepare extensive documents, referred to as briefs, in which the positions taken by the respective parties are set forth in great detail. These trial briefs provide an outline that will guide the lawyers and the judge during the trial.

In many patent infringement trials, the parties will retain expert witnesses. The expert witnesses may also be deposed and prepare statements that define their expert opinions concerning the issues of the case.

In 1996, the United States Supreme Court held that the determination of the scope of a patent claim was considered to be a matter of law, and not a question of fact. As such, this determination, referred to as the construction of the claims, is in the exclusive province of the judge, and not a matter for the jury to decide. As a result, in a patent trial tried before a jury, before the case is presented to the jury, the judge will hold a special hearing in order to determine the scope of the claims at issue. Because the 1996 case was titled *Markman v. Westview Instruments Inc.*, such claim construction hearings are called Markman hearings.

Once discovery has been completed and the issues have been briefed by the parties, the trial will proceed. The trial itself may last anywhere from a couple of days for a simple lawsuit to many months for a complex case. If either party requests a jury, a jury will be impaneled to hear issues of fact relevant to the lawsuit. Otherwise, all issues are tried before a judge.

If a jury has been impaneled to hear a case, the jury's decision is usually reached within a few days after the trial. If no jury is involved, and all issues are to be decided by a judge, the judge may issue his decision at any time, generally within a few weeks to a few months after the end of the trial.

If either party is not satisfied with the final decision of the court, an appeal may be had to the United States Court of Appeals for the Federal Circuit, in Washington, D.C. An appeal to the Court of Appeals generally takes a full year to complete.

B. Estimate of Costs

Infringement litigation in a U.S. District Court is extremely expensive. Even a very simple case, with few issues to be tried may cost several hundred thousand dollars. A large percentage of the costs include attorney fees. However, expert witness fees, court reporter fees for transcribing depositions, and photocopying and shipping costs can represent a large percentage of litigation expenses. In extremely complex litigation, the cost to each party may run in the neighborhood of $5-10 million.

If the likelihood of a large damage award is reasonable, the plaintiff may be able to engage an attorney to handle the lawsuit on a contingency basis, or a partial contingency basis. On a contingency basis, the plaintiff pays only the costs, such as witness fees, travel costs, and duplication costs. However, the attorneys do not charge for their time. If the plaintiff wins an award, the plaintiff's attorneys will receive a previously agreed upon percentage of the award as their fees. The percentage awarded to the attorneys may range from 25-50%, depending upon the nature of the case. In addition, it is not uncommon to set up a sliding scale wherein the percentage of the award paid to the attorneys is reduced if the award exceeds a predetermined amount.

In a partial contingency case, the attorneys may charge an hourly rate for their time. However, the hourly rate is less than the normal hourly rate. In a typical case, the attorneys may charge half their hourly rate. In addition, if the plaintiff wins a damage award, the attorneys receive a percentage of the damage award to compensate for the reduced hourly rate. In a partial contingency case, the percentage received by the attorneys will likely be less than that used in a full contingency case.

1.6.2 Arbitration

As an alternative to litigating a patent issue in a U.S. District Court, both parties may agree to submit the dispute to an arbitrator, or a panel of arbitrators. The decision to submit the dispute to arbitration must be reduced to writing in the form of a binding contract between the parties. The arbitration contract should specify in detail the procedure to be followed by the arbitrator. Specifically, the contract would define how much, if any, discovery will be conducted, and the ground rules for conducting the discovery. In addition, the contract should set forth exactly what issues are to be decided by the arbitrator. Arbitration contracts may also provide additional arrangements. For example, the parties may agree that the losing party will pay the costs of the

arbitrator.

Unlike litigation, in order to set up an arbitration proceeding, both parties must agree to resolve the dispute by arbitration. There is no legal mechanism for forcing a party to participate in an arbitration proceeding.

If an arbitration agreement is properly prepared, the arbitration procedure can be quite simple. Costs for preparing and submitting a case to arbitration may be significantly lower than that of a U.S. District Court litigation. For example, it is possible to prepare and submit a case to arbitration for as low as $100,000. However, in some cases, the costs of an arbitration can be much higher. The costs are determined, at least in part, by the complexity of the issues and the procedures agreed to by the parties. If the parties agree to limit discovery to a short period of time and if the parties agree that the submissions to the arbitrator will be limited to a certain amount of time or a certain number of pages, the costs of the proceeding can be kept quite reasonable.

Since arbitration is not governed by a court, the parties are able to set up any procedures that are mutually agreeable. Such procedures can include the time, place and manner in which the issues are presented to the arbitrator and precisely which issues are to be decided by the arbitrator. For example, the parties may agree to have an arbitrator determine solely whether or not a patent is valid, or only whether or not a particular claim is infringed.

The arbitration agreement generally provides that the decision of the arbitrator is final and binding upon the parties. If one of the parties fails to abide by the decision of the arbitrator, the other party may have a cause of action against the non-complying party in a breach of contract suit.

1.6.3 Mediation

Mediation is similar to arbitration, except that it is generally not binding. For example, a mediator may hear presentations from both parties and then discuss with each of the parties his or her position on the issues. Although mediation is not binding on the parties, sound advice from a mediator may frequently lead the parties to an amicable resolution of a patent dispute.

Mediation is typically less formal than arbitration, and thus also less expensive. However, mediation does not always result in a resolution of the dispute.

Many U.S. District Courts require the parties to mediate their disputes prior to a trial on the merits.

1.6.4 Negotiation

At any time during a patent dispute, the parties are free to negotiate, amongst themselves, to resolve the dispute. Frequently, the lawyers that are handling the dispute also negotiate on behalf of the parties. However, it may be advantageous to hire a person or lawyer not involved in the litigation to negotiate the dispute. Frequently, the most effective and economical manner of negotiating a dispute is to have the principals involved in the dispute negotiate directly amongst themselves. Having lawyers present at a settlement negotiation can frequently disrupt the settlement discussions.

Once an agreement to resolve the dispute has been reached, the agreement should be reduced to writing in the form of an enforceable contract that has been prepared by the lawyers.

1.6.5 Reexamination at the U.S. Patent & Trademark Office

If an accused infringer is aware of prior art that will likely invalidate a patent at issue, the infringer may file a request for reexamination of the patent with the U.S. Patent and Trademark Office. If a U.S. District Court litigation is pending, the court may, under some situations, stay, i.e., postpone, the litigation pending the outcome of the reexamination procedure at the U.S. Patent and Trademark Office. If, as a result of the reexamination of the patent, the U.S. Patent and Trademark Office determines that the patent is not valid over the prior art, the Patent Office will cancel the claims of the patent or require the patentee to narrow the scope of the claims so that the claims distinguish over the prior art.

If a District Court litigation has been stayed pending the outcome of the reexamination, the litigation will then be dismissed upon a determination by the Patent Office that the claims are invalid.

A potential problem with the reexamination process for a defendant is that the patent owner has the opportunity to amend or change the claims of the patent during the reexamination process. Accordingly, during reexamination, the patent owner may amend the claims of the patent to avoid the prior art found by the accused infringer. However, the patent owner may be able to amend the claims so that they avoid the prior art yet still read on the accused device. In that event, the accused infringer will likely be in a very weak position at trial. Accordingly, the decision to file a request for reexamination must be considered carefully.

There are two different reexamination proceedings which can be used at the U.S. Patent & Trademark Office. The most commonly used reexamination proceeding is ex parte reexamination. During ex parte reexamination, if the requestor of the proceeding is not the owner of the patent, the participation of the requestor will be significantly limited. In such a proceeding, a third-party requestor will not be able to participate after the U.S. Patent & Trademark Office has agreed to reexamine the patent. The Patent Office fee for filing a request for ex parte reexamination is $2,520.00. In addition, the attorney may charge $10,000 - $30,000 for preparing and filing the

request for reexamination.

The U.S. Patent & Trademark Office also has a proceeding called inter partes reexamination. In an inter partes reexamination proceeding, a third party requestor is allowed greater participation in the proceedings. The Patent Office fee for filing a request for inter partes reexamination is $8,800.00. The amount of attorneys fees is difficult to predict because they will depend upon the extent of the proceedings.

1.7 Conclusions

It should be clear from the foregoing descriptions that intellectual property is a complex subject. The material herein is not intended to enable someone to effectively practice intellectual property law. The material is instead intended to enable one to recognize important issues that may arise, and to enable that person to communicate effectively with an experienced U.S. patent attorney or patent agent.

It is only by attending formal training programs, such as law school or seminars, and by benefitting from years of experience, that one can competently represent an inventor and obtain strong and comprehensive protection for intellectual property.

Chapter 2 Advice on Writing U.S. Patent Applications

Before beginning the preparation of a patent application, it is important to have a good understanding of the most relevant prior art. Accordingly, a thorough discussion with the inventors concerning the prior art is highly recommended. In addition, it is also recommended that a careful prior art search be conducted by a trained professional.

One benefit of having a thorough understanding of the prior art is that it reduces the likelihood that claims will be filed in the original application that are too broad, and which will need to be narrowed during prosecution. Recent cases have emphasized the negative impact that narrowing amendments have on the scope of a claim and the application of the doctrine of equivalents. Accordingly, an issued patent will be stronger, broader, and easier to enforce if there were no amendments made to the claims during prosecution. The most likely way to ensure that this will be accomplished is by carefully studying the prior art prior to drafting the application.

It is also advisable to discuss with the inventors all possible alternative embodiments of the invention. Recent cases have also emphasized the importance of disclosing all embodiments that could have been reasonably contemplated by the inventors at the time of drafting the application. The courts have now placed restrictions on applying the doctrine of equivalents to reach embodiments that could have been reasonably contemplated, but which were not claimed.

Once you have a good understanding of the prior art and the alternative embodiments of the invention, you can then begin preparing the application. The following sections set forth various formats that can be used, together with suggestions for obtaining strong and enforceable patents.

2.1 U.S. Patent & Trademark Office Format For a Patent Application

The U.S. Patent and Trademark Office does not require a mandatory format for a U.S. patent application. Nevertheless, the U.S. Patent and Trademark Office does offer a suggested format, which is published in section 608.01(a) of the Manual of Patent Examining Procedure. This format is set forth below:

(a) Title of the Invention.

(b) Cross-Reference to Related Applications.

(c) Statement Regarding Federally Sponsored Research or Development.

(d) Reference to a "Sequence Listing," a table, or a computer program listing appendix submitted on a compact disc (see 37 CFR 1.52(e)(5)).

(e) Background of the Invention.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) Brief Summary of the Invention.

(g) Brief Description of the Several Views of the Drawing(s).

(h) Detailed Description of the Invention.

(i) Claim or Claims (commencing on a separate sheet).

(j) Abstract of the Disclosure (commencing on a separated sheet).

(k) Drawings.

(l) Sequence Listing, if on paper (see 37 CFR 1.821-1.825).

In spite of the format recommended by the U.S. Patent and Trademark Office and the format recommended below, each invention should be treated individually and the drafter of a patent application should feel free to use a format that is able to most effectively describe a particular invention. One should not feel constrained to use a similar format for each application. Instead, one should take a creative approach and tailor each application to best suit the particular invention. For example, in one case, the drafter may find that it is most effective to provide a detailed description of the prior art in the application, whereas in another case, it may not be necessary or desirable to provide any description of the prior art.

The following discussion provides a recommended format for U.S. patent applications. The format varies only in minor detail from that recommended by the U.S. Patent and Trademark Office. However, as set forth above, it is important to remember that no particular format is mandatory.

2.2 Recommended Format For U.S. Patent Applications

2.2.1 Title of the Application

U.S. Patent & Trademark Office regulations limit the length of the title to 500 characters. And, the U. S. Patent & Trademark Office Manual of Patent Examining Procedure states that the title should be brief, technically accurate, and descriptive. It also states that the title should not include the words "improved", "improvement of", and "improvement in". See section 606. Some Examiners will accept a very general title, such as "Image Forming Apparatus", whereas other Examiners will require the title to more closely describe the claimed subject matter. However, with a 500 character limitation, it is sometimes difficult to provide an accurate and detailed title. Although the exact title used is rarely critical, it is important to avoid a title that is narrower than the claimed invention.

2.2.2 Cross-reference to Related Applications

The first paragraph of each patent application should include a reference to all related applications. In this context, related applications are applications from which the benefit of an earlier filing date is claimed under either 35 U.S.C. § 119 or 35 U.S.C. § 120.

The cross reference does not need to be in any particular format, and may simply state: "The present application claims the benefit of patent application number 123,456, filed in Japan on January 1, 2002, the subject matter of which is hereby incorporated herein by reference."

As shown in the above example, it is also recommended to incorporate the subject matter of the related applications by reference into the application. In the event that there is an error in the translation of the foreign language priority application, the corrected translation can be easily incorporated into the application after filing without any risk of raising an issue of new matter. Similarly, if a drawing figure or other section of the application is inadvertently omitted during the filing of the U.S. application, the omitted drawing or section can be added to the application after filing, again without raising any risk of new matter.

2.2.3 Background of the Invention

The "Background of the Invention" section typically includes two parts.

The first part is entitled "Field of the Invention", and is a short one or two sentence description of the subject matter of the application. The main purpose is to enable the U.S. Patent and Trademark Office to direct the application to the appropriate art unit for examination. In describing the Field of the Invention, care must be used in order to avoid inadvertently defining the invention in a manner narrower than is intended. Accordingly, the Field of the Invention should be described in the broadest, most general terms that are reasonable.

The second half of the Background of the Invention section is the "Description of Related Art". This part should summarize the relevant prior art, and traditionally provides a description of the problems or deficiencies of the prior art that are overcome by the present invention. This part can be useful in enabling the Examiner to quickly focus on the importance of the invention.

There is no requirement to summarize the prior art in a patent application. In fact, some U.S. practitioners advocate simply omitting a description of the prior art entirely. The reason offered for omitting such a description of the prior art is that statements made in that section may inadvertently narrow the scope of the invention. However, if properly drafted, the description of the prior art will not unnecessarily narrow the scope of the invention, and will provide the Examiner with a good focus from which to begin the examination of the application. Accordingly, most practitioners do provide a description of the relevant prior art, together with a discussion of the problems with the prior art that are overcome by the present invention.

One should also be careful in describing the shortcomings of the prior art. For example, if the specification indicates that the prior art devices have a certain drawback or lack a certain quality, and if an accused device similarly has that drawback or lacks that certain quality, a court may find that the accused device does not infringe. Accordingly, some people recommend simply providing an objective description of the prior art without any attempt at describing the problems or deficiencies of it.

If some technology or teaching that is not prior art is mistakenly described as prior art, the Patent Office or a court may rely on such admission to use the technology or teaching as prior art to reject or invalidate the claims. Although in some cases it is possible to retract or withdraw such an admission, it is difficult, and sometimes it cannot be undone.

Therefore, in describing prior art, it is recommended to use terms such as "related art" or "conventional art" instead of "prior art". Also, be sure that anything described as prior art is in fact prior art under U.S. law. In view of the fact that the United States has a twelve month grace period in 35 U.S.C. § 102(b), a publication may be prior art with respect to a Japanese patent application, but not with respect to a U.S. patent application that claims priority from the Japanese application.

2.2.4 Objects And Summary

The next section of the patent application is titled "Objects and Summary". This section starts out with a small number of briefly described objects of the present invention. Again, it is important to draft this section carefully so as to avoid defining an object that might be narrower in scope than the invention. As a result, the objects tend to be described in a relatively broad and general manner.

It is also recommended to refer to each object as "an" object, as opposed to "the" object. By using an indefinite article such as "an", it implies that there may be additional objects, and that the recited objects are not the only objects of the present invention.

As with the description of prior art, many practitioners advocate omitting a description of objects of the invention. Courts may use the objects to interpret the claims. For example, if the accused device or accused method fails to achieve one or more of the recited objects, the court may find that the accused device or method does not infringe the patent.

Nevertheless, if one or more objects can be drafted that are not too restrictive or difficult to achieve, such objects may be listed, especially if they put a positive emphasis on the invention, which may aid during prosecution. However, if in doubt, it is quite acceptable to omit the objects entirely.

Following the objects of the invention is a summary of the invention. The summary should merely be a recitation of the independent claims of the application, almost verbatim. Some practitioners will include only the broadest independent claim in the summary section, while other practitioners include all of the independent claims in the summary section. Still, other practitioners include all claims, including dependent claims in the summary section of the application.

Although there is no harm in reciting all of the independent and dependent claims in the summary section, reciting the dependent claims usually does not add anything to the application, and simply makes the application more difficult to read. Accordingly, it is recommended to summarize all of the independent claims, and not the dependent claims in the summary section.

When prosecuting the application during examination, it is not uncommon for the independent claims to be amended in response to rejections made by the Examiner. If one or more of the independent claims is amended, it is important to remember to also amend the summary section of the application so that the scope of the summary section is always consistent with the scope of the claims.

2.2.5 Brief Description of The Drawings

The next section is typically entitled "Brief Description of the Drawings", and is, as implied, a brief description of the drawings incorporated in the application. This section should be relatively short. It is important to remember in drafting this section to refer to the subject matter of the drawings as embodiments of the invention, and not as the invention itself. Repeated references to the embodiments of the invention as the invention itself may result in the scope of the application being limited to only the preferred embodiments.

2.2.6 Detailed Description of the Preferred Embodiments

The Detailed Description of the Preferred Embodiments section is where the details of the invention should be set forth. If this section is prepared properly, significant detail can be included in a manner that will not limit the scope of the claims. As set forth below, it is preferable to describe as many alternative embodiments of the invention as are practical. Although the claims of a patent ultimately define the scope of the patent, the Detailed Description section is also very important in that it is the foundation that supports and gives meaning to the claims. Just as the foundation of a house is important to maintain the strength and stability of the house, the Detailed Description section must be properly drafted in order to provide adequate support and strength for the claims.

A. Preferred Embodiments vs. the Invention

This next section of the application is a detailed description of the preferred embodiments. When drafting this section, it is extremely important to remember to describe the embodiments of the invention as the preferred embodiments, and not as the invention itself. In most cases, the invention is broader than the preferred embodiments. The Court of Appeals for the Federal Circuit has indicated that the scope of the claims is to be construed in view of the specification. Accordingly, in situations where the specification repeatedly refers to the disclosed embodiments as the invention, and not as preferred embodiments, the court may limit the scope of the claims to the preferred embodiments.

B. Absolute Terms

Be very careful about using absolute terms, such as "must", "critical", "essential", "important", or other words that imply a particular feature is a requirement of the invention. In situations where the specification indicates that certain features are "critical" or "must" be present for the invention to work, the courts have construed the scope of the claims so as to require such critical or necessary features for infringement, even if the features themselves are not included in the claims. Accordingly, care should be utilized when drafting this section so as to avoid unnecessarily limiting the scope of the claims.

In one case before the Court of Appeals for the Federal Circuit, the detailed description of the preferred embodiments indicated that a particular structure was included in "all embodiments of the present invention contemplated and disclosed herein". As a result of such language, the Court held that the recited structure was deemed to be part of the claimed invention, even though such structure was not set forth in any of the claims.

C. Features Not Present in the Invention

Converse to the principles set forth above, the Court of Appeals for the Federal Circuit has also held that in situations where the specification makes clear that an inventive device or method does not include a particular feature, all devices or methods having that feature may be deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass devices or methods with the feature in question. Accordingly, the specification should be carefully drafted to make sure that it does not eliminate certain subject matter from the scope of the claims. Such elimination might be accomplished by statements indicating that the invention cannot have a particular feature or does not include a particular structure. Even statements that the prior art is unsatisfactory because it has a certain feature may be enough to cause a court to refuse to construe the claim so as to cover a device or method having such feature.

In one case before the Court of Appeals for the Federal Circuit, the background section of the patent described prior art devices having a certain feature as suffering from several disadvantages. Based on this description of the prior art, the Court held that any device that included such features was deemed to be outside the scope of the invention.

D. Redefined Terms

The Court of Appeals for the Federal Circuit has also indicated that the specification must be consulted to see if the patentee "redefined" any of the terms in the claims. For example, if a term in the claims of the patent has been given a meaning in the specification other than the ordinary meaning associated with that term, the claim will likely be construed such that the term is defined as used in the specification, rather than according to the ordinary meaning of the claim term.

E. Alternative Embodiments

In view of the fact that the scope of an application may be affected either directly or indirectly by the detailed description of the preferred embodiments, it is recommended to describe in this section all alternative embodiments that can be reasonably contemplated by the inventors. The United States Supreme Court has indicated that an inventor is expected to draft claims encompassing all readily known equivalents. Failure to do so may result in a narrow construction of the scope of the claims. In addition, failure to draft claims encompassing all readily known equivalents may potentially limit the application of the doctrine of equivalents. Specifically, the Supreme Court has held that the doctrine of equivalents may not be used to cover readily known equivalents that are not literally covered by the claims.

Furthermore, 35 U.S.C. § 112, paragraph six, states that the scope of a means plus function element shall be construed to cover the corresponding structure described in the specification that performs the recited function, and equivalents thereof. Since the scope of such claim elements is

determined, at least in part, by the specification, inclusion of all readily known equivalents in the specification will have a positive affect on the scope of means plus function claim elements.

F. Disclosed but Unclaimed Subject Matter

Although it is recommended to disclose all readily known equivalents in the specification of an application, attention must also be paid to the fact that the Court of Appeals for the Federal Circuit has also held that the doctrine of equivalents cannot be utilized to reach disclosed, but unclaimed subject matter.

In one recent case, the specification of a patent indicated that a particular substrate could be made from either aluminum or steel. However, the claims in the application were limited to aluminum substrates. When the patentee tried to use the doctrine of equivalents to enforce the patent against an accused device having a steel substrate, the Court held that the application of the doctrine of equivalents to recapture subject matter deliberately left unclaimed would conflict with the function of the claims' role in defining the scope of the patentee's exclusive right. As a result, the Court held that the patentee could not invoke the doctrine of equivalents to cover the disclosed but unclaimed subject matter.

Accordingly, in view of this principle, care must be taken to insure that the claims pending in the application cover each of the disclosed embodiments. Failure to do so may limit the application of the doctrine of equivalents.

G. Fall Back Positions

A well drafted specification should also include numerous fall-back positions. For example, if the inventor believes that an inventive method should operate between 40°F and 100°F, the application should probably state the invention could operate between 30°F and 110°F, preferably between 40°F and 100°F, and most preferably between 50°F and 90°F. The intermediate positions provide greater safety and flexibility when prosecuting the application and enforcing the patent. These are simply examples, and any variation from the description of the invention provided by the inventor should be discussed with the inventor to ensure that such variations are reasonable.

H. Consistency

Be sure to use terms consistently throughout the entire application, including the claims. For example, if the detailed description describes something as "about" 10, do not use "approximately" 10 in the claims. Failure to use terms consistently may render one or more of the claims indefinite under 35 U.S.C. § 112, second paragraph.

I. Terminology

Make sure you understand the meaning of all of the words that you use in the application. For example, if you use the term "impurity-free", what does it mean? Does it mean 100% free, or can trace amounts of impurities be included?

It is also important to know if a particular term has a special meaning to one skilled in the art. If a term has one accepted meaning in most situations, but a special and different meaning in a particular industry, care should be taken to be clear as to which meaning of the term is used.

The courts have held that a patentee can be his/her own lexicographer. In other words, the patentee can use a term in a unique way. However, if this is done, the specification should be clear as to how the term is used. It is possible to specifically input a definition, such as "As used herein, the term 'impurity-free' shall mean...." Of course, that meaning will apply throughout the patent, and will likely be used as a limitation on the scope or construction of the claims.

J. Support for the Claims

It is also important to ensure that the specification provides clear support for the claims. By "clear", two meanings are intended. First, it should be clear that there is support for all of the claims. Although the cases have held that even the drawings can provide support for the claims, the preferable practice is to be sure that there is essentially verbatim support for all of the claims in the detailed description section of the application. Clear support for the claim language will reduce the likelihood of any uncertainties concerning the meaning of the claim terms. Second, it is meant that the supporting portions of the specification should be clear and free from ambiguity. If a portion of the specification is ambiguous, it is likely that there will be some confusion in construing the corresponding claim language.

K. Enablement Requirement

The first paragraph of section 112 of title 35 requires that a specification of an application provide 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 the invention. This paragraph is generally construed as mandating three requirements, known informally as the written description requirement, the enablement requirement, and the best mode requirement. All of these requirements will be addressed separately.

As to the enablement requirement, the cases have made clear that the specification of a patent

application is directed to one skilled in the art, not to a typical lay person. Furthermore, a patent need not teach, and preferably omits, that which is well known in the art.

The scope of enablement required under 35 U.S.C. 112, first paragraph, in other words, the amount of detail necessary to adequately enable the invention, varies with the degree of complexity of the subject matter involved. Enablement is not precluded even though some experimentation is necessary, provided that the experimentation is not unduly extensive.

The Court of Appeals for the Federal Circuit has set forth factors to be considered in determining whether a disclosure would require undue experimentation. The factors include: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

In one case, the claims in a patent application related to an etching process involved in the making of integrated circuits. The Examiner alleged that the application was not enabling because it did not teach the specific reagents, and that it did not teach the specific time periods for which the etching should be undertaken. The Board of Appeals dismissed the rejection alleging that suitable reagents were known in the art, and that the time periods would have been easily determined by one of skill in the art. Specifically, the Board noted that the etching process is time dependent, and that it is logical and almost self-evident that if too little time is provided the resulting etch is not complete.

The law is clear that a specification is not required to be a production document that will enable one to mass produce the claimed invention. The law has never required that a patentee who elects to manufacture its claimed invention must disclose in its patent the dimensions, tolerances, drawings, and other parameters of mass production not necessary to enable one skilled in the art to practice (as distinguished from mass produce) the invention.

Accordingly, it is not difficult to meet the enablement requirement, and rejections based on this section are rare. Nevertheless, practitioners should be aware of it and draft specifications accordingly.

L. Best Mode

As set forth above, the first paragraph of section 112 of title 35 also requires that a specification of an application shall set forth the best mode contemplated by the inventor of carrying out the invention. As with the enablement requirement, this requirement is not hard to meet, and rejections thereunder are not common.

A main concern with the best mode requirement arises when an inventor wants to patent the broad concept of an invention, while simultaneously maintaining a specific embodiment thereof as a trade secret. In such a case, the specific embodiment desired to be maintained as a trade secret is invariably the best mode contemplated by the inventors. Such action could result in the entire patent be held invalid, if successfully proved at trial.

Typically, examiners do not concern themselves with violations of the best mode requirement. It is usually only an issue that arises during an enforcement proceeding, such as litigation in Federal district court. However, since the disclosure of the best mode is considered to be at the heart of the quid pro quo of the patent system, i.e., advancing the public scientific body of knowledge in exchange for patent rights, courts generally do not look favorably on suspected intentional violations of the best mode requirement.

M. Written Description Requirement

To fulfill the written description requirement, a patent application must convey, with reasonable clarity to those skilled in the art, that the inventor was in possession of the claimed invention as of the filing date of the application. The invention is, for purposes of the written description inquiry, whatever is set forth in the claims.

Until recently, it was generally accepted that the written description requirement was construed more strictly for unpredictable arts, such as chemistry and genetics, than for predictable arts. Courts traditionally held that in chemical cases, where there is unpredictability in the performance of certain species or subcombinations, there may not be adequate written description of a broad genus when only a small number of species are disclosed. Accordingly, the courts have traditionally distinguished between predictable and unpredictable cases, finding that the disclosure of a single species in a predictable art would typically support a claim of the entire genus. However, in unpredictable arts, a more detailed written description may be required in order to support a genus claim.

Accordingly, until recently, patent practitioners in the mechanical and electrical arts felt secure that the disclosure of a single species would support a broader generic claim. However, in January 1998, the Court of Appeals for the Federal Circuit issued a decision relating to a mechanical, very predictable subject--a reclinable sofa. The original disclosure described the controls for the reclining seats as being on the console. The disclosure indicated that the controls may be mounted on either the top, side, or front wall surfaces of the console. In addition, as is typically done in a patent application, the disclosure indicated that various modifications and equivalents can be made without departing from the spirit or scope of the invention. Although the specification and the originally filed claims indicated that the controls were located on the console, during prosecution of the application, the claims were amended to no longer require the controls to be on the console.

In that case, the Court of Appeals for the Federal Circuit, held the claims invalid as failing to meet the written description requirement of 35 U.S.C. § 112, first paragraph. To justify its decision, the court focused on whether certain elements were important or essential to the invention. The court found that it was not only important, but essential to the invention, for the controls to be on the console. The implication behind the Court's decision is that the original application did not convey that the inventor contemplated that his invention was so broad that there was no limitation as to where the controls could be located.

A difficulty with the decision is the level of uncertainty that is now introduced into the written description requirement. In order to determine whether or not a claim added or amended during prosecution complies with the written description requirement, the specification must be reviewed to determine if any elements therein, which are deemed essential or otherwise part of the invention, have been omitted from the claims. Such issues do not arise with unamended claims that are originally filed in an application, because in that case, the claims themselves provide the requisite written description.

To further confuse the "written description" requirement, subsequent to the aforementioned decision, the Court of Appeals for the Federal Circuit again invalidated a mechanical claim based on failure to comply with the written description requirement. In the second case, a parent application defined an acetabular cup prosthesis. The parent application disclosed only conical shaped cups, and the original claims in that application defined the cups as conical. A continuation-in-part application disclosed additional cups and added a broad independent claim which defined the cup without limitation as to the shape thereof. The Court found that the continuation-in-part application was not entitled to the filing date of the parent application, because the parent application did not meet the written description requirement with regard to the claims that did not define the cup as conical. The court held that the parent application "discloses only conical shaped cups and nothing broader" and "therefore, does not support the later-claimed, generic subject matter...."

Based on the extensive discussion in the first case of the fact that the written description requirement is not fulfilled if "essential" elements are omitted from the claims, one might conclude that the shape of the cup in the second case was important. However, in discussing another issue in the case, the Court stated that "the evidence tended to demonstrate that the shape of the cup was irrelevant to achieving the desired result and that after successful implantation any shape would function essentially the same way."

The differences between the bases for the conclusions in the two cases is not so much an inconsistency, rather than an indication that there are now at least two different reasons why a mechanical (i.e., predictable art) claim may fail the written description requirement. It is also interesting to note that the second case did not once cite the first case. The only conclusion that can

be made is that the "written description" conclusions reached in both cases were based on entirely different reasons. In simplified terms, the rule in the first case appears to be that essential elements must be included in a claim, and the rule in the second case appears to be that the disclosure of two different species does not necessarily support a genus claim - even in the mechanical arts. Both of these decisions are troubling, not only for their failure to define "bright line" tests that are easy to apply, but also for their clear departure from long established case law holding that the disclosure of a single species provides a written description of a broader genus claim if the whole disclosure conveyed to any person skilled in the art the broader invention.

In view of the these decisions, drafters of applications in the predictable (e.g., mechanical and electrical arts) might want to heed the following advice. First, draft the "objects" section of the application very carefully. One of the factors relied upon by the Court in the first decision was the fact that the specification indicated that "another object of the present invention is to provide...a console positioned between [the reclining seats] that accommodates the controls for both of the reclining seats." Accordingly, when drafting objects in the background section of an application, care should be taken to avoid describing any particular element as "essential".

Second, as a precaution, drafters of applications should liberally add dependent claims defining all elements omitted from the independent claims that might possibly be construed as essential. In addition to adding specific structural elements, further details, including the location and the shape of elements in the claims should also be defined in dependent claims. Thus, if the unpredictable happens and an independent claim is found to be failing to comply with the written description requirement, certain dependent claims may survive.

Third, whenever possible, add alternative numerous embodiments and examples of the invention. The disclosure of multiple embodiments will enhance the likelihood that the disclosure will be found to support broad generic claims.

Fourth, be sure to include at least one broad claim in the application as originally filed. At least from the aspect of the written description requirement, problems are more likely to occur when broadening claims after the application is filed. In both cases discussed above, the problems were found with claims that were broader than those that were originally filed with the application. Of course, the claims should not be so broad that they will necessarily require amending during prosecution because any amendments to a claim will likely create file history estoppels. Thus, there is a balance that has to be reached between making the claims broad or narrow.

2.2.7 Abstract

U.S. Patent & Trademark Office regulations limit the length of the abstract to 150 words. With a 150 word limitation, it is sometimes difficult to provide an accurate and detailed abstract.

Frequently, the abstract will be similar in scope to one of the broader independent claims. However, the abstract should avoid using terms considered to have special legal significance, such as "invention", "comprising", "means", or "said". Although the exact format of the abstract is rarely critical, it is important to avoid an abstract that may be used to imply a narrow scope of the claimed subject matter. For that reason, it is better to use a broad, general abstract instead of a narrow, more detailed abstract.

2.3 Claims

The claims of an application should be carefully drafted to define the invention in varying scope. The use of broad claims enables the patent to cover as much subject matter as possible, whereas the use of narrower claims provides protection even if some of the broader claims are ultimately held invalid in view of subsequently discovered prior art.

In addition to providing claims of varying scope, it is also recommended to provide different types of claims. For example, when possible, the invention should be claimed as a device or article, a method of making the device or article, and/or a method of using the device or article. Depending upon the nature of the invention, some of these formats may not be appropriate for a particular invention. However, each of them should be considered, at least initially.

Be sure that the meaning of each term in a claim is clear from the specification. Ideally, each term should be used according to its generally understood meaning. However, if a particular industry has given a unique meaning to a particular term, be sure that this special meaning is clearly set forth in the specification and is used in a consistent manner throughout the application.

It is also recommended that after drafting a claim, it should be carefully reviewed to ensure that it does not include any limitations that are not necessary to define the invention and distinguish it from the known prior art.

The current U.S. Patent & Trademark Office fee schedule allows a total of twenty claims, including three independent claims with the filing fee. Each claim over twenty requires an excess claim fee of $18 for a large entity, $9 for a small entity. Each independent claim over three requires an excess claim fee of $84 for a large entity, and $42 for a small entity. In spite of the fee structure, the drafter of a patent application should include as many claims as are reasonable for the invention. The excess claim fees are quite small compared to the overall cost of preparing and prosecuting a patent application.

2.3.1 Means (Or Step) Plus Function Claim Elements

Means (or step) plus function claim elements are important tools in defining inventions.

Authorization for means (or step) plus function language may be found in 35 U.S.C. § 112. Paragraph six of that section states:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

As a compromise in allowing means (or step) plus function elements, two limitations were placed on the use of such means (or step) plus function elements. First, such elements are not limited to any structure or step that performs the recited function. Instead, the scope of such an element is limited to the corresponding structure, material, or acts recited in the specification that perform the recited function, and equivalents thereto. The second limitation is that single means claims are not allowed. In other words, a means (or step) plus function element can only be used in a claim if there are other elements in the claim. The other elements can be means (or step) plus function elements, as well. As such, it is not possible to have a claim that has only one element in it if that element is written in means (or step) plus function format.

A. How to Identify Means (Or Step) Plus Function Elements

The patent statute has been commonly construed to have three requirements for a means (or step) plus function element. The first requirement is that there be a "means" or a "step". However, it is important to note that a claim element may invoke means (or step) plus function treatment, even if it does not literally use either of the terms "means" or "step".

When an element of a claim does not use the term "means" or "step", it is generally assumed that the claim element is not a means (or step) plus function claim element. However, merely because an element does not include the word "means", does not automatically prevent that element from being construed as a means (or step) plus function element.

The second requirement is that the claim element define a function. As a general rule, the use of the term "means" in a claim creates a presumption that 35 U.S.C. § 112, paragraph six, applies. However, the presumption applies only if the term "means" appears in a claim element in combination with a function.

The third requirement of 35 U.S.C. § 112, paragraph six, is that the particular claim element does not include the recital of structure, material, or acts to perform the claimed function.

In analyzing means (or step) plus function claim elements, the courts have generally distinguished between a "means" plus function and a "step" plus function. The Court of Appeals for

the Federal Circuit has held that in section 112, paragraph six, "structure" and "material" are associated with means-plus-function claim elements, and that "acts" are associated with step-plus-function claim elements.

Accordingly, the recital of structure or material in a claim element may prevent that claim element, which defines a means for performing a function, from being construed in accordance with 35 U.S.C. § 112, paragraph six. Similarly, the recital of acts in a claim element which defines a step for performing a function may prevent that claim element from being construed under 35 U.S.C. § 112, paragraph six.

It is difficult to determine how much structure (or acts) is sufficient to remove a claim element from 35 U.S.C. § 112, paragraph six. In analyzing this issue, the courts have distinguished between the recitation of some "structure" that serves to further specify the function that is being performed, and the recitation of structure that tells what the "means" is structurally. Structure that only serves to further specify the function does not remove the claim element from 35 U.S.C. § 112, paragraph six. However, a recitation of structure further identifying or limiting the "means" may serve to remove the claim element from § 112, paragraph six.

A determination must also be made as to how much structure need be recited in the claim element before that element is removed from § 112, paragraph six. It is clear that a claim element can be removed from § 112, paragraph six, even if it does not recite every detail disclosed in the specification of the device that performs the recited function. However, to be removed from § 112, paragraph six, the claim should recite "sufficient" structure to perform entirely the claimed function. Accordingly, it is important to ascertain exactly what "function" is recited in the claim element, and based on that determination, it must then be determined whether the structure, if any, recited in the claim element is sufficient to perform that function.

The U.S. Patent & Trademark Office Manual of Patent Examining Procedure states that, a claim limitation will be interpreted to invoke 35 U.S.C. § 112, paragraph six, only if it meets the following three prong analysis:

(1) the claim limitation must use the phrase "means for" or "step for";

(2) the "means for" or "step for" must be modified by functional language; and

(3) the phrase "means for" or "step for" must not be modified by structure, material, or acts for achieving the specified function.

B. Scope of Means (Or Step) Plus Function Elements

As set forth in 35 U.S.C. § 112, paragraph six, a means (or step) plus function claim element shall be construed to cover the structure, material, or acts described in the specification that performs the recited function, and equivalent structure, material, or acts. As interpreted by the Court of Appeals for the Federal Circuit, the "structure" and "material" are applied as corresponding to means-plus-function claim elements, whereas the "acts" are construed as applying to step-plus-function claim elements.

i. Literal Infringement

In order to determine whether a claim having a means (or step) plus function claim element is literally infringed, the first step is to determine if the accused device performs the recited function. In a literal infringement analysis, an accused device or an accused method must include the identical function recited in the claim. If the accused device or method does not include the identical function, there can be no literal infringement of the claim.

If the accused device or method does include the identical function, an analysis must be performed to determine if the accused device or method includes structure, material or acts that are the same as the structure, material or acts disclosed in the specification which perform the recited function. And, in the case of a step-plus-function element, an analysis must be performed to determine if the accused method includes the same act as that recited in the specification for performing the recited function. If the accused device or method includes the same structure, material, or acts as that disclosed in the specification for performing the recited function, then literal infringement exists.

If the accused device or method does not include the same structure, material, or acts as that recited in the specification, an analysis must be conducted to determine if the structure, material, or acts in the accused device or method is equivalent to that disclosed in the specification which corresponds to the recited function.

The Court of Appeals for the Federal Circuit has held that the proper test for "equivalence" under 35 U.S.C. § 112, paragraph six, is whether the differences between the structure in the accused device and any structure disclosed in the specification are insubstantial. In other words, the corresponding structure, material, or acts in the accused device are equivalent if they include only an insubstantial change which adds nothing of significance to the structure, material, or acts disclosed in the patent specification.

In setting forth guidelines for determining whether or not differences are substantial or insubstantial, a Court may consider the interchangeability of the parts. The Courts have held that a finding of known interchangeability is an important factor in determining equivalence. The Courts also emphasize that an important factor is whether persons reasonably skilled in the art would have

known of the interchangeability of an ingredient not contained in the patent with one that was. Thus, it is not relevant whether or not an element is interchangeable. What is significant is whether or not persons reasonably skilled in the art would have known of the interchangeability. However, such findings are not dispositive of equivalence.

The U.S. Supreme Court has stated that the test for equivalence under 35 U.S.C. § 112, paragraph six, is closely related to the test for equivalence under the Doctrine of Equivalents.

Unfortunately, even the Supreme Court decisions provide little specific guidance for determining equivalence. The Supreme Court has stated that "[T]he particular linguistic framework used is less important than whether the test is probative of the essential inquiry: Does the accused product or process contain elements identical or equivalent to each claimed element of the patented invention?" The Court also stated that different linguistic frameworks may be more suitable to different cases, depending on their particular facts. The Court cautioned that a "focus on individual elements and a special vigilance against allowing the concept of equivalence to eliminate completely any such elements should reduce considerably the imprecision of whatever language is used".

While refusing to endorse any particular test, the Supreme Court did seem to agree that the triple identity test, i.e., "focusing on the function served by a particular claim element, the way that the element serves that function, and the result thus obtained by that element - is suitable for analyzing mechanical devices".

In conclusion, the Supreme Court has refused to "micro-manage" the Federal Circuit's particular word choice for defining tests for analyzing equivalence. The Supreme Court has encouraged the Federal Circuit to refine the formulation of the test for equivalence in the orderly course of case-by-case determinations.

In summary, there are at least three tests for determining equivalence. The first, which is more conclusory than guiding, simply requires one to consider whether the differences between the structure of the accused device and that disclosed in the specification are substantial, i.e., whether they add anything of significance to the structure, material, or acts.

The second test endorsed by the courts is whether or not the structure, material, or acts in the accused device or method are known to be interchangeable with those disclosed in the patent specification.

And, the third test is the traditional tripartite (function, way, results) test endorsed by the U.S. Supreme Court:

"To temper unsparing logic and prevent an infringer from stealing the benefit of the

invention" a patentee may invoke this doctrine to proceed against the producer of a device "if it performs substantially the same function in substantially the same way to obtain the same result."

In summary, if the structure, material, or acts in the accused device or method are not equivalent to the corresponding structure, material, or acts disclosed in the patent specification, there is no literal infringement.

The courts have held that in order to find literal infringement of a means (or step) plus function element, a structural equivalent under § 112, paragraph six, must have been available at the time of issuance of the patent. Literal infringement under § 112, paragraph six, cannot embrace technology developed after the issuance of a patent, because the literal meaning of a claim is fixed upon its issuance. An "after developed technology" infringes, if at all, under the Doctrine of Equivalents. In other words, an equivalent structure or act under § 112 for literal infringement must have been available at the time of the patent issuance, while an equivalent under the Doctrine of Equivalents may arise after patent issuance, and before the time of infringement.

ii. Doctrine of Equivalents

If it is determined that the accused device or method does not literally infringe a claim element, infringement must also be considered under the Doctrine of Equivalents. While, as stated above, the test for equivalence under 35 U.S.C. § 112, paragraph six, and the Doctrine of Equivalents are closely related, there are two significant differences. The first difference relates to the comparison of the recited function, and the second difference relates to technology developed after the patent issues.

a. Equivalent Function

As set forth above, in determining literal infringement under 35 U.S.C. § 112, paragraph six, the accused device or method must include the identical function as that recited in the claim. If there is no identity of function, there can be no literal infringement. However, if the function performed by the accused device or method is not identical to the function recited in the claim element, there may still be infringement of the means (or step) plus function element under the Doctrine of Equivalents if the function performed by the accused device or method is substantially the same as the recited function. Thus, even though there may not be any literal infringement because there is no identity of function, there may still be infringement under the Doctrine of Equivalents if the function performed by the accused device or method is substantially the same as the recited function.

b. After Developed Technology

Another important difference between literal infringement of a claim element under § 112,

paragraph six, and infringement under the Doctrine of Equivalents involves the timing of the separate analyses for an "insubstantial change". A distinction is made for variants of an invention created due to technological advances that are developed after the issuance of the patent. Such variants are referred to in the cases as "after developed technology". As set forth above, an equivalent under the Doctrine of Equivalents may include after developed technology.

The Doctrine of Equivalents is necessary, and was in part created, because one cannot predict the future. Due to technological advances, a variant of an invention may be developed after the patent is granted, and that variant may constitute such an insubstantial change from what is claimed in the patent, that it should be held to be an infringement. The Doctrine of Equivalents enables such after developed technology to infringe a claim element, provided the other requirements are met.

2.3.2 Step-Plus-Function Claim Elements

There are relatively few cases in the United States analyzing step-plus-function claim elements.

First, it is important to distinguish the "means" plus function claim elements from "step" plus function claim elements. Primarily, the step-plus-function claim elements refer to method claims, whereas the means plus function claim elements are used in device or apparatus claims. And, the "structure" and "material" in 35 U.S.C. § 112, paragraph six, are associated with "means-plus-function" claim elements, whereas the "acts" is associated with "step-plus-function" claim elements. When analyzing an element to determine if it is a step-plus-function claim element, certain phrases trigger a presumption that § 112, paragraph six, applies.

As used in § 112, paragraph six, "step" is the generic term for "acts" in the same sense that "means" is the generic term for "structure" and "material". The word "step", however, may introduce either an act or function, depending upon the context within the claim. Therefore, use of the word "step", by itself, does not invoke a presumption that § 112, paragraph six, applies. For example, method claim elements may begin with the phrase "step of" without invoking application of § 112, paragraph six. The phrase "step of" generally signals the introduction of specific acts, rather than functions, and should therefore not presumptively invoke the application of § 112, paragraph six.

Unlike "of", the preposition "for" colloquially signals the recitation of a function. Accordingly, the phrase "step for" generally introduces functional claim language falling under § 112, paragraph six. Thus, the phrase "step for" in a method claim raises a presumption that § 112, paragraph six, applies. This presumption gives legal effect to the commonly understood meanings of "of" - introducing specific materials, structure, or acts, and "for" - introducing a function.

However, even when a claim element uses language that generally falls under the step-plus-

function format, § 112, paragraph six, still does not apply when the claim limitation itself recites sufficient acts for performing the recited function. Thus, § 112, paragraph six, only is implicated when a step-plus-function claim element does not include the acts sufficient to perform the recited function.

Furthermore, the absence of the phrase "step for" from the language of a claim tends to show that the claim element is not in step-plus-function formation. However, claim elements without express step-plus-function language may nevertheless fall within § 112, paragraph six, if they merely claim the underlying function without recitation of acts for performing that function.

Unfortunately, method claim elements often recite phrases susceptible to interpretation as either a function or as an act for performing a function. Both acts and functions are often stated using verbs ending in "ing". For instance, consider the following claim element:

"spreading an adhesive tack coating for adhering the mat to the foundation over the foundation surface;"

In this element, if the method claim element had merely recited the step of "spreading an adhesive tack coating", it would not have been clear solely from the claim language whether "spreading" was a function or an act. In such circumstances, claim interpretation requires careful analysis of the limitation in the context of the overall claim and specification.

In general terms, the "underlying function" of a method claim element corresponds to what that element ultimately accomplishes in relationship to what the other elements of the claim and the claim as a whole accomplish. On the other hand, "acts" correspond to how the function is accomplished. Therefore, claim interpretation focuses on what the claim limitation accomplishes, i.e., its underlying function, in relation to what is accomplished by the other limitations in the claim as a whole. If the claim element recites only an underlying function without acts for performing it, then § 112, paragraph six, applies even without express step-plus-function language.

Thus, if a claim element uses the phrase "step for", then § 112, paragraph six, is presumed to apply. On the other hand, the term "step" alone, and the phrase "steps of" tend to show that § 112, paragraph six, does not govern the claim element.

In the aforementioned claim element, the proper analysis should distinguish between what is ultimately accomplished, and how it is accomplished. In this element, what is ultimately accomplished is that the mat is adhered to the foundation over the foundation surface. Thus, the "adhering" term is considered to be the "function" in the step-plus-function analysis. However, the claim element further recites "spreading an adhesive tack coating". Using the test set forth above, the "spreading" refers to how the function of "adhering" is ultimately accomplished. Thus, the

"spreading" is considered to be an "act" under 35 U.S.C. § 112, paragraph six. Accordingly, the foregoing claim element includes both a function of adhering the mat to the foundation, together with the act of spreading an adhesive tack coating. Thus, the foregoing claim element does not invoke § 112, paragraph six.

2.3.3 Recommendations for Means (or Step) Plus Function Claim Elements

Because of the limitations that 35 U.S.C. § 112, paragraph six, puts on the scope of means (or step) plus function claim elements, such elements should be used carefully. However, there may be situations where, because of the difficulty in describing an element, it is almost necessary to use such claim language. Furthermore, there may be situations where a means (or step) plus function claim element is actually broader than a corresponding element drafted only in structural language. The following suggestions are made to help in drafting claims.

A. Make a Case-by-Case Determination

When drafting claims, approach each situation independently, and determine on a case-by-case basis whether the claim element should be drafted in structural terms or in accordance with 35 U.S.C. § 112, paragraph six. Avoid a firm rule to always avoid or always use means (or step) plus function language.

B. Be Clear

After you have decided whether or not to use means (or step) plus function language, make sure your claim element is drafted the way you intended. As set forth above, this may not be as easy as it sounds. Remember, the mere use of the terms "means" or "step" does not automatically invoke 35 U.S.C. § 112, paragraph six. Similarly, the absence of the terms "means" or "step" does not automatically avoid 35 U.S.C. § 112, paragraph six. Be especially careful about using "structure, material or acts" in the claim if you intend to invoke 35 U.S.C. § 112, paragraph six.

C. Be Diverse

Whenever possible consider using two parallel sets of claims, one of which is drafted using means (or step) plus function language, and the other of which uses structural language. This way, you are likely to increase the breadth of your claim coverage.

2.3.4 Disclosed But Unclaimed Subject Matter

The Court of Appeals for the Federal Circuit has held that the doctrine of equivalents cannot be used to cover subject matter that is disclosed, but not literally claimed, in a patent. Accordingly,

when prosecuting a patent application, care should be given to insure that all disclosed embodiments are covered by the claims. If an embodiment is disclosed in the specification of an application, and is not literally covered by any of the claims therein, it is likely that such embodiment will not be covered by the patent, even under the doctrine of equivalents.

2.4 Computer Related Patents

Traditionally, the U.S. Patent and Trademark Office has refused to grant claims directed to mere algorithms or other abstract ideas, that are not tied to some useful, concrete, and tangible result. Accordingly, when drafting a patent application directed to computer software, it is important to provide sufficient background to the software program to fulfill the U.S. Patent and Trademark Office requirements. Specifically, at a minimum, it is recommended that at least some general discussion concerning the computer system that will be running the software should be included in the application. For example, for traditional software programs, the application should indicate, at least in very general terms, the components of the computer system that will be required to operate the software. The computer system may be described as including a processing unit, a memory for storing the software program, a display unit, and input/output device, such as a keyboard or a mouse.

Although it is generally considered unnecessary to include the specific code of a computer software program in a patent application, it is highly recommended to include one or more flow charts outlining the steps of the program. It is further recommended that the flow charts be set forth in varying scope. For example, a first flow chart may set forth only the broad steps of the program, and each box in the first flow chart may be further described by using additional, more detailed flow charts which include the various steps of each of the blocks in the first flow chart.

The flow charts are not only useful for enabling a quick and easy understanding of a program, they also serve the important function of providing antecedent basis for claim language that may describe the steps of the program.

In addition to providing a description of a computer system that can be used to operate the program, and in addition to providing a description of the basic steps of the program, as set forth above, it is also recommended to provide information concerning the appropriate applications for the program, and information concerning how the program will be used to accomplish real life solutions.

2.4.1 Claims

Computer software programs can be claimed in at least two different manners. The most common format for claiming a computer software program is to use a claim having a preamble which states "A storage medium having stored thereon a computer program executable to perform the steps of:". The preamble is then followed by the method steps performed by the software when run on a

computer. Although the full language of the preamble may no longer be required by the U.S. Patent and Trademark Office, the use of such a preamble will most likely avoid any issues concerning whether or not the claim includes statutory subject matter required by 35 U.S.C. § 101.

As set forth above, if a flowchart is included in the specification, the steps of the claims should be included in the flowchart in order to ensure that there is adequate antecedent basis for the claim language.

A second method of claiming a computer software program is to use a claim directed to "A computer system, comprising:". Such a preamble would then be followed by a series of "means plus function" claim elements, wherein each of the steps of the software program would be proceeded by "means for....". When utilizing this type of claim language for computer software, it is important to ensure that the specification provides clear support for the "means" or structure that performs each of the method steps. Support will most likely be found if the specification describes the basic components of the computer system, including, e.g., a memory, a processing unit, a display, and an input/output device. Again, the various method steps in the means plus function claim elements should be included in a flow chart, or otherwise clearly spelled out in the detailed description section of the application.

2.5 Design Patents

Although most patent applications filed at the U.S. Patent & Trademark Office are for utility patents, design patents provide an important mechanism for protecting new products.

Pursuant to 35 U.S.C. § 171, a design patent may be obtained by the inventor for "any new, original, and ornamental design for an article of manufacture." The "ornamental" requirement of the design patent statute requires that the design must not be governed solely by function, i.e., meaning that the claimed design is not the only possible form of the article that could perform its function.

In order to ascertain whether the features of the design were "created for the purposes of ornamenting," a patent attorney preparing a new design application should ask whether the design was "merely a by-product" of functional or mechanical considerations, or whether the ornamentation was added for the purpose of enhancing the visual appearance and thus the commercial value of the article.

There are three types of designs which can be protected by a U.S. design patent. They are surface ornamentation, configuration (shape of a product), or the configuration and surface ornamentation of a product.

2.5.1 Drafting a Design Patent Claim

A design patent has only one claim which generally reads "I claim the ornamental design for a widget, as shown and described," wherein the widget may be any type of article of manufacture. Given this very broad and ambiguous language, it is clear that further definition is required in order to determine what is protected by the claim of the design patent. This further definition is provided by the drawings such that, in essence, the claim in a design patent is defined by the drawings of the patent.

Similar to a utility patent application, the most important aspect of a design patent is drafting a claim of proper scope. In order to accomplish this, the patent attorney must take into consideration the prior art of which the designer is aware, what the designer regards as the unique elements of his creation, and what is likely to be the most important feature of the design during the commercial life of the article of manufacture.

Under the statute, 35 U.S.C. § 171, it is required that the patented design be directed to an article of manufacture. However, the entire article of manufacture does not need to be claimed in the design patent. Thus, it is desirable to illustrate only the part of the article of manufacture that the designer wants to claim in solid lines and the part that the designer does not want to claim in broken lines. In this manner, broken lines can be used to show environment and the portion of the article of manufacture that is not considered to be a part of the claimed design. The use of broken lines in a design patent thus allows significant control over the scope of the design patent claim.

Although a design patent may only have one claim, and this claim is defined by the drawings in the patent, it is still possible to include multiple embodiments of an article of manufacture within a single design patent if the differences between the two embodiments are de minimis. Determination of whether two or more embodiments are proper subject matter for a single design application is based upon whether the various embodiments illustrate a single inventive concept. One of the benefits of presenting multiple embodiments within a single design application is that, arguably, the scope of the patent claim may be broadened so as to extend to variations of the design falling between the illustrated embodiments. A drawback, however, of following this approach is that if one embodiment of the patent is found invalid, the entire patent will be found invalid.

The importance of quality drawings in a design patent application cannot be emphasized enough. The drawings must include adequate surface shading to clearly disclose the shape and contour of the article, any open or closed areas, and any particular surface characteristics, such as a texture, color, contrast, or a transparent or reflective surface. A design patent requires a sufficient number of drawings to clearly illustrate the article of manufacture from all sides. A perspective view, although not required, is useful in order to more clearly illustrate the article of manufacture.

Black and white photographs in lieu of formal ink drawings may be used as formal drawings

in a design patent application. Color photographs or color drawings may also be used if they are submitted with the required petition and petition fee. For the purposes of obtaining a filing date, color photographs or color drawings may be submitted as informal drawings, without necessitating a petition or fee. A drawback of using photographs as formal drawings is that it is not permissible to include a broken line disclosure, which may result in a very narrow claim which shows each and every feature of the article of manufacture. Photographs may be filed as informal drawings with any text or graphic indicia or other portion of the article disclaimed in the specification, in order to thereby provide support for later filed ink drawings which include a broken line disclosure.

Expedited examination of a design patent application may be requested by way of a special procedure set up at the Patent Office which is called the "rocket docket" or by way of a petition to make special. Accelerated examination under the so-called rocket docket (37 C.F.R. § 1.155) requires the submission of a $900.00 fee, formal drawings which include appropriate shading and thus meet the requirements of 37 C.F.R. § 1.84, a statement that a pre-examination search was conducted and indicating the field of search, an Information Disclosure Statement, and an application which is in condition for examination, i.e., the application is complete and includes an executed Declaration. The goal under this system for accelerated examination is an average time to first action of 35-45 days and the time to issue following payment of the issue fee being approximately 4-6 weeks.

Accelerated examination of a design patent application may also be requested under 37 C.F.R. § 1.102(d) by way of a petition to make special. Such a petition requires the petition fee of $130.00, formal drawings, a statement that a pre-examination search was conducted and indicating the field of search, and an Information Disclosure Statement including a detailed discussion of the references and pointing out with particularity how the claimed subject matter is patentable over the references. When filed as a complete application including an executed Declaration and formal drawings, applications under this system are granted in approximately 6-9 months.

The priority period for filing an application in a foreign country and claiming priority to the U.S. design patent application is 6 months, not 12 months as for a utility patent application. Design applications also cannot be foreign filed through the Patent Cooperation Treaty or the European Patent Office, although a European Community design right will be possible at some point in the near future.

The determination of design infringement is limited by the point of novelty test. More specifically, the point of novelty test requires that no matter how similar the designs are, there is no infringement unless the accused product also incorporates the novel elements that distinguish the patented design from the prior art. In other words, the basis for granting the design patent must appear in the accused design. It is also irrelevant whether old features in the claimed design are found in the accused device--as long as the overall resemblance is substantially the same. Thus, the

scope of the patented design claim depends upon the "points of novelty" that distinguish it from the prior art.

The evaluation of design patent infringement is further complicated by requiring a differentiation between functional and ornamental features of the design. That is, where a design is composed of functional and ornamental features, in order to prove infringement there must be substantial similarity "in the eye of the ordinary observer" of the features that are common to both the claimed design and the accused product, and which are ornamental.

A design patent claim is interpreted by reference to the patent documents, the claim and the description, the prosecution history, and the prior art. Where a design contains both functional and non-functional elements, the scope of the claim must be construed in order to identify the non-functional aspects of the design as shown in the patent.

2.5.2 Design Patent Infringement Remedies

Under 35 U.S.C. § 289, a design patent owner may recover the total profit made by the infringer on his sales of the infringing products. This is advantageous to the patentee because it does not require disclosure of any financial records on the patentee's part for calculation of reasonable royalty or lost profit. The entire focus thus being on the infringer and his financial records tends to encourage the infringer to reach a speedy settlement.

2.5.3 Design Patents are Cost Effective

Design patents are relatively inexpensive to obtain. The majority of design patent applications proceed to allowance without extended prosecution or any rejections over prior art. Design patents are not subject to 18 month publication or patent term adjustments. A U.S. design patent has 14-year term which generally encompasses the commercial life of an article of manufacture and there are no annuity or maintenance fees required to maintain a design patent in force for the entire 14 years.

2.6 Further Recommendations

As should be appreciated, the U.S. patent system is a continuously evolving system, wherein significant changes occur frequently. Information concerning new developments is frequently posted on the website of the U.S. Patent & Trademark Office, or may be available through some of the organizations dedicated to intellectually property. Two of the better known organizations are the Section of Intellectual Property Law of the American Bar Association (www.abanet.org/intelprop/home.html) and the American Intellectual Property Law Organization (www.aipla.org). Those groups frequently hold training seminars and publish useful information.

Serious practitioners should be constantly alert for new developments in the law.

Chapter 3 English Writing for Patent Applications

© **Neil McArdle and Joel T. Muraoka**

Patents are peculiar documents in that they contain a mixture of technical language and legal language and often use strange, antiquated expressions. At first sight, a patent appears to be something like a scientific paper combined with a legal document. The legal language mainly occurs in the claims, and there are a few other expressions commonly used in the Background of the Invention, Objects and Summary, and Detailed Description of the Preferred Embodiments (see section 6 for a description of common expressions in patents). The other parts of the application contain technical descriptions, and therefore, the guidelines and advice generally applied to technical and scientific writing also apply to these sections. In this chapter we briefly outline some guidelines and advice for writing good English in patent applications.

We have grouped the guidelines and advice into four sections: general advice, including things to consider before you begin writing; advice and tips relating to grammar and language; advice related to formatting, layout, and punctuation; and a list of things to check after you have finished writing.

General Advice and Points to Consider Before Writing

Before writing any document, whether it be a letter, a report, a paper, a book, an article, or an patent application, you must first ask yourself "Who is the reader?" and "What is the document for?". In the first instance the reader of a patent application will be an examiner at the United States Patent and Trademark Office (USPTO). Basically, the principal purpose of

a patent application is to convince the examiner that your invention is novel and patentable according to the rules set down by U.S. statute. Also, your application should fully disclose your invention so that "one skilled in the art" can practice it. Therefore you must describe your invention to a sufficient level of detail and clarity to achieve this. You may assume that the patent examiner and "one skilled in the art" are knowledgeable about the technology of your invention, so there is no need to define and describe in great detail any features, equipment, processes, or procedures that are well-known in this technical field, as you would do if writing an article for a non-technical reader. However, after a patent is granted, it may also be read by potential licensees and by judges and juries if the patent is the subject of litigation, and therefore, depending on the difficulty of the subject matter, you may wish to be somewhat more explicit than if writing only for one skilled in the art.

Organization: In the description of the embodiments, break-up your description into logical sections. As in any other kind of technical writing, it is useful to use a top-down approach; that is, start by writing main section headings, such as structure, operation, and advantages, and then gradually add more detail by breaking down each section into smaller, more-manageable sections. Refer to the drawings when describing the main structure and operation of your invention and make sure you describe all elements, the relationship or connection between them, and their features in a logical order.

As in technical writing, three very important points of advice in writing a patent application are: keep it simple, keep it short, and talk about one thing at a time.

Keep it simple: A patent application is not a work of literature. Do not write to impress the reader with your wide knowledge of English vocabulary or your grasp of complex grammar. Do not use a thesaurus to find alternative and fancy words. Write in simple, understandable language and avoid the use of complex grammatical constructions, such as many nested clauses. You can look at previously published technical papers or patent applications in the same technical field, preferably written by native English speakers, to find commonly used words and expressions.

Keep it short: Whether you are working from a Japanese draft or whether you are writing directly in English, keep your sentences short and concise (except in the claims, of course, which must be single sentences). Omit any unnecessary or redundant words. Repetition, however, is common throughout different parts of the specification; for example, very similar descriptions are given in the Objects and Summary, the Detailed Description of the Preferred Embodiments, and the Claims.

Talk about one thing at a time: Although you might be able to use fewer words by using descriptions like "A and B are connected to 1 and 2, respectively", this type of sentence can become very confusing when the names of A, B, 1, and 2 are long, when there is a mixture of singular and plural forms, or when there are additional relative clauses. Try to describe things separately, and one thing at a time; for example, use "A is connected to 1 and B is connected to 2".

An example of using these three points of advice is shown below. Instead of the long, complex sentence in No. 1, split it into shorter, simpler sentences, as shown in No. 2:

No. 1 (Long, complex sentence):

A switching element, which may be a thin-film transistor or a thin-film diode in the case of an active matrix display or a passive matrix display, respectively, is provided at each intersection of the scanning lines and data lines, which extend in the horizontal direction and the vertical direction and which are made of a metal, such as aluminum, to form an array of pixels.

No. 2 (Shorter, clearer sentences – Better):

An array of pixels is formed by providing a switching element at each intersection of the scanning lines and the data lines. The scanning lines extend in the horizontal direction and the data lines extend in the vertical direction. The scanning lines are made of a metal, such as aluminum. The switching element may be a thin-film transistor in the case of an active matrix display, or a thin-film diode in the case of a passive matrix display.

Be consistent: Once you have decided on a particular name for an element of your invention, use that name consistently throughout the application. Do not vary the terminology. If you do, the reader may think that you are talking about a different thing. For example, if you first call an element "a detection unit", do not refer to it later as "the detecting device."

Before You Begin Writing Your Application...

Before you begin writing your Application in English, whether you are working from a Japanese patent application or will be writing directly in English, there are a number of differences between Japanese applications and US applications that you should bear in mind. Considering these problems *before* you write will help you avoid errors and will make the editing process at the end much easier.

First, look at the Drawings.

Be sure that all the parts you intend to claim are shown and are numbered in the drawings. Make corrections or notes to any apparent errors.

If a part is numbered and the meaning of the part is explained in the specification, there is no need to label the part with a word. Parts that are not numbered, such as boxes in a flow chart, will need to be translated.

Renumber "Fig. 1 (a), (b), and (c)" as "Fig. 1A, Fig. 1B, and Fig. 1C" etc. Be sure you refer to these Figures consistently throughout the specification. For example, in this situation, there is no Fig. 1; there are only "Fig. 1A, Fig. 1B, and Fig. 1C" and they should be referred to as such.

If any symbols appear which are used in Japanese but are not used in English, change them to English symbols, or substitute a word for the symbol. For example, O does not apparently mean "good" in English. Change it to the word good, or be sure there is an explanation of the meaning of such symbols somewhere in the specification.

If you have a Japanese application or a Japanese draft to work from, and if you did not write the application or draft yourself, there may be terms for which the meaning is unclear to you. Read the entire application or draft before you start writing in English. There will probably be either explicit explanations of the meanings of these words or discussions from which you can determine the meanings from context.

Because inventorship is very important in US applications, determine whether there is one inventor or more than one inventor, and refer to the "inventor" or "inventors" consistently throughout the application.

Consider the different order of the sections in a Japanese application and a US application. For example, in a US application, the claims go after the specification. If you have a Japanese draft to work from, number the sections in the order in which they should appear in the US application.

In Japanese applications, the present invention is sometimes discussed at the end of the Background Art; in a US application, this belongs in the Summary of the Invention.

The content and style of US claims is very different from the content and style of Japanese claims. It will be helpful to rewrite the claims in Japanese exactly as you would like them to appear in the US application before writing the claims in English.

Grammar and language

Use US spelling: Do not use British-English spelling. For example, use: color, not colour; neighbor, not neighbour, etc. Any good English dictionary should list both US and British spellings.

Passive and active voices: When writing a paper for publication in a technical or scientific journal, it is generally advised that you should always use the active voice. In patent applications, however, the passive voice is very common. Not many applicants use expressions like "We measured the...", "We then connected the device to a...", or "I will describe my invention below...". The passive voice is quite acceptable. For example: "...was measured", "the device is connected to a...", "the invention is described below...".

Tenses: In a patent application, as in general technical or scientific writing, the present tense is normally used for a general discussion and description of the invention, embodiments, structures, components etc., and past tense is normally used for things that were actually done, made, or measured. For example, if you say "the laser was provided with metal mirrors", this sounds like it was actually done. If you simply wish to describe the structure of the laser in your

invention, you should say “the laser is provided with metal mirrors”. However, if the application includes Examples, which are common in chemical inventions, where specific dimensions, components, and manufacturing conditions are given, then you should use the past tense to indicate that these Examples were actually made.

Use of "that" and "which": "That" and "which" (sometimes with a comma) are used to introduce restrictive and non-restrictive clauses, also known as defining and non-defining clauses. Consider the two sentences: (a) Bicycles, which have one wheel, are difficult to ride; and (b) Bicycles that have one wheel are difficult to ride. The clause ",which have one wheel" in sentence (a) is called a non-restrictive clause because it does not restrict the subject to a particular group of bicycles; rather it adds some additional, but non-essential, information to the statement "bicycles are difficult to ride". Restated this sentence means: bicycles are difficult to ride, and incidentally, bicycles have one wheel (neither statement is true!). On the other hand, the clause "that have one wheel" in sentence (b) is called a restrictive clause because it restricts the subject of "are difficult to ride" to only the group of bicycles having one wheel, not all bicycles. The meanings of (a) and (b) are completely different. It is often difficult to decide whether a clause should be restrictive or non-restrictive, but as a simple test, since a non-restrictive clause adds some additional, non-essential information to a sentence, the basic meaning of the sentence should not change if you remove it.

Hyphenate compound modifiers: Two or more words forming a compound modifier (or adjective) for an element should be

hyphenated. For example, use “a metal-layer-forming device” instead of “a metal layer forming device” (which is ambiguous) or “a metal layer-forming device” (which means that the device is made of metal, not the layer).

Use of "a" and "the": For the second and subsequent embodiments, each element can be introduced again with the article "a", even if it was mentioned in the first embodiment. That is, each embodiment can be read and understood independently. However, if the second and subsequent embodiments only slightly modify the first embodiment, then you can use "the" for elements that were mentioned previously, and use "a" for any new elements.

Use of "a" and "an": Usually "a" is used before a consonant and "an" is used before a vowel; however, there are some well-known exceptions to this rule. If a word beginning with a vowel *is pronounced* as a consonant, then "a" should be used instead of "an". Examples of this are "unique", "university", "uniform", which are all pronounced with a "YOO" sound. This rule also applies to abbreviations such as "SAT", which starts with a consonant but is actually pronounced as a vowel "ESS-AY-TEE". Therefore "an SAT test" is used rather than "a SAT test". Chemical elements are read by word rather than by chemical symbol. For example, “a Ag layer” is read as “a silver layer”, not “an AY-GEE layer”.

Word endings -ing, -ed, -ion: In English, the word endings -ing, -ed, and -ion have different meanings. For example, the Japanese 接続部 could be translated as connecting unit, connected unit, or connection unit. The ending -ing usually implies the function of the unit, that is, "connecting unit" is a unit which is used for connecting one thing to another thing. The

ending -ed implies that the unit is the object of connection, that is, the unit itself is connected to something. The ending -ion is neutral and could mean either.

Subjunctive: In English, the subjunctive is used if a sentence includes a clause expressing statements of necessity ("it is necessary that..."), desire ("it is preferable that..."), demands ("he insisted that..."), and suggestions ("I suggested that..."). In technical writing, statements of necessity and desire are most common.

If a sentence begins with one of these clauses, then the main verb following this clause should be in the subjunctive form, rather than the usual indicative form. Some examples are shown below:

It is necessary that the output terminal ***be*** connected to the signal processor.
(**Not:** It is necessary that the output terminal ***is*** connected to the signal processor.)

It is preferable that the mixture ***contain*** 5% by weight of iron.
(**Not:** It is preferable that the mixture ***contains*** 5% by weight of iron.")

Abbreviations: The first time you use an abbreviation, unless it is a very common abbreviation such as LCD or FET, you should define it. You can use a form like this: A thin film transistor (TFT) is formed at each pixel.

Contractions: Do not use contractions such as can't, don't, won't, didn't etc. Instead, use cannot, do not, will not, did not, etc.

Pronouns: Try not to use “it”, “they”, or “them” as pronouns. Replace these words with the words they refer to. For example, in “The arm 4 and the leg 12 are connected to the torso 17, and they are made of metal”. Does “they” refer to arm 4 and leg 12, or does it refer to arm 4, leg 12, and torso 17?

Data: Strictly speaking “data” is a plural noun (the singular form is “datum”), however, nowadays, data can be used a either a singular or plural noun. Therefore, “data is transmitted over the network” or “data are transmitted over the network” are both OK, although the singular form may be more common these days.

Legal words: Use legal language such as "said" or "comprising" only in the Claims; the Background of the Invention, Objects and Summary, Detailed Description of the Preferred Embodiments, and Abstract should contain normal English.

Renderings of Katakana Words: There are many common terms in English which may cause confusion in translations. チップ: chip ≠ tip; レジスタ: register ≠ resistor; バルブ: bulb ≠ valve. Beware of katakana words which sound like English, but are not. バン: “van” or “wagon” in certain contexts; ヒップ: “buttocks” or “rear” is correct, “hip” is not correct; ステンレス: "stainless steel" is correct, just "stainless" is not correct; VTR is VCR in English. There are many, many problems which can be caused by the mistranslation of katakana words, so beware!

Easily confused words: Be careful not to confuse the following pairs: “everyday” and “every day”; “anyone” and “any one”; “anyway” and “any way”; "may be" and "maybe"; “cannot” and “can not”. The space is very important!

"cannot" is almost always one word (no space). It is very rare for it to be two words ("can not"). The meanings of "cannot" and "can not" are the opposite. In patents, it is almost always "cannot".

Example

A spaceship cannot travel faster than the speed of light.

You can go, or you can not go. It doesn't matter which you choose.

Easily confused symbols: Many symbols look alike but are different. On the other hand, some symbols look different in different fonts.

Such problems were usually not serious since the reader could determine the meanings of symbols by context. However, most patent information will soon become electronic, and computers process symbols very differently. Symbols which appear to be similar or the same to a human may be completely different to a computer, which processes symbols as ASCII code, and symbols which may appear to be different to a reader may be interpreted to be the same by a computer.

For example, the symbol β (Greek beta) and the symbol ß (German "ss") do not have the same ASCII code, even though they look alike.

Use of an incorrect symbol or inconsistent use of a symbol in a patent application may cause serious problems.

Here are some examples of symbols which look similar but are in fact different.

β ≠ ß (Greek letter beta ≠ German "ss")

ρ ≠ p (Greek letter rho ≠ English letter p)

∅ ≠ φ ≠ ø ≠ θ

(diameter symbol ≠ Greek letter phi ≠ the letter ø ≠ Greek letter θ)

It is best to avoid using the ∅ (diameter symbol). Write the word "diameter" instead, or omit translating the word when it is unnecessary. For example, "a diameter of 2 cm ∅" is often written in Japanese. This should be "a diameter of 2 cm" when translated into English.

1 ≠ l ≠ I (one ≠ letter ell ≠ capital letter I in some fonts)

0 ≠ O (zero ≠ letter o)

A degree symbol is not a superscripted letter o or zero. There is a separate degree sign.

On the other hand, some symbols which appear to be identical may in fact be different

Β ≠ B (Greek capital beta ≠ English capital bee)

Also, be careful to turn OFF autocorrect. If a lower case Greek letter beta (β) is typed at the beginning of a sentence, as may happen for chemical compounds, autocorrect may immediately change it to a capital Beta (Β), which looks like an English capital B!

The following are not English symbols; avoid using them.

Japanese asterisk ※

Circled numbers ①, ②, ③, ...

×, △, and ○, meaning bad, average, and good, should be written out in words instead.

Do not use the mark "~" to indicate "to". Write "Figs. 1~3" as "Figs. 1 to 3".

The above are just a few examples of problems which can occur in translation. Whenever you encounter a new word or symbol, you should try to verify your understanding of how it should be rendered in English.

In addition, you may find that some special symbols are not supported by your printer, and although the symbol appears correctly on your computer screen, when you print the page, the special symbols print as blank spaces! This is one reason you must review a *printed paper copy* of your application before submission.

Use a standard font such as Courier New or Times New Roman. Avoid using other fonts and avoid mixing fonts if at all possible.

In the Claims: If the preamble is long, repeat the subject of the claim before the word "comprising". For example, instead of "An image processing apparatus for removing noise in images captured by a video camera, comprising:", it would be better to use "An image processing apparatus for removing noise in images captured by a video camera, the image processing apparatus comprising:", otherwise the subject of comprising may be unclear; the subject may appear to be "video camera" rather than "image processing apparatus"

Don't use abbreviations and don't put words in parentheses. For example, don't use "the system is provided with an input element (selecting unit)". This could mean that the system is provided with an input element OR a selecting unit, or it could mean that input element and selecting unit are two names for the same thing.

Spaces, underlining, and [ ]: For *applications* for the *US*, computer files *must not* contain non-breaking spaces and non-breaking hyphens. When files containing non-breaking characters are submitted to the USPTO using the EFS (Electronic Filing System), words after the non-breaking characters disappear! Also, avoid unnecessary underlining or use of [ ] because these are used to indicate inserted text and deleted text, respectively, when making amendments.

Formatting, Layout, and Punctuation

The formatting conventions of a patent application are *not* the same as those used in the final published version of the patent. Therefore, the line spacing, indenting rules, word spacing, text styles such as bold, normal, or italic, and so on are not necessarily the same as in the final published version. Use the guidelines suggested below. The typesetter at the USPTO will reformat and restyle your text in accordance with their own conventions.

Before you actually begin typing, open a file and set the following. Do not type your application and then try to change these settings later because this may cause the data in the file to become corrupted!

- Use A4 paper.

- If you are using Microsoft Word, turn off the Autocorrect feature, but turn on automatic spell checking.
- Choose a standard font such as Times New Roman or Courier New. If at all possible, do not mix fonts. If you need a special symbol which is not on the keyboard, insert the special symbol, in the same font you have chosen, for example, using the Insert Symbol function of Microsoft Word. If you use unusual symbols, even though the symbols appear on the screen correctly, make sure that they print correctly. It is not uncommon for unusual symbols to appear on the screen but for a blank space to appear when printed out on paper. If a symbol will not print, try choosing Bitmap Print and then printing. If the symbol still will not print, you may have to choose a different symbol or replace the symbol with the entire word spelled out.
- Choose Font Size 12 point.
- Set margins to 2.5 cm at the top, bottom, left, and right.
- Set page numbers, centered, at the top.
- Set left justified.
- Set double spaced lines (or whatever setting is necessary so that there are approximately 25 lines per page).
- Paragraphs begin with an indentation of 5 spaces or a 1-cm tab.
- Do not skip a line between paragraphs, but do skip a line between sections.

- Capitalization of section headings: Capitalize the first letter of each word that is a noun, verb, or adjective. Do not capitalize articles (a/the), prepositions, and conjunctions.

- Use of semicolons and commas: A semicolon is a stronger separator than a comma. Semicolons can often make a long, complex description easier to read and makes the structure clear. Use semicolons to separate a list of items, especially if the text of those items contains commas and clauses. For example:

  Original

  The communication apparatus contains a main unit, which is mountable on the surface of a supporting plate and which contains the input/output components, the processing components, and the display components, a subunit, which is mountable on the main unit and which contains a speaker and a microphone, and a connecting cable which connects the main unit and the sub-unit.

  Modified

  The communication apparatus contains a main unit, which is mountable on the surface of a supporting plate and which contains the input/output components, the processing components, and the display components; a subunit, which is mountable on the main unit and which contains a speaker and a microphone; and a connecting cable which connects the main unit and the subunit.

- There is one space after a comma, semicolon, and period after an abbreviation.

- There are two spaces after a period at the end of a sentence. (Question marks and exclamation points at the ends of sentences should be avoided.)

- There are no spaces between a number and °C and between a number and the % sign.

- There is a space between most other numbers and units. Example: 10 mm (not 10mm).

- Plural forms of abbreviations: In abbreviations, the plural of LCD is LCDs, not LCD's or LCDS.

- Parentheses "( )", brackets "[ ]", and braces "{ }" are used in English; other offsetting marks such as "< >", "【 】", "《 》" etc., should be avoided. Also, do not use parentheses "( )", brackets "[ ]", or braces "{ }" around section headings (which is often done in Japanese documents).

- There are many symbols used in Japanese which are not used in English. Such symbols should be avoided. Change the Japanese symbols ◎ to "very good", ○ to "good", △ to "average", and X to "poor", or other such appropriate terms.

- Avoid using underlining and brackets in a patent application manuscript. In a response to an Office Action, underlining means to add text and brackets mean to delete text, which may be very confusing if there are already sections in the application which are underlined or enclosed in brackets.

- There is one space before "(", but no space after, and there is no space before ")", but one space after.

- Although the US English convention is to move a punctuation mark inside quotation marks, even if the punctuation mark is not part of the quotation, do not do this in patent application manuscripts, Office Action Responses, etc. Place quotation marks around the quoted material only.

- Change “parts 1,2” to “parts 1 and 2”.

- Don’t use slashes between words, for example, “the computer is provided with input/output terminals”. This is ambiguous. Does it mean (i) input terminals AND output terminals, (ii) input terminals OR output terminals, or (iii) input terminals AND/OR output terminals?

- In a range of values, replace the Japanese character ~ with “to”. For example, instead of “4 ~ 25 electrodes”, write “4 to 25 electrodes”..

- When a sentence is composed of two independent clauses joined by a conjunction, insert a comma before the conjunction. For example, “The substrate 45 is made of silicon, and the conductive layer is made of aluminum” and “The etching gas A contains element X, but the etching gas B contains element Y”.

- In a list of three or more items, use a comma after each item, except the last one. For example, “The compound contains 10% zinc, 45% iron, 35% platinum, and 10% carbon”.

- Use a hyphen when expressing fractions such as “one-half”, “one-quarter”, etc.

- Don’t start a sentence with a number. For example, instead of “4 rotating axes are provided in the engine”, use “Four rotating axes are provided in the engine”.

- Paragraph numbering: The USPTO recently introduced an optional paragraph numbering system to aid in the examination and prosecution process. Basically, the rules are as follows:

- Each paragraph should contain a four digit number, enclosed in square brackets and emboldened, at the beginning of the line. The text should be separated from the number by four spaces.
- Section headings such as "Field of the Invention", "Summary of the invention", "First Embodiment", etc. should not be numbered.
- A paragraph may contain nontext elements such as tables, mathematical formulae, chemical structures, numbered lists, bulleted lists, etc. The nontext elements should be considered to form part of the paragraph above or around the nontext elements, and should not be independently numbered.

Things to Check After Writing

After writing your patent application, please check the following:

- Read and check your application carefully; if possible, try to wait at least one day before checking it.
- If possible, have someone else proofread your application.
- Check for spelling errors by using the spell-check feature of your word processor; however, be careful with errors that the spell checker will not find, such as using “their” instead of “there" and using "forgoing" (which means "without") instead of "foregoing" (which means "the above").
- Check for grammatical errors such as subject-verb agreement (use the singular form of a verb with a singular subject and the plural form of a verb with a plural subject).

- Check for consistent use of terms. Make sure the same name is used for each numbered element throughout the document.
- Reference numerals and drawings: Is every reference numeral used in the description also included in the drawings? Is every reference numeral included in the drawings also mentioned in the description? Is every reference numeral uniquely used to describe an element?

Chapter 4 Common Expressions in Patents

The following are some expressions commonly appearing in US patent applications. Each expression is listed in the section in which it most commonly appears.

Bear in mind that the purpose of the Specification and Drawings is to disclose the invention so that it can be practiced by one skilled in the art, whereas the purpose of the Claims is to claim the broadest possible scope of your invention as the disclosure will allow. Do not confuse these two issues.

The title of the application is NOT preceded by a heading. That is, there is no heading "title". The title of the application should be all in capital letters and should not exceed seven words (if possible).
The title should not use the articles "a", "an", and "the", and should not use the words "new" or "novel". Also, the title should not contain the word "it" and should instead use the words "thereof" (=of it), "therefor" (=for it)(note that "therefor" and "therefore" are two different words), and "therewith" (=with it).

CUTTING DEVICE, METHOD OF MANUFACTURE THEREOF, MOLD THEREFOR, AND APPARATUS THEREWITH

Background of the Invention

Field of the Invention

> "the present invention"
> "relates to"
> The present invention relates to cutting devices...
>
> "and in particular, relates to"
> "further relates to"
> The present invention relates to cutting devices, and in particular, relates to cutting devices used for cutting sheet metal. The present invention further relates to methods of manufacturing cutting devices, molds for cutting devices, and apparatuses on which cutting devices are mounted.

Description of Related Art

Because the term "prior art" has a particular legal meaning in the US, and because if you mistakenly refer to something as being "prior art" you cannot subsequently retract that statement (estoppel), it is best to avoid using the term "prior art". The words "conventionally", "conventional", "generally", and "typically" should be used instead.

> "Conventionally,"
> Conventionally, cutting devices used to cut sheet metal are...
>
> "However, there are problems in"
> However, in the cutting process, there are problems in that cutting blades may break easily or be otherwise damaged.
>
> "Therefore, there is a demand for"
> Therefore, there is a demand for cutting blades that are less likely to break.

Do not discuss the present invention in this section even though Japanese patent applications often state how the present invention overcomes the problems in the conventional art in this section. Move such comments to the next section.

Summary of the Invention

Typically, this section begins by mentioning that, in view of the above problems, the present invention seeks to overcome the problems in the conventional art.

> In view of the above problems in the conventional art, the present invention has as an object to provide a cutting blade with a lower risk of fracture.

Other than mentioning that the present invention seeks to overcome the problems in the conventional art, it would be best to avoid discussing anything other than the present invention in this section. In particular, since you should have already completely discussed the conventional art in the Description of Related Art section above, you should not here again discuss the conventional art, nor should you discuss additional conventional art. (If it is, for some reason, necessary to discuss the conventional art in parts of the application other than the Description of Related Art, be sure to refer to the related art as being "conventional"; do not refer to the related art as an "invention" because this will be very confusing. In short, the word "invention" should be applied only to the invention of your application, not to matters disclosed in publications.)

"It is an object of the present invention"/"the present invention has as an object to"
The use of the word "object" in this section is peculiar to patents.
In the Summary of the Invention, "object" means "objective" or "goal". Always say "**an** object", not "**the** object" since your invention will undoubtedly have more than one goal.

> It is an object of the present invention to provide a cutting method for cutting stainless steel.

Do not refer to multiple inventions as is often done in Japanese patent applications. A US patent application must be directed to only *one* invention; the claims claim different aspects of this one invention. Therefore, your invention should always be referred to in the singular.

In a US application, usually, only the inventor(s) is/are discussed. In the US, only an inventor may apply for a patent, and therefore the inventor *is* the applicant. The inventor may then assign his application to an assignee (such as the company he works for).

Avoid use of the words "said", "means", "comprising" and other claim language in this section. Avoid the use of claim style in the Summary of the Invention (that is, do not start each element of the invention on a new line). Make sure sentences are complete and are in normal narrative English rather than being in claim language and style.

> For example, here is how an embodiment would be described in the Claims and in the Summary of the Invention.
>
> > What is claimed is:
> > 1. A device comprising:
> > Part A;
> > Part B; and
> > Part C.
> >
> > Summary of the Invention
> > In an aspect of the present invention, a device comprises Part A, Part B, and Part C.

The Summary of the Invention should briefly summarize the invention, particularly mentioning the aspects of the invention you intend to claim. Do not refer directly to the claims in this section, i.e., do not write "In the present invention according to claim 1," in this section; instead, write "In a first aspect of the present invention,".

> In a first aspect of the present invention, a cutting device is made of a metal such as titanium and has a blade hardness within a particular range so as to reduce the risk of blade fracture.
> In a second aspect of the present invention, a...
> In a third aspect of the present invention, a...

Alternatively, if you do not wish to number the aspects of the invention, you may refer to the various aspects as follows.

> In an aspect of the invention, a cutting device is...
> In another aspect of the invention, a...
> In another aspect of the invention, a...
> In another aspect of the invention, a...

Brief Description of the Drawings

This section should very briefly describe what is in the drawings, and, if appropriate, the kind of view. Common views are plan view, top view, bottom view, front view,

rear view, elevation view, perspective view, exploded view and cross section.

“Figure” is abbreviated to “Fig.”, and “Figures” is abbreviated to “Figs.”

Japanese patent application drawings are usually numbered “Fig. 1, (a), (b), (c)”; however, for US applications, this should be written as “Fig. 1A”, “Fig. 1B”, and “Fig. 1C”.

> Fig. 1A is a top view, Fig. 1B is a front view, and Fig. 1C is a side view of the cutting device of the present invention.
>
> Figs. 2 and 3 shows a conventional cutting device.

(See also the last section below regarding the Drawings.)

Description of Preferred Embodiments

> embodiment/example/comparative example
> There should be no confusion between what constitutes your invention and what constitutes background art or comparative examples. The word “embodiment” should only be used to refer to your invention. An embodiment may have “examples”. Refer to everything else as “comparative examples”.
>
> > A first embodiment of the present invention will be illustrated by way of examples. The compositions of Examples 1, 2, and 3 of the present invention are shown in Table 1, and the compositions of Comparative Examples 1, 2, and 3 are shown in Table 2.
>
> a preferred embodiment
> A preferred embodiment of the present invention will be explained below.
>
> in case ≠ in case of ≠ in the case in which
> In case a blade breaks, replacement blades are provided.
> In case of blade breakage, it is possible to replace the blade.
> In the case in which a blade breaks due to cutting impact, the blade can be quickly replaced.
>
> “the scope of the invention”
> The embodiments are merely examples and do not limit the scope of the invention.

The following terms may not appear in some dictionaries and may be rejected by spellchecking software, but they are often used in patents.

> “therethrough” = through an object, through a place
> > A steel sheet is provided with a rod passing therethrough.
>
> “therebetween” = between two objects
> > Two steel sheets are provided with an adhesive therebetween.

"thereof" = of an object, of objects

A steel sheet has an oxide layer on one surface thereof.

"therein" = in an object, in objects

Water droplets may have particles contained therein.

"thereon" = on an object, on objects

A steel sheet may have a paint applied thereon.

"thereunder" = under an object, under objects

A washing machine has a drain disposed thereunder.

"therewith" = with an object, with objects

A paint is disclosed and a steel sheet therewith is also disclosed.

Claims start on a new page

The heading is "What is claimed is:".

Note that a claim is not a full sentence by itself. It will be a full sentence if you read "What is claimed is" and then the claim.

What is claimed is:

"comprising" ("comprising" means A ya B ya C ya (that is, A+B+C+perhaps other things); "consisting (essentially) of" means A to B to C (that is, A+B+C only). Therefore, you would almost always choose "comprising" because it will make the claim broader.)

1. A cutting blade **comprising** metal.

"consisting of"/"consisting essentially of"
If you wish to make your claim very narrow, you may use the phrase "consisting of" or "consisting essentially of". This will limit your claim to only the element(s) which is(are) named. These phrases are sometimes used in claims for chemical inventions.

1. A shampoo consisting essentially of water and a nonionic surfactant.

Writing a claim in this way would claim a shampoo containing only water and a nonionic surfactant. Surfactants other than nonionic surfactants would be excluded.

"means" (note that use of "means" is often avoided because the "means" may be understood to mean only those examples which are explicitly stated in the application, thus making the claim narrower than if words such as "device", "unit", "-er" (as in "holder" in the example below) were used.)

2. A cutting blade comprising a blade main body and a holding means for holding the blade main body.

2. A cutting blade comprising a blade main body and a hold**er** for holding the blade main body.

"further comprising"

3. A cutting blade according to one of Claims 1 and 2, **further comprising** a shield.

“a”/”the”/”said” (It is usually easier to use “a” for the first instance of a term, and to use “the” for each subsequent instance of the term rather than “said”. Using the word “said” can be tricky, and it may be best simply to avoid using it. Avoid using “the said”.

> 4. **A** cutting blade according to Claim 1, further comprising ***a*** diamond film coating, ***the*** diamond film coating disposed on a cutting edge of **the** cutting blade.

“wherein” (“wherein” means “in which”. This is sometimes translated as “characterized in that” in Japanese applications.)

> 5. A cutting blade according to Claim 2, wherein the holding means is longer than the blade main body.
> 5. A cutting blade according to Claim 2, wherein the holder is longer than the blade main body.

“comprising the steps of”

> 6. A method of manufacturing a cutting blade, comprising the steps of:
> forming a cutting blade preform;
> sharpening the cutting blade preform to form a finished blade; and
> mounting the finished blade.

The Abstract of the Disclosure starts on a new page.

`Abstract of the Disclosure`

In this section, briefly describe the invention in up to150 words. Do not use “said” or claim language or style.

Drawings (starting on a new page, no heading)

Japanese application drawings are usually numbered “Fig. 1, (a), (b), (c)”; however, for US applications, this should be rewritten as “Fig. 1A”, “Fig. 1B”, and “Fig. 1C”.

There should be no titles of drawings.
The Examiner may require the addition of the legend “Prior Art” to drawings which show the conventional art if such a legend was not applied to a drawing of the conventional art when the application was filed. Be careful not to accidentally label any drawing showing your invention as being “Prior Art”!

Auxiliary Verbs

Modal auxiliary verbs such as “can”, “may”, and “must”, basically expresses the writer’s judgment of the degree to which a proposition of a clause is true.

In patents, these words usually indicate 1) that there is a possibility that an event will occur, 2) that it is necessary that an event occur, or 3) that an event is predicted to occur.

These words each have many possible senses in English, but only senses common in technical writing are discussed below.

can (possibility) Thoroughly debugged software **can** still produce erroneous output if there are clock errors. (It is possible that thoroughly debugged software will produce erroneous output if there are clock errors, so you should not believe that just because you have debugged the software that there will never be any output errors. Such errors are definitely possible.)

(ability) Diamond **can** cut glass better than most other materials **can**. (Diamond is able to cut glass better than most other materials can cut glass.)

may (possibility) Thoroughly debugged software **may** still produce erroneous output if there are clock errors. (It is possible that thoroughly debugged software will produce erroneous output if there are clock errors. We cannot say that such errors will not occur.)

must (necessity) In order to produce superior microchips, the manufacturing environment **must** be free of dust. (Only when there is no dust in the manufacturing environment can superior microchips be produced.)

should (expectation) The temperature **should** increase due to the reaction. (It is expected that the reaction will cause the temperature to increase.)

(obligation) The temperature **should** be increased during the reaction. (It is desirable that the temperature be increased during the reaction because this will increase yield or produce some other desirable outcome. Therefore, it is desirable to increase the temperature rather than not to do so.)

will (repeated observation) Diamond **will** cut glass. (It is well known, through repeated observation, that diamond has the ability to cut glass.)

(prediction in a specific case) The diamond knife **will** cut the glass sheet. (The writer is certain of the outcome in a specific instance.)

Further examples of modal auxiliary verbs and other word pairs or groups that may present problems in translation from Japanese to English follow.

will The cutter **will** cut the substrate. (It is certain that the substrate will be cut by the cutter.)

can The cutter **can** cut the substrate. (The cutter is able to cut the substrate, although it is uncertain whether or not this will happen.)

may The cutter **may** cut the substrate. (It is possible that the cutter will cut the substrate, if, for example, it moves in an undesirable direction, although it is uncertain whether this will happen.)

is/were

In situations about reality, "is/was" is used; in situations which are hypothetical or are contrary to reality, "were" is used.

The glass **is** polished and therefore reflects light.

If the glass **were** polished, it would reflect light. (The glass is not now polished, but if the glass were polished, it would reflect light.)

would If the cutter were aligned, it **would** cut the substrate properly. (The cutter will cut the substrate properly when the cutter is aligned, but the cutter is not aligned, so the substrate cannot be cut properly.)

could If the cutter were aligned, it **could** cut the substrate properly. (The cutter might, or would be able to, cut the substrate properly when the cutter is aligned, but the cutter is not aligned, so the substrate cannot be cut properly.)

should If the cutter were aligned, it **should** cut the substrate properly. (It is believed that the cutter will cut the substrate appropriately when the cutter is aligned.)

should The cutter **should** cut the substrate. (It would be desirable for the cutter to cut the substrate. It is believed that the cutter will cut the substrate.)

must The cutter **must** cut the substrate. (It is necessary that the cutter cut the substrate.)

is/be

When a simple action is being stated, use "is". However, when the desirability or undesirability of an action is being stated, use "be".

is The substrate **is** cut.

be It is **desirable** that the substrate **be** cut.

It is **undesirable** that the substrate **be** cut.

It is **necessary** that the substrate **be** cut.
It is **unnecessary** that the substrate **be** cut.
It is **required** that the substrate **be** cut.
It is **suggested** that the substrate **be** cut.