Intellectual Property - Patents

Background

A utility patent is government protection of an idea. Protection is quid pro quo[1]. To get a patent you must disclose the best method for execution. When the term of protection expires, society is advanced by the best execution of a good idea being clearly stated and becoming public domain. An invention must be unique and non-obvious to be patented. Unique means no one else has done it before. Non-obvious means that a person skilled-in-the art[2] would not typically come up with that solution given similar circumstances. This does not mean that the idea must be complex. Just look at the plastic spacer used in pizza delivery boxes, it was patented.

Utility

"Issued for the invention of a new and useful process, machine, manufacture, or composition of matter, or a new and useful improvement thereof, it generally permits its owner to exclude others from making, using, or selling the invention for a period of up to twenty years from the date of patent application filing." [3]

Design

"A design consists of the visual ornamental characteristics embodied in, or applied to, an article of manufacture. Since a design is manifested in appearance, the subject matter of a design patent application may relate to the configuration or shape of an article, to the surface ornamentation applied to an article, or to the combination of configuration and surface ornamentation. A design for surface ornamentation is inseparable from the article to which it is applied and cannot exist alone. It must be a definite pattern of surface ornamentation, applied to an article of manufacture."[4]

Design rights protect the visual design of a product that is not purely functional. Its aesthetic features are not imposed by technical requirements. It is almost the antithesis of form follows function. Visual appeal and novelty integrating function are required. Industrial design can be a two or three dimensional shape, pattern, composition of color, or combination that has esthetic value.

Herman Miller's Aeron® desk chair is a classic example. Its smooth flowing lines have are so beautiful it was an exhibit at the New York Museum of Modern Art. It is also one of the most comfortable chairs for task work on the market.

Getting a patent

The biggest decision to make is if the value of the patent is worth the cost of obtaining it. A patent's value can come from several factors. It can prevent a competitor from using your idea. It can be licensed to companies paying you a royalty. Or, it may simply give your product a marketing advantage by being able to say it is patented. The actual patented feature may not give much benefit, but most people are impressed when you advertise "*patented*" technology. **DON'T CHEAT**, it is illegal to advertise something as being patented if it is not.

First use a patent attorney. He is a professional to help you get the most benefit from your patent. If you do most of the research and preparatory work it will not be exorbitantly expensive. He will generally take whatever you give him and turn it into a document that is in the format

1 Getting something requires giving something in return
2 A person with significant experience in that area
3 US Patent and Trademark Office
4 US Patent and Trademark Office

expected by the patent office. You can get a good idea of how to structure a patent by reading existing patents.

Understand Your Patent

Make sure you understand everything that is written. Your patent attorney may not fully understand your invention and misrepresent your intents. Legalese is tough. But, it is only a math formula written as text. Break it up by using commas as parenthesis; with 'and's and 'or's in a Boolean logic string. If you hit unfamiliar jargon ask the lawyer. Sometimes a word is used because it has a special legal meaning. Just as a word in engineering may have a paragraph long definition.

1. Make sure you understand everything in the patent. Legalese is tough, and many times an engineer is tempted to let the lawyer worry about what it says. If this happens the content may not cover what you intended. A lawyer cannot understand your invention from a few hours of meetings as well as you do. Think of the patent as a math formula written as text. Break it up by using commas as parenthesis with and's and or's in a Boolean logic string. If you hit unfamiliar, jargon ask the lawyer. Sometimes, words and phrases are used to denote specific legal meaning. Just as a word in engineering may have a paragraph long definition. Make copies of the patent draft to mark up. Cut out the paragraphs, paste them to a larger sheet and dissect each sentence one by one if you have to. Take your time and be sure. After awhile you will find reading patents gets easier. Swap flowery legal jargon for more common place words; ex. glued for adhered.
2. Patent claims are the most important part. Generally I will flip directly to the claims first, and then read the rest of the patent. The claims are the portion actually protected by the patented. A claim describes, defines, and limits the exact features protected.
3. There are two goals in writing claims; protect the application for which the idea was developed and protect future use in applications inconceivable today.
4. Write each claim in two ways, general and specific. General and broad as possible so they can cover as much as possible. This is to get as big an umbrella as possible. In the future, someone might use your patent for a different application. If worded correctly you can still be covered.
5. Second, very specific in as many practical cases as you can think of. This is in case the general claims is over turned or deemed to not cover a specific application.
6. It is up to the patent applicant to do the research into the prior art (patents or information at large no matter how old) as completely as is reasonable. A patent attorney is good at finding them. You should get copies and work with the attorney to determine what parts of prior art apply to these patents.
7. The rest of the patent is fulfilling the quid-pro-quo. It defines the general field for someone who knows nothing about the subject and the best way to execute it. It is also background for others to help explain the meaning of a claim. Say a patent examiner. He specializes for these classes of patents, so he probably sees most or all patents for that class. But, he still is not as familiar as a person who developed the idea.

Reading Claims

Example from an actual patent:
What is claimed is:

1. A rotating, substantially horizontally oriented, motorized conveyor pulley drum in which an electric motor is enclosed said drum having a cylindrical inner surface, said drum containing a pool of oil but not being filled with oil, and a flexible sheet of magnetic material mounted on said cylindrical inner surface in direct contact with said oil, said

magnetic material having sufficient attraction and surface to attract and retain within said drum throughout the anticipated life of said pulley drum ferrous particles generated within said drum.

2. The pulley drum of claim 1 wherein said flexible sheet of magnetic material is adhered to said cylindrical inner surface.
3. The pulley drum of claim 1 wherein said flexible sheet of magnetic material covers at least one-third of said inner surface.
4. The method of protecting moving elements in a substantially horizontally oriented, rotating conveyor pulley drum with a cylindrical inner surface, said drum containing a pool of oil, but not being filled with oil, into which ferrous particles are introduced in the course of the operation of said drum, comprising securing to said cylindrical inner surface of said drum a flexible sheet of magnetic material for direct contact with said oil, said sheet material having sufficient attraction and sufficient surface to attract and hold said particles, and keeping said sheet of magnetic material and said held particles in place within said drum for the duration of the operating life of said drum.
5. The method of claim 4 wherein said flexible sheet of magnetic material covers at least one-third of said inner surface.

Claim 1 broken down:

1. (rotating) AND
2. (substantially horizontally oriented) AND
3. (motorized conveyor pulley drum in which an electric motor is enclosed said drum having a cylindrical inner surface) AND
4. (said drum containing a pool of oil but not being filled with oil) AND
5. (flexible sheet of magnetic material mounted on said cylindrical inner surface in direct contact with said oil) AND
6. (said magnetic material having sufficient attraction and surface to attract and retain within said drum throughout the anticipated life of said pulley drum ferrous particles generated within said drum)

Each section must be true to be covered by the patent. If the pulley is mounted vertically the unit does not meet claim 1, so the patent does not apply. A separate claim could cover that contingency. Which is why you need to understand exactly what is written.

When reviewing a patent the claims are the most important part. They are what is actually patented. Claims are a list of what you are "claiming" to be protected by the patent as your ideas. The rest is background that defines the general field for someone who knows nothing about the subject. The patent examiner, reviewing your application, specializes in that type of industry. But, he still is not as familiar as you or people in your industry. Background is also important because it may be used to help explain the meaning of a claim.

They should be listed in two ways. Very general so they can cover as much as possible. So if someone comes up with a slightly different way to use your idea you are still covered. The patent examiner will limit how far you can generalize your claims. Claims should also be written very specific. In case the general one gets rejected before the patent is issued or over turned after issue. Independent claims stand alone and are valid even if other claims are not met. Dependant claims call on all aspects of a previous claims plus additional restrictions. This is one way to make a broad general claim then get very specific.

Claims 1 and 4 are independent claims. Claims 2, 3 and 5 dependant on previous claims and focus on specific refinements. For claim 2 use the Boolean string from claim 1 and claim 2. Broken down:

1. (rotating) AND
2. (substantially horizontally oriented) AND
3. (motorized conveyor pulley drum in which an electric motor is enclosed said drum having a cylindrical inner surface) AND
4. (said drum containing a pool of oil but not being filled with oil) AND
5. (flexible sheet of magnetic material mounted on said cylindrical inner surface in direct contact with said oil) AND
6. (said magnetic material having sufficient attraction and surface to attract and retain within said drum throughout the anticipated life of said pulley drum ferrous particles generated within said drum) AND
7. (adhered ~glued~ to cylindrical inner surface)

Note that there are added fees for more claims. They can add several hundred dollars to the cost of a patent. They are not significant for corporations, but for small companies or individuals they may steer what you chose to put in the patent. Remember, this is a business decision. Can the money I make on the patent get back the money and time spent, with interest?

It is up to the patent applicant to do the research into the prior art as completely as is reasonable. Prior Art is existing patents and information at large (catalogs, articles, textbooks) no matter how old. A patent attorney is good at finding Prior Art. He will probably even have contacts at the Patent Office to ask for advice on researching prior art. One place to save some money is to do part of the research yourself.

Resources: http://www.uspto.gov/main/patents.htm

The Down Side of a Patent

You must disclose the best practice for using and implementing your idea in the patent application. If the patent is denied or when the patent protect term expires the information is public domain[5]. If the information you want to patent cannot be determined by somebody buying your product it may be best to keep it a trade secret[6].

About the author:
James K. Simonelli is a Licensed Professional Engineer with 30 years experience designing and troubleshooting machine automation, heavy duty equipment and industrial products. He has a broad background with department head roles in engineering, quality and business development in companies varying from startups, turnarounds to Fortune 100 corporations. Mr. Simonelli has served on committees developing industrial standards for the American Gear Manufacturers Association and the Hydraulics Institute.

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