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The Parts of a Patent, and their Functions

Before dealing with the various parts of a patent, and the function that each is expected to perform, it is first necessary to understand the role of a patent. The primary purpose is fairly clear: to provide an inventor with the greatest amount of protection possible for the invention. However, that ignores another critical aspect, for the granting of a patent which is the result of a bargain between the inventor and Canada. As Justice Binnie put it in the *AZT* case[1]"A patent, as has been said many times, is not intended as an accolade or civic award for ingenuity." It is a method by which inventive solutions to practical problems are coaxed into the public domain by the promise of a limited monopoly for a limited time. Disclosure is the *quid pro quo* for valuable proprietary rights to exclusivity which are entirely the statutory creature of the Patent Act. Monopolies are associated in the public mind with higher prices. The public should not be expected to pay an elevated price in exchange for speculation, or for the statement of "any mere scientific principle or abstract theorem" (s. 27(3)), or for the "discovery" of things that already exist, or are obvious. The patent monopoly should be purchased with the hard coinage of new, ingenious, useful and unobvious disclosures."

Consequently, the patent has two primary functions: the first is to provide a complete description of the invention so that any person skilled in the field to which it relates, using only the instructions provided, may make as complete use of the invention as the inventor herself; and, the second is to fence off that portion of the field to which the inventor claims the right of exclusive use. These two functions are set out in section 27 of the *Patent Act*[2]:

SPECIFICATION

(3) The specification of an invention must:

(a) correctly and fully describe the invention and its operation or use as contemplated by the inventor;

(b) set out clearly the various steps in a process, or the method of constructing, making, compounding or using a machine, manufacture or composition of matter, in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it pertains, or with which it is most closely connected, to make, construct, compound or use it;

(c) in the case of a machine, explain the principle of the machine and the best mode in which the inventor has contemplated the application of that principle; and

(d) in the case of a process, explain the necessary sequence, if any, of the various steps, so as to distinguish the invention from other inventions.

CLAIMS

(4) The specification must end with a claim or claims defining distinctly and in explicit terms the subject-matter of the invention for which an exclusive privilege or property is claimed.

Section 37 of the *Patent Act* adds a requirement that: "In the case of a machine, or in any other case in which an invention admits of illustration by means of drawings, the applicant shall, as part of the application, furnish drawings of the invention that clearly show all parts of the invention."

From these statutory requirements we know that the main part of the patent is the Specification, part of which explains the invention and its operation or use and the other part, called the claims, which define the subject-matter of the invention for which a monopoly is claimed. The drawings, which are required when the invention admits of illustration by means of drawings, are generally considered to be part of the description part of the specification. Not surprisingly, the part of the specification other than the claims is called the description[3].

While the description and the claims have different primary purposes, they are nevertheless closely linked to one another because they are both concerned with the invention. The most important evidence of this is the concept of "fair basis" which requires that a valid claim must be fully supported by the description. Another way of thinking about this is that the ability to claim a monopoly is limited by the extent of the disclosure - even if the inventor may have invented aspects of his invention which are not discussed in the description he cannot claim these aspects as he has not paid for them with the "hard coinage" of disclosure. At one time it was thought that a claim was supported by the description if a skilled worker in the field with which the patent was concerned could make at least one embodiment within the scope of the claim by following the directions given in the description. In the *Biogen*[4] case the House of Lords made it clear that the description had to give the notional skilled worker sufficient direction to make everything within the scope of the claims. In part this follows from the requirement that the description give sufficient direction that the skilled worker is able to practice the invention just was well as the inventor. In *Biogen* the main claim read as follows:

"A recombinant DNA molecule characterised by a DNA sequence coding for a polypeptide or a fragment thereof displaying HBV antigen specificity, said DNA sequence being operatively linked to an expression control sequence in the recombinant DNA molecule and being expressed to produce a polypeptide displaying HBV antigen specificity when a suitable host cell transformed with said recombinant molecule is cultured, the transformed host cell not producing any human serum proteins and any primate serum proteins other than the polypeptide displaying HBV antigen specificity."

Professor Murray's patent claimed priority from an earlier application. At the date of the priority document, the only available source of DNA from HBV was the infected particle itself, referred to as the "Dane particle." The priority document disclosed that since there was insufficient information known about the coding sequences, fragments of the Dane particle had been made with the use of restriction enzymes chosen on the basis that they would cleave the particle into large rather than small fragments. Restriction enzymes are enzymes that will break or cleave a DNA molecule at a particular sequence of base pairs. These enzymes make it possible to prepare selected fragments of DNA, which can then be manipulated or inserted into other DNA sequences. Using these large fragments and conventional methods, a recombinant DNA molecule had been made which was then expressed by conventional means in a conventional bacterial host.

Subsequent to the disclosure of the priority document, further work identified the DNA sequence of the Dane particle. With this knowledge, workers would chose restriction enzymes which would digest the sites closest to the relevant gene or part of the gene which expressed an antigenic fragment of the polypeptide, rather than choosing enzymes on the basis of providing the largest possible fragments which one might hope would include the relevant gene or part of the gene. The accused infringer had selected its restriction enzymes on the basis of the by then known sequence of the Dane particle, and not upon the basis of generating the largest possible fragments.

Lord Hoffmann, who wrote the primary judgment in the case, began by considering what Professor Murray's inventive step had been. While it was clear that Professor Murray had been the first person to make HBV antigens by recombinant DNA technology that alone did not mean that he had made an invention.

"Whenever anything inventive is done for the first time it is the result of the addition of a new idea to the existing stock of knowledge. Sometimes, it is the idea of using established techniques to do something which no one had previously thought of doing. In that case, the inventive idea will be doing the new thing. Sometimes, it is finding a way of doing something which people had wanted to do but could not think how. The inventive idea would be the way of achieving the goal. In yet other cases, many people may have a general idea of how they might achieve a goal but not know how to solve a particular problem which stands in their way. If someone devises a

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way of solving the problem, his inventive step will be that solution, but not the goal itself or the general method of achieving it."

The problem Professor Murray faced was that with little knowledge of the gene sequence in the Dane particle, it was difficult to select restriction enzymes that would isolate the key sequence. By selecting the enzymes to provide the largest possible fragments, Prof. Murray had devised one solution to that problem. However, his claims covered the result, and were not restricted to the solution he had devised.

Related to the concept of fair basis is the concept of sound prediction. Suppose an inventor has discovered compound X is effective in improving the yield of extraction of metal from ore, and

that compound X is a member of a family of similar compounds that have the same functional group. The family has several hundred, if not more members so the inventor tests several dozen and determines that they all work, some better than others. Whether the inventor can claim all the members in the family depends upon whether a person skilled in the art would believe, on the basis of the data collected by the inventor, that all members of the family could be soundly predicted to work in a similar fashion. If the answer is yes, then she can; but if there is reason for a person of skill in the art to doubt the prediction then she may not. Patents, as Justice Binnie noted in AZT, are given for inventions and not speculation, even if the speculation later turns out to be correct. The danger of claiming based on prediction, however sound, is that if the claim extends to compounds that are later shown to be useless, the claim is void[5] . In *Minerals Separation* the claims failed, even though the invention provided a huge advance in minerals extraction, because all the claims covered a compound that would not work. For this reason inventors usually draft a broad claim covering the family of compounds and at least one claim restricted to the compounds that have been tested. The courts recognize the dilemma the inventor faces: draft the claims too narrowly and others will be able to take the benefit of the invention by staying beyond the fence set up by the claims, or draft too broadly and risk invalidating the claim. [6]

There is one last part of a patent that is often overlooked because it cannot be used to interpret the scope of the patent - the Abstract[7]. The purpose of the abstract is to provide a summary of the invention in 150 words or less so that it can efficiently serve as a scanning tool for purpose of searching in the particular art. Given the constraint of 150 words, and the fact that the abstract can't help the inventor explain the scope of the patent, some abstracts are not very illuminating. However, if nothing else they can help you decide which of a stack of patents to look at first.

Summary

A patent then has two parts - the abstract and the specification. The abstract is essentially an indexing tool while the specification performs the dual function of fully explaining the invention and how to use it and defining the area of the monopoly the inventor claims. The explanation function is performed by the description, which includes the drawings if any, and the monopoly defining function is performed by the claims. The inventor is limited in the extent of the monopoly she can claim by the disclosure, which must be sufficient for a skilled person in the field to which the patent relates to make anything within the scope of the claims.

In the next article of this series we will look at the requirement of invention and the implications that has on the sorts of developments that can be patented.

References

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6. *Burton Parsons Chemicals Inc. v. Hewlett-Packard (Canada) Ltd., [1976] 1 S.C.R. 555 at p. 565*
7. *Patent Rules, SOR/96-423, S. 79*