

Technical note on patents and the mining industry—Part I

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This technical note is issued in two parts, as follows:

Part I, after a brief introduction, discusses the value of patents and the law of patents, including patent applications and the exploitation of inventions. This is followed by some comments for the benefit of would-be inventors and potential users of patents.

Part II, which will appear in the February issue of this *Journal*, focuses on the mining industry and then discusses views on patents that were quoted in Part I. The last section makes recommendations as to how inventors and users (including mining authorities) should handle patents.

INTRODUCTION

This note has been prepared as a result of experience gained in a company that, for several years, has been attempting to develop new types of underground support systems in South African mines. The company is an offshoot of a specialist civil-engineering company that, since 1975, has successfully promoted a patented system having application in the building and construction industries. The underground support systems developed by the offshoot company are, in fact, further developments of the technical principles originally expounded and set down by the inventor of the patented civil-engineering system mentioned above.

In accordance with the terminology used in innovation technology, the company that carried out the research and development into underground support systems will be referred to as the *product champion* or *product champions*.

As the research programme unfolded, the product champion regularly filed patent applications for ideas or systems that were considered to be both innovative and practical. In the course of time, moreover, certain of the proposed systems attracted sufficient interest in the industry to enable them to be installed and tested underground.

It was then that the product champions encountered a variety of approaches and reactions from the mining industry and its suppliers in the matters of having to deal with patented products, and the possible prospect of having to pay royalties. In the opinion of the product champions, the reason for such variations of approach lay in a general lack of familiarity with the law relating to patents, and the extent to which patents could or could not afford protection to inventor, licensee, and end-user.

The object of this note is therefore to set down what are considered to be salient features of the law of patents and its application in South African mining practice. The note is not intended as a reference or treatise on patent law— that

is best left to the experts. Rather, the note is intended to serve as a guide to engineers and managers in the industry who, in the course of their occupations, stand a strong chance of running into complications arising from patented products and processes. It is hoped that the note may also prove useful to the mining-supply industry, and to aspirant innovators and inventors.

PATENTS AND THEIR VALUE

In order to protect a new idea, which may have commercial value, from imitation and exploitation by others, an inventor or innovator will try to protect himself by obtaining a government grant of exclusive privilege for making, using, or selling the new invention, i.e. he obtains a patent. This patent then gives what amounts to a temporary monopoly so that, for a given period of time, the inventor may be free of competition from imitators. In this connection, there is a mistaken belief that the use of a patented invention for private purposes does not constitute an infringement.

Kingston¹ states that the age of the individual inventor has passed its heyday. He divides the industrial revolution into three distinct stages or three distinct revolutions.

In the first of these, a characteristically important event, such as the building of the canals, Watt's steam engine and Stephenson's railway locomotive came about on a basis of scientific knowledge that was so slender as to be virtually zero. The keynotes of this first industrial revolution were empiricism and ingenuity, not knowledge. In the second revolution, applied sciences and a more analytic approach are increasingly the characteristics of innovatory activity, from roughly the mid nineteenth century to the First World War. A significant example of the change in approach is Stephenson's rail bridge across the Menai Straits, which was preceded by a comprehensive programme of deliberate testing to destruction of samples of the material and models of the design which Stephenson had in mind. This approach also was adopted in the development of chemical industries and electrical power. Ingenuity however still played an important part. The characteristic of the third revolution is that science, absent in the first and on a basis of rough equality in the second, moved into the dominant role. This

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can also be called the age of organised inventing, when both government and private companies began investing in research and development.'

According to Kingston, each of the three revolutions had its own particular pattern of innovation. In the first, practical capability was the keynote, and invention and innovation generally the works of the same person. In the second, the characteristic vehicle of innovation was a newly founded firm. In the third stage, the typical innovating unit is not a new firm but an established one, very probably operating internationally. The third phase is accompanied by an enormous growth in the field of marketing.

Kingston then goes on to say that, in the third stage of innovation, patents are less likely to protect an inventor than know-how and marketing monopoly, and that the golden age of patents has passed. He expressed this view in 1977.

A recent article in *The Economist*² takes more or less the same view as Kingston, and states:

'Traditionally, the reward for innovation provided by patents came in the form of a period in which the inventor could produce his innovation without competition. In addition to heartwarming profit margins, this provided patent holders with the powerful advantage of being able to stay well ahead of rivals on the "learning curve" of their trade.

'Today in an increasing number of industries, that system is breaking down. Companies no longer wait for the patent authorities to award them unchallengeable first crack at the market; instead they just jump in. Competition decides who gets the lion's share of the market. Patents, as they arise, are swapped for royalties or other patents. Instead of being the arbiter of competitive position, patents are becoming just another tradeable commodity, like bonds or baseball cards.'

The article concludes by saying:

'Given today's shortening product cycles, the ability to create a steady flow of unique, innovative products is far more profitable than trying to stake a claim to any single idea. So however much patents may inspire tinkerers to keep searching for a pot of gold, for companies they are becoming irrelevant. Worse still, they risk being laurels on which managers are tempted to sit and rest—while sinking out of sight.'

Whether or not these views are valid (and the views will be discussed in Part II), most inventors still look to the patent system to provide them with protection, however temporary or tenuous, and even the very large R&D organizations file patents on a regular basis. For the individual inventor and smaller company, there appears to be only the patent system that will prevent others from taking over new ideas without having to pay a fair price for them.

Of interest is the policy applied in France, where official research institutes make a point of applying for patents on any new inventions that might be regarded as commercially exploitable, and where the State and private enterprise often enter into partnerships in order to promote the development of the proposed new product.

THE LAW OF PATENTS

In order to summarize fairly quickly certain basic features and steps that have to be taken to apply for patents and to be granted patents, a procedure list is set down here. This list has been extracted from a pamphlet³ compiled by a firm of patent attorneys who issue the document as a matter of routine to their clients. Some of the wording is, in turn, based on the wording of the Patents Act. Permission to quote from the pamphlet is gratefully acknowledged.

Most of the points that have been set down are direct quotations, and are indicated as such by the use of quotation marks. All italics are by the author.

Patents: Obviousness and Novelty

- 'A patent may be granted for any new invention which involves an inventive step and which is capable of being used or applied in trade or industry or agriculture.'
- 'Anything which consists of a discovery, a scientific theory, a mathematical method, a literary, dramatic, musical or artistic work or any other aesthetic creation, a scheme, rule or method for performing a mental act, playing a game or doing business, a program for a computer, or the presentation of information, is not regarded as an invention for the purposes of the Patents Act.'
- 'An important factor determining whether an invention is patentable is whether or not it involves a step of sufficient magnitude to be recognised in law as an "inventive step" and as meriting patent protection. This involves an enquiry into whether or not the invention is *obvious*.'
- 'An invention shall be deemed to involve an "inventive step" if it is not obvious to a person skilled in the art, having regard to any matter which forms, immediately before the priority date of any claim to the invention, part of the "state of the art".'
- 'The state of the art shall comprise all matter (whether a product, a process, information about either, or anything else) which has been made available to the public (whether in the Republic of South Africa or elsewhere) by written or oral description, by use or in any other way. The state of the art also comprises matter contained in a patent application in the RSA and which is, or will become, open to public inspection and where such matter has an earlier priority date.'
- 'An invention shall be deemed to be new if it does not form part of the state of the art immediately before the priority date of any claim to that invention.'
- 'Disclosure, use or knowledge of the invention prior to the priority date of a claim to the invention, as a result of the invention being worked in the RSA by way of reasonable technical trial or experiment, by the applicant or patentee, can be excused.'

Patent Applications

- 'An application for a patent in respect of an invention may be made by the inventor or by any other person acquiring from him the right to apply or by both such inventor and such other person.'
- 'For purposes of drafting a patent specification the following information is required:

- (a) a full description of the invention and its novel features, accompanied by sketches, drawings, photographs, or models;
- (b) an explanation of how the invention constitutes an advance or improvement on existing devices or processes;
- (c) details of any alternative forms of the invention.
- 'There are two ways in which an application for a patent may be filed, namely either:
 - (i) as a provisional patent application, accompanied by a provisional specification *fairly* describing the invention (which may be completed within twelve months, which time period is extensible in respect of South Africa only by a maximum period of three months), or
 - (ii) as a complete patent application in the first instance accompanied by a complete specification *fully* describing the invention and the manner in which it is to be performed together with illustrative drawings and claims defining the subject matter for which protection is claimed.'
- 'If a provisional application is not followed by the filing of a complete application and specification within the prescribed time, it lapses.'
- The following are the advantages of a provisional patent application:
 - (1) 'It can be filed with a minimum of delay because claims to the inventive features are not required in a provisional specification, and informal drawings can be used to illustrate the invention.'
 - (2) 'The filing of a provisional patent application secures a priority date for the applicant's rights in the same way as a complete specification. It also affords an opportunity for the novelty, technical merit, and commercial value of the invention to be investigated before further patenting costs are incurred.'
- 'The filing of a complete patent application in the first instance, instead of a provisional patent application, is only advisable if the applicant is quite satisfied that the invention has been perfected and that further improvements or modifications therefore are unlikely. A complete patent application in the first instance further has the disadvantage that onerous and costly procedures are required if developments or improvements are to be covered in the specification at a later stage. Such opportunity exists for a limited time period only.'

The filing of a provisional or of a complete patent application in the first instance affords the applicant a priority right in terms of the International Patent Convention to file a corresponding application in any other Convention country within 12 months (not extensible) and to have such later filed application effectively backdated to the date of the first application. Thus, disclosure of the invention in the interim period does not prejudice the later filed application. With few exceptions, all countries in the world are signatories to the Convention.

Exploitation of Inventions

- 'Having filed a patent application for the invention, the applicant may exploit it and he may disclose it to others without such disclosure itself affecting the validity of any patent which he may obtain on the patent application.'
- 'The filing of a patent application does not entitle the applicant for the patent to restrain others from making, using or disposing of a similar invention. This right to exclude others only arises after the *grant* of a patent.'
- 'An applicant's right to exploit his invention is subject to such exploitation not infringing the right of others.' To illustrate this: if A has a so-called master patent, and B has a patent for a detailed development of a constituent element of A's patent, then B cannot exploit his patent without the permission of A. In patent terminology, A's patent is independent while B's is dependent. Provision has been made for the patentee of a dependent patent to obtain a compulsory licence from the patentee of the master patent under prescribed circumstances.
- 'After a complete application has been filed at the patent office, Pretoria, the application is formally examined by the patent office. If all the formal requirements have been complied with, the Registrar accepts the complete specification and the acceptance is advertised in the patent journal. Thereupon the application documents (which have been kept secret by the patent office up to this stage) become open to public inspection. Upon acceptance of the complete specification, the Registrar gives written notice of that fact to the applicant. The notice contains the date of acceptance of the specification and a statement that, on publication in the patent journal of such acceptance, the patent concerned shall be deemed to have been sealed and granted as from the date of such publication. Except under exceptional circumstances, the patent may only be enforced nine months after grant, but damages can accrue during this period.'
- 'Examination by the patent office is for formal correctness only. Examination is not for novelty of subject matter. The granting of a patent or filing of a patent application is no guarantee that the invention is new. Nor is it a guarantee that the patent is valid, nor that the patent will not be revoked, nor that the exploitation of the invention will not infringe an existing patent. It is the duty of the applicant to investigate the novelty of the invention and to satisfy himself regarding the strength of his patent. It is not the duty of the patent office.'
- 'A patent when granted confers upon the patentee in the Republic of South Africa for the duration of the patent a right to exclude other persons from making, using, exercising or disposing of the invention, so that he shall have and enjoy the whole profit and advantage accruing by reasons of the invention.'
- 'The fact that a patent has been granted does not mean that it cannot be revoked. At any time after the granting of a patent, any person has the right to apply for the

revocation of the patent on any of the grounds prescribed by the act, eg. that the invention was not new at the date on which the application for the patent was filed at the patent office, or that it was obvious.'

- 'The term of a patent is 20 years dating from the date of the filing of the complete application subject to the patent being maintained in force by the payment of the prescribed renewal fees.'

COMMENT ON THE PAMPHLET³

Relevant extracts from the pamphlet have generally been set down *verbatim* in the precise language used by the experts. The comment that follows is an attempt to accentuate some of the points made for the benefit of would-be inventors, potential users, and potential imitators, the last-named being sometimes termed *practitioners of copy-cat technology*.

For Inventors

The pamphlet sets down the need for the inventor to check for novelty or obviousness, and makes it clear that the onus is on the inventor to satisfy himself regarding the strength of his patent.

The pamphlet further points out the procedures that have to be followed in relation to provisional applications and complete specifications, and the time restrictions relating to these applications.

It is also stressed that the filing of applications alone does not entitle the inventor to restrain others from exploiting similar inventions. The right to exclude others arises only after the *granting* of a patent, as distinguished from the filing of a patent application.

Finally, the filing of a patent application entitles the applicant to exploit it and to disclose the invention to others without disturbing the validity of the patent.

For Potential Users of Inventions

The law relating to patents provides the following safeguards for the potential payers of royalties.

- Filing alone does not entitle the inventor to restrain others from using the invention.
- The examination by the South African patent office does not look into the novelty of the subject matter, and the granting of a patent or the filing of a patent application is no guarantee that the invention is new, valid, or irrevocable, or that it will not infringe an existing patent.
- At any time after the granting of a patent, any person has the right to apply for its revocation on the grounds of lack of novelty or obviousness.

There is therefore no reason for the potential user of an invention to regard the filing of a patent application as a sinister act. If the invention proves to be valuable and the patent protection strong, a licensee benefits therefrom because the licensee enjoys a monopoly *vis-à-vis* his competitors. On the other hand, if it turns out that the inventor is not entitled to patent protection, the Patents Act provides adequately for having the patent revoked if required.

ACKNOWLEDGEMENT

This note has stressed that patents and patent applications tend to become sensitive matters. The author has discussed the associated problems with several officials in the mining industry, but considers it prudent that they should not be named. However, their advice and criticism are gratefully acknowledged.

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