

84/88

Case No 188/87

SUPREME COURT OF SOUTH AFRICA  
(APPELLATE DIVISION)

In the appeal of :

DE BEERS INDUSTRIAL DIAMOND  
DIVISION (PROPRIETARY) LIMITED ..... appellant

versus

GENERAL ELECTRIC COMPANY..... respondent

CORAM: CORBETT, HEFER, NESTADT, KUMLEBEN JJA, et  
BOSHOFF AJA.

DATE OF HEARING: 9 May 1988

DATE OF JUDGMENT: 30 August 1988.

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J U D G M E N T

CORBETT JA:

The respondent, the General Electric Company, of  
Schenectady, State of New York, United States of America,  
is the patentee of South African patent no. 78/7060, a  
convention patent, entitled "Composite compact components

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fabricated with high temperature filler metal and method of making same". The patent application was filed with the Registrar of Patents on 18 December 1978 and the patent was granted with 10 January 1978 as the effective date, being the date upon which application for the protection of the invention was made in the convention country, viz. the United States of America.

In March 1982 appellant, De Beers Industrial Diamond Division (Pty) Ltd, made application for the revocation of patent no. 78/7060 upon the grounds that the invention was not new, that it was obvious, that the claims of the complete specification did not sufficiently and clearly define the subject-matter for which protection was claimed and that the complete specification did not fully describe and ascertain the invention and the manner in which it was to be performed. Respondent filed a counter-statement to this application in which it, in a

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in a special plea, referred to a simultaneously filed application for the amendment in various respects of the complete specification of patent no. 78/7060, which amendment, it averred, would have a material effect upon the issues raised in the appellant's revocation application, and prayed that the latter application be stayed in terms of sec 51(9) of the Patents Act 57 of 1978 ("the 1978 Act").

The application for amendment was opposed by appellant, which filed its answering evidence, in the form of an affidavit by Dr R J Caveney, an expert in the scientific field to which the invention claimed in patent no. 78/7060 relates. In his affidavit Dr Caveney averred (and sought to substantiate these averments) that the proposed amendments conflicted with the provisions of sec 51(6) and sec 51(7) of the 1978 Act and would also not cure either the ground of revocation based upon lack of novelty or that contending that the claims of the

/ complete.....

complete specification did not sufficiently and clearly define the subject-matter for which protection was sought. Dr Caveney did not traverse the other grounds of revocation since (according to him) he had been advised that this would more appropriately be done in the application for revocation itself. In reply respondent filed an affidavit by its expert, Mr H P Bovenkerk. In this affidavit Mr Bovenkerk gave respondent's answers to the averments made by Dr Caveney and, in respect of certain of them, stated that in order to limit the issues in the application for amendment respondent was prepared, by way of alternative relief, to apply for certain alternative amendments. The original notice of motion was thereafter amended to include these alternative amendments. This provoked a further affidavit from Dr Caveney, criticising the alternative amendments on various grounds and contending that they were in conflict with the provisions of sec 51(6) of the 1978 Act or, alterna-

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tively, rendered claim 1 of the specification ambiguous. In answer to these criticisms respondent filed a further affidavit from Mr Bovenkerk.

The application for amendment was heard by Van Zyl J, sitting as Commissioner in the Court of the Commissioner of Patents. At the hearing respondent abandoned the original application for amendment and pursued only the application for the alternative amendments. The application was opposed by appellant. Van Zyl J granted the application and ordered appellant to pay the costs occasioned by its opposition. An appeal by appellant to the Full Bench of the Transvaal Provincial Division ("the TPD") was dismissed with costs. The judgment of the TPD has been reported (see De Beers Industrial Diamond Division (Pty) Ltd v General Electric Company 1987 (4) SA 362 (T) ). Appellant now appeals to this Court.

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The invention disclosed by the complete specification of patent no. 78/7060 relates to components consisting of what are termed "abrasive compacts", which are used in wire dies, wear surfaces, rock-cutting and drilling equipment and cutting tools for machining. According to the body of the specification, the area of "primary interest" for the invention is in components useful as cutters for rock-drilling bits and techniques for the fabrication of such components. The specification uses two terms in relation to compacts, viz. "cluster compact" and "composite compact". These are defined. A cluster compact is stated to be —

"..... a cluster of abrasive particles bonded together either (1) in a self-bonded relationship, (2) by means of a bonding medium disposed between the crystals, or (3) by means of some combination of (1) and (2)."

A composite compact is defined by the specification, in its original form, as —

/ "a cluster....."

"a cluster compact bonded to a substrate material such as cemented tungsten carbide. A bond to the substrate can be formed either during or subsequent to the formation of the cluster compact."

In both these definitions there is, in addition, reference to disclosures in certain United States patents, which are said to be incorporated by reference in the specification; but more of this anon.

The specification further discloses that conventional rotary drill bits have until now used as cutting elements steel teeth, steel teeth laminated with tungsten carbide, an insert of cemented tungsten carbide or natural diamonds, all of which are set or moulded in a tungsten carbide crown. Due to the relatively short life and/or high operating cost of these conventional designs, it has recently been proposed to use synthetic diamond composite compacts as the cutting element in such drills.

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The specification goes on to explain that in adapting composite compacts to certain drill bit applications, it has been found to be desirable to provide an elongated base or support for the composite compact to aid attachment in the drill crown. While it is technically feasible to form an integral composite compact of an adequate length directly under high temperature and pressure (and here the specification makes reference to the disclosures in another United States patent), this has not been adopted commercially because of the significantly increased cost of manufacture. One method of avoiding this added cost is to braze an additional length of cemented carbide to the carbide base of the composite compact (and here again reference is made to what is disclosed in certain United States patents). Where this has been done, field tests have revealed a problem in that the stresses on each cutting element en-

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countered in rock-drilling are severe and some "disattachment" of the cutters has been experienced because the bond strength of the components which have been thus brazed together is not strong enough to withstand these stresses.

At this point I should digress to state that in the specification "brazing" is defined as —

".... a group of welding processes wherein coalescence is produced by heating to suitable temperatures above 800°F and by using a brazing filler metal having a melting point below that of the base metals. The filler metal is distributed between the closely fitted surfaces of the joint by capillary action."

Reverting to designs whereby additional lengths of cemented carbide are brazed to the carbide base of the composite compact, I note that the specification states that in these designs available attachment techniques and acceptable brazing filler metals for use

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with a diamond composite compact — "made in accordance with the teaching" of United States patent no. 3,745,623 — are limited because the diamond layer of such compacts is thermally degraded at temperatures above approximately 700°C. Similarly it has been found that a cubic boron nitride composite compact — "made in accordance with the teaching of" United States patent no. 3,743,489 — is also thermally degraded at temperatures above approximately 700°C. Because of the thermal degradation problem, it has been necessary to use brazing filler metals with a liquidus (meaning, in lay terms, melting point) below 700°C. Such metals form braze joints generally of lower strength than braze filler metals having a higher liquidus. Moreover, even when metals having a lower liquidus are used temperatures approaching those at which the diamond layer is degraded are required, resulting in great care having to be exercised to prevent degradation

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of the compact during brazing.

With this introduction the specification then proceeds to describe the invention. The objects of the invention are stated as follows:

"Accordingly, it is an object of this invention to provide improved and stronger components comprised of composite compacts.

Another object of this invention is to provide an improved cutter component for drill bits.

Another object of this invention is to provide an improved fabrication technique for forming high strength bonds to composite compacts without degrading the particulate layer of the composite compact.

Another object of this invention is to provide an improved fabrication technique for forming a high strength bond between a composite compact and cemented carbide pin in the fabrication of cutters for drill bits.

Another object of this invention is to provide improved techniques whereby small composite compacts produced by an expensive high temperature,  
/ high.....

high pressure process can be dimensionally scaled up to larger sizes permitting easier attachment of the compact to a tool body".

Under the heading "Summary of the Invention" the invention itself is thus described:

"These and other objects of the invention are accomplished by a component comprised of a composite compact bonded to a substrate with a high temperature filler metal which, to form a bond, requires the exposure of the surfaces to be bonded to a temperature substantially greater than the degradation temperature of a particulate layer of the compact and a method for fabrication thereof. The method comprises the steps of (1) disposing the composite compact in thermal contact with a heat sink, (2) disposing the compact adjacent to a substrate with a high temperature filler metal disposed therebetween, and (3) heating the base layer of the compact, filler metal and substrate to a temperature in excess of the degradation temperature to form a high strength bond while maintaining the temperature of the particulate layer of the compact below the degradation temperature thereof".

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It appears from the drawings contained in the specification and the description of the preferred embodiments that the "particulate layer" referred to in the summary of the invention consists of a layer of bonded abrasive particles of either diamond or hard phase boron nitride, which is bonded along an interface to a base layer of cemented carbide to form the composite compact. As I understand the position, it is the exposed or upper surface of this particulate layer which forms the cutting edge of the compact.

As the summary of the invention indicates, the invention consists of both a product and a method. The product is a composite compact bonded to a substrate (sometimes referred to as a "pin") with high temperature filler metal which, to form a bond, requires the exposure of the surfaces to be bonded and the filler metal to a temperature substantially greater than the degradation

/ temperature.....

temperature of the particulate layer of the compact.

The method is one for fabricating such a compact, using, inter alia, a heat sink which maintains the temperature of the particulate layer of the compact below the degradation temperature thereof, while at the same time the base layer of the compact, the filler metal and the substrate are heated to a temperature in excess of the degradation temperature to form a high strength bond. One of the drawings, as explained in the section on preferred embodiments, shows an apparatus for fabricating a component, consisting of composite compact and substrate, in this way.

The specification concludes with 14 claims, some of them product claims, others method or apparatus claims. Of them only claims 1 and 2 are of relevance for present purposes. They read:

/ "A component.....

- "1. A component comprising:
- (a) a composite compact comprised of
    - (i) a particulate mass of bonded abrasive particles selected from the group consisting of diamond and boron nitride, said particulate mass being subject to degradation at temperatures above a predetermined temperature, and
    - (ii) a second mass bonded to said particulate mass along an interface, said second mass having a surface spaced from said interface;
  - (b) a substrate; and
  - (c) a filler metal disposed between and bonding said substrate to the surface of said second mass, said filler metal having a liquidus greater than said degradation temperature.
2. The component of claim 1 wherein:
- (a) said particles are diamond;
  - (b) said degradation temperature is approximately 700°C; and
  - (c) said substrate and said mass are cemented carbide."

/ I .....

I come now to the application for amendment.

The main aim of this application, as originally conceived, was to amplify the wording of claim 1 and incorporate in it the substance of claim 2. The allegation in the revocation proceedings that the invention was not new (referred to above) was based upon an anticipation said to be found in S A patent specification 77/1904. This patent, of which respondent was also the patentee, related to a rotary drill bit. In the specification there is a description of a diamond compact comprising a thin layer of polycrystalline diamond bonded to a cement carbide substrate; and of a cutting element formed by attaching the compact to a drill bit by brazing or soldering the carbide substrate to a cemented carbide pin. In his affidavit filed in support of the original application for amendment the late Dr J R Steyn (whose untimely death last year was a great loss to the profession) iden-

/ tified.....



tified this description as being the probable basis of the appellant's attack upon the novelty of the invention; but went on to point out that it appeared clearly from other portions of the specification of patent no 77/1904 that the process therein described degraded the diamond layer, whereas the present invention had as its object the prevention of such degradation. Dr Steyn further stated that respondent had been advised that claim 1 of the patent in suit might conceivably be interpreted as including a composite compact having degraded diamond particles, although such an interpretation would be contrary to the whole purpose of the invention. Accordingly, the application included an appropriate amendment of claim 1. At the same time it was necessary to limit claim 1 to cubic boron nitride (instead of boron nitride) in order to bring the claim into conformity with the body of the specification and to amplify it so as to

/ incorporate.....

incorporate claim 2. These considerations prompted a proposed amendment of sub-paras (a) (i) and (c) of claim 1 to read as follows (the new words being underlined):

"A component comprising:

- (a) A composite compact comprised of
  - (i) a particulate mass of bonded abrasive particles selected from the group consisting of diamond and cubic boron nitride, said particulate mass being subject to degradation at temperatures above a pre-determined temperature of approximately 700°C said particulate mass not having been so degraded, and .....

- (b) A filler metal disposed between and bonding said substrate to the surface of said second mass, said substrate and said mass being cemented carbide, said filler metal having a liquidus greater than said degradation temperature."

The amendment application comprehended other matters as well, but these were merely the correction of certain typing errors and the substitution of new reference numbers

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for certain United States patent applications (referred to in the specification) which had since been granted.

In his answering affidavit Dr Caveney criticised the proposed introduction in claim 1(a)(i) of the words "of approximately 700<sup>0</sup>C said particulate mass not having been so degraded" by pointing out that the only disclosure or basis in the body of the specification for the introduction of these words was a passage (referred to above) in which it is stated that the diamond layer of composite compacts made in accordance with United States patent no 3 745 623 and that the cubic boron nitride layer of composite compacts made in accordance with United States patent no 3 743 489 are thermally degraded at temperatures above approximately 700<sup>0</sup>C. Thus the reference to this temperature factor is confined to these two types of composite compact. Dr Caveney went on to explain that the temperature at which a particulate mass of bonded

/ abrasive .....

abrasive particles selected from the group consisting of diamonds and cubic boron nitride would degrade depended on many factors and could in certain circumstances in fact be as high as 1000°C. He, therefore, submitted that the temperature limitation which the respondent sought to introduce in claim 1 related only to the compacts described in the two United States patents cited and that consequently claim 1 in its amended form, to the extent that it was not limited in this way, would not fairly be based on the specification before amendment (in contravention of sec 51(6)(b) of the 1978 Act) and would introduce new matter or matter not in substance disclosed in the specification before amendment (in contravention of sec 51(6)(a) ). Dr Caveney furthermore contended, for reasons which need not be canvassed, that the introduction of the words "of approximately 700°C" as a qualification of the original words of the claim,

/ "a predetermined.....

"a predetermined temperature", was ambiguous and that, whichever way it was read, it would result in the amendment being in conflict with either sec 51(6) or sec 51 (7).

In his replying affidavit Mr Boyenkerk explained that the invention in suit described a technique that was of relevance to a specific compact, namely one which had <sup>the</sup> diamond or cubic boron nitride bonded to a substrate material such as cemented tungsten carbide. He admitted that there were diamond and cubic boron nitride compacts which would degrade at a temperature much higher than 700°C, but averred that the patent in suit did not describe such compacts and that the purpose of the proposed amendment to claim 1 was to exclude such compacts. He further admitted that the temperature limitation to be introduced by the proposed amendment was in order to limit the claim to the types of composite compacts

/ described .....

described in the cited United States patent specifications. He denied the various allegations that the proposed amendment was in conflict with secs 51(6) and/or (7). He stated, however, that in order to "limit the issues" in the amendment application respondent was prepared by way of alternative relief to change the amendment applied for in respect of para. (a)(i) of claim 1 to read (the changes from the original being underlined) —

"A particulate mass of bonded abrasive particles selected from the group consisting of diamond and cubic boron nitride, said particulate mass being subject to degradation in said composite compact at temperatures above a predetermined degradation temperature, said particulate mass not having been so degraded, and".

He further indicated that another amendment, which would "solve the Respondent's (the appellant on appeal) problem", would be one which added at the end of the first sentence of the definition (quoted above) of composite

/ compact.....

compact in the body of the specification the words —

"..... and which is made in accordance  
with the teaching of US Patent 3,745,623  
or US Patent 3,743,489 or US Patent  
3,767,371."

These two proposed amendments were incorporated in the  
amendment asked for in the alternative prayer in an amend-  
ed notice of motion, which prayer was, as I have indicated,  
granted by the Commissioner.

On appeal before us two main issues were argued:

(a) Whether the application for amendment in terms  
of the alternative prayer was not defective in  
that "full reasons" for the amendment had not  
been furnished, as required by sec 51(1) of the  
1978 Act.

(b) Whether the amendment would not give rise to  
an invalid claim. If it would, then, so it  
was argued, it ought not to have been granted.

/ Although.....

Although appellant's counsel did not place issue (a) above in the forefront of his oral argument — in fact he merely referred to what was stated in the heads of argument — the point has been raised and it is necessary for us to deal shortly with it. The relevant portions of sec 51 read as follows:

"51. (1) An applicant for a patent or a patentee may at any time apply in the prescribed manner to the registrar for the amendment of either the relevant provisional specification or the relevant complete specification, and shall in making such application, set out the nature of the proposed amendment and furnish his full reasons therefor.

.....

(9) Where any proceedings relating to the application for a patent or a patent are pending in any court, an application for the amendment of a relevant specification shall be made to that court, which may deal with such application as it thinks fit but subject to the provisions of subsections (5), (6) and (7), or may stay such pending proceedings and remit such application to be dealt with in accordance with subsections (2) to (8)."

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It seems clear that the application in casu fell to be dealt with under sec 51(9). This subsection does not lay down any particular procedure, nor is one to be found in the regulations. Unlike certain other subsections, subsec (1), which speaks of "full reasons" being furnished in an application to the registrar for amendment, is not referred to or incorporated into subsec (9). Nevertheless, it was held by McEwan J in the Court of the Commissioner of Patents, in the matter of Dresser Industries Inc v South African Inventions Development Corporation (1982)BP 317, at p 328 B, that a court to which an application under subsec (9) was made should be informed of the nature of the application and that the applicant should equally be required to furnish his reasons therefor. In the Court of the Commissioner and in the Court a quo (see reported judgment at p 365 D-G) it was held that the respondent had

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furnished reasons, both for the amendment as originally conceived and for the alternative amendment. Before us respondent's counsel challenged the correctness of what was decided in this connection in the Dresser Industries case, supra, and submitted that it was not necessary in an application under sec 51(9) for reasons to be furnished. I very much doubt whether this submission is sound, but I do not find it necessary to decide the point for I am of the view that it was correctly held by the Courts a quo that respondent had sufficiently complied with this requirement.

I have dealt at some length with the reasons given by Dr Steyn in his affidavit for the original application. In my view, this affidavit fully explains why respondent sought to amend claim 1, eliminate claim 2 and make the other formal corrections to the specification. And I do not understand appellant's counsel to contest

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this. Appellant's attack, on this issue, is, as I understand it, confined to the alternative amendment. Here it is true that the only explanation for the deviations from the original amendments which were brought about by the alternative amendment is to be found in the somewhat cryptic statements in Mr Bovenkerk's affidavit, where he speaks of limiting the issues and solving the appellant's problem. Reading his affidavit, in conjunction with that of Dr Caveney, it is clear, however, that the deviations from the original amendment were designed to overcome Dr Caveney's two main grounds of attack upon the alternative amendment by limiting the claim to the compounds described in the United States patents cited and by eliminating the reference to the temperature of "approximately 700°C", alleged to be a source of ambiguity and consequent invalidity. In my view, this sufficiently explains the alternative amendment in so far as it deviates.....

viates from the original amendment; and, as I have indicated, it is not disputed that adequate reasons were given for the original amendment. Issue (a) must therefore be decided in favour of the respondent.

I turn now to issue (b). In the instant case the Commissioner recognized that although he had a discretion in amendment proceedings, subject to his paying due regard to the provisions of subsecs. (5), (6) and (7) of sec 51, an amendment should not be granted if after amendment the specification would contain an invalid claim (see in this connection the judgment of Colman J, sitting as Commissioner in the Court of the Commissioner of Patents, in the matter of James S Robbins & Associates Inc v Dresser Industries Inc (1975) BP 411, at pp 418 E - 419 A). Before us the parties appeared to accept the correctness of this proposition.. Furthermore it seemed to be common cause that inasmuch as an amendment, if allowed, would

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be retrospective in its operation to the effective date (cf Holtite Limited v Jost (Great Britain) Limited and Others [1979] RPC 81, at p.91) the question as to whether it would introduce an invalid claim should be adjudged in the light of the law as it was as at the effective date (see Burrell: South African Patent Law and Practice, 2nd ed, sec 9.20). Since the effective date of SA patent no 78/7060 is 10 January 1978 and since the 1978 Act came into operation only on 1 January 1979, it would appear that the Patents Act 37 of 1952 (the 1952 Act) is the legislation relevant to such questions of invalidity.

In oral argument before us appellant's counsel relied solely on sec 23(1)(g) of the 1952 Act, which provides that the grant of a patent may be opposed on the ground —

"that the claims of the complete specification do not sufficiently and clearly define the subject-matter for which protection is claimed."

/ Similarly.....

Similarly a patent granted may be revoked on this ground (see sec 43(1) of the 1952 Act). This may, therefore, be regarded as a ground of invalidity. (Reference may also be made in this connection to the provisions of secs 10(3)(c) and 10(4) of the 1952 Act.) Although this ground of invalidity is often referred to as "ambiguity", "uncertainty of claiming" would appear to be a preferable expression (see remarks of Nicholas J in Colgate-Palmolive Company v Unilever Limited (1981) BP 121, at p 125 G). In Letraset Ltd v Helios Ltd 1972 (3) SA 245 (A) Holmes JA spoke of "sufficiency of definition of the claims" (at p 251 B) and summarized what he termed "the basic principles of approach" (see pp 249 H - 251 A). Although in the final result the judgment of Holmes JA was a minority one, what he said on the issue of sufficiency of definition carried the approval of all the other members of the Court. A full discussion of the topic of uncertainty

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of claiming is also to be found in the judgment of the Full Bench of the TPD (delivered by Ackermann J in Colgate-Palmolive Co v Unilever Ltd 1983 (4) SA 249 at p 251 F - 254 H. It is not necessary to dilate upon this topic: I shall merely highlight some of the principles which appear to be of importance in this case. Although I am primarily dealing with the position as it was under the 1952 Act, these principles have in general transcended the replacement of the 1952 Act by the 1978 Act.

The function of the claims in a complete specification is to demarcate the monopoly which the patentee thereby stakes out for himself and thus to inform prospective rivals of the extent of the forbidden field. On the other hand, the function of the body of the specification is to instruct interested members of the public on how to carry out the invention once the monopoly comes to an end with the expiry of the patent and the invention

/ becomes.....

becomes available for general utilisation. In order that they should properly fulfil their appointed function the claims must sufficiently and clearly define the ambit of the monopoly; hence the provisions of, inter alia, sec 23(1)(g) of the 1952 Act. What is required is not absolute certainty, but reasonable certainty. Consequently vagueness or ambiguity or uncertainty of claiming which cannot be resolved with reasonable certainty by a process of interpretation will cause a claim to fall foul of sec 23(1)(g) and render it invalid. The criterion of reasonable certainty must be considered from the point of view of the reader of the patent who is reasonably skilled in the relevant art, the so-called skilled addressee. Who he is and with what knowledge and expertise he should (hypothetically) be endowed will depend upon the nature of the invention and the technology of the field in which it operates. As remarked by Ackermann J in the Colgate-Palmolive case, supra, at



p 254 D —

"..... having regard to the fact that the function of the claim is to inform prospective rivals of the limit of the monopoly, the expertise required of the addressee must be the level of expertise possessed by the ordinary rival, 'the ordinary skilled or qualified persons engaged in the art'."

In the case of a field having a highly developed technology the hypothetical skilled reader may not be a single person, but a team of persons whose combined skills would normally be employed in that art in interpreting and carrying into effect the instructions contained in the patent. These principles appear from the judgments cited in the previous paragraph, to which may be added Gentiruco A G v Firestone SA (Pty) Ltd 1972 (1) SA 589 (A), at pp 611 H - 612 F, 615 C - 616 D; and the remarks of Nicholas J in Beecham Group Limited v The B-M Group (Proprietary) Limited (1977) BP 14, at pp 27 G - 30 E). In the last-mentioned case Nicholas J stated, with reference to the

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skilled addressee (at p 30 E):

"How is this 'hypothetical', 'notional', 'representative' person rendered incarnate so as to be able to perform the important role in a patent case? That can only be done through the medium of an expert witness."

It was recognized in Gentiruco's case, supra, at p 615 E, that certain words or expressions in the claims may be affected or defined by what is said in the body of the specification, in which case the language of the claims must be construed accordingly (see also the Letraset case, supra, at p 250 A).

A complete specification is also required to fully describe and ascertain the invention and the manner in which it is to be performed (sec 23(1)(f) of the 1952 Act). This is mainly the function of the body of the specification. Failure to do so is generally termed "insufficiency". Here the skilled addressee will be

/ presumed.....

presumed to have a knowledge of the state of the art as it existed at the date of the patent, and to be endowed with a reasonable amount of common sense. (See Burrell, op. cit. at pp 169-70 and the authorities there cited.)

In the present case claim 1 of the complete specification relates to a component comprised of (a) a composite compact, (b) a substrate and (c) a filler metal. The term "composite compact" is defined in the body of the specification. For convenience I repeat that definition, including the words whose insertion is sought by the alternative amendment (underlined), and I add the two sentences following the definition to indicate the context:

"A composite compact is defined as a cluster compact bonded to a substrate material such as cemented tungsten carbide and which is made in accordance with the teaching of U.S. Patent 3,745,623 or U.S. Patent 3,743,489

/ or .....

or U.S. Patent 3,767,371. A bond to the substrate can be formed either during or subsequent to the formation of the cluster compact. Reference can be made to U.S. 3,743,489, U.S. 3,745,623 and U.S. 3,767,371 for a detailed disclosure of certain types of composite compacts and methods for making same. (The disclosure of these patents are hereby incorporated by reference herein)."

It is clear that this is a case where the claim is affected or defined by what is stated in the body of the specification and that the term "composite compact" in the claim must be interpreted accordingly.

Appellant's counsel, recognizing this, argued that the introduction of the words underlined would render the definition of "composite compact", and therefore claim 1, uncertain because of —

(1) the use of the word "teaching" which was uncertain in meaning and/or ambiguous; and

(2) the reference to the three United States patents.

/ The .....

The relevant meaning of the word "teaching" is: "That which is taught; a thing taught, doctrine, instruction, precept" (The Oxford English Dictionary, sv. "teaching"). The "teaching" of a patent means, in my view, the instruction contained in the specification as to how the invention works or how to make or operate it. This is done by the body of the specification (see Colman J in P.A. Moroney v West Rand Engineering Works (Pty) Ltd (1970) BP 452, at p 456 G; see also Blanco White, Patents for Inventions, 5th ed, par 2-004, 2-005). Accordingly, I do not find any ambiguity or uncertainty inherent in the mere use of the word "teaching". It is argued, however, that its use in conjunction with the three United States patents gives rise to uncertainty.

It was submitted by appellant's counsel, in the first place, that it was not legally competent for a patentee to incorporate an extraneous document by

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reference as part of the process of defining his monopoly.

No authority was quoted in support of this submission.

Indeed counsel for both parties informed us that they

were not aware of any case-law on the subject, either

in this country or in England. In Power Steel Construction

Co (Pty) Ltd v African Batignolles Constructions (Pty)

Ltd 1955 (4) SA 215 (A), the specification of the patent

in suit expressly referred to an earlier patent of the

patentee in certain of the claims, but that was a patent

of addition. In the case of B-M Group (Pty) Ltd v

Beecham Group Ltd 1980 (4) SA 536 (A), the "penicillin

case", there was the following express reference in the

patent specification (the patent having been granted

in 1963) to an earlier patent (granted in 1959) in the

name of the same patentee:

"Thus the compounds of the present invention may be prepared and isolated in the manner described and claimed in our South African patent no 59/3827...."

(This appears from the appeal record.)

/ In .....

In considering the issues of usefulness and inventiveness raised in regard to the 1963 patent Trollip JA, delivering the judgment of this Court, stated (at p 548 A) —

"For these purposes it is permissible to have regard also to the specification of the 1959 patent, since it is incorporated into the 1963 patent specification, expressly as to part thereof and by reference as to the remainder. The manifested intention of the patentee was that the two specifications should be read together for those purposes (cf, eg, Wessels Law of Contract 2nd ed vol 1 para 1979)."

The paragraph in Wessels referred to contains the following statement:

"It is obvious that if two instruments relate to the same subject matter and the one refers to the other, the intention of the parties can be gathered from both, and therefore it follows that the one can be used to interpret the other."

It would seem from this that, as far as the description of the invention is concerned, there is no objection

/ in .....

in principle to the incorporation by reference of the teaching of a prior patent. Accordingly it may be argued that a claim which refers, expressly or by implication, to a component which is described in the body of the specification by reference to a prior patent is equally unexceptionable.

In England the only case of any relevance which I have been able to find is Temescal Metallurgical Corporation's Application [1964] RPC 1, which endorsed a previous ruling by the Assistant Comptroller in another matter. The gist of the decision was that an application purporting to be a convention application accompanied by a "specification" which consisted merely of references to an application filed in the United States Patent Office (which priority document was not available in the United Kingdom at the time the application was filed) was held not to be a complete specification within the meaning

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of the Patents Act 1949. This, however, was an extreme case of incorporation by reference (see p 3 of the report) and, by reason of the subsequent filing of an amended specification fully describing the invention, the case was mainly concerned with the question of priority dates.

In the United States of America, where much the same requirements in regard to sufficiency of disclosure and certainty of claiming obtain as in this country (see American Jurisprudence 2d, vol 60, paras 346 and 398; Lipscomb's Walker on Patents, 3 ed, paras 10.17 and 11.10 (pp 234 ff and 346) ), the incorporation by reference of prior United States patents is a recognized practice (see American Jurisprudence, op cit, para 359; Walker op cit, para 10.12, pp 206 ff). In the leading case of General Electric Company v Brenner 159 USPQ 335, a decision in 1968 of the Court of Appeals, District of Columbia, Justice Tamm stated (at p 337) —

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"The doctrine of incorporation by reference is more clearly associated with the law of wills where it antedates the federal system. It is the offspring of the economies of time and space and is used to enable one document to become part of another by reference and to take effect as if the former clearly outlined the latter. In the law of patents, however, incorporation by reference is a new arrival. Its birth has been retarded by a too literal reading of the statutes."

Later, referring to the extent to which incorporation by reference may be permitted, the learned justice said  
  
(at p 338) —

"It is limited to reference to material available to the public. This would exclude secret or privileged materials as in the case of some abandoned patent applications. It is reasonable also to exclude materials which are not easily available to the public or the Patent Office. This would include unpublished dissertations and theses, obscure foreign publications and publications to which there are no available English translations. Books and learned treatises with the imprimatur of the particular profession to which they relate ought  
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to be permitted to be incorporated by reference as to the specifics contained therein."

In terms of guidelines formulated by the United States Commissioner of Patents essential material may not be incorporated by reference to, inter alia, foreign patents, apparently on the ground of possible non-availability in the United States (see Walker, op cit, para 10.12, p 211).

Under our system of patent law I can see no objection in principle to the incorporation by reference in a patent specification of the teaching of another patent specification, provided that the other patent specification is available to those persons interested in ascertaining the limits of the monopoly, in other words, rivals in trade. In fact considerations of economies of time and space often make it desirable that there should be such incorporation by reference,

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particularly where the subject-matter of a patent specification consists of a development of, or addition to, an existing patented invention. That is exemplified by the patent in suit, where the patentee took a number of components well-known in the art (and, in the case of the composite compact, the subject-matter of certain prior patents) and added a technique whereby a filler metal with a liquidus temperature higher than the degradation temperature of the particulate layer could be used to braze together the composite compact and the substrate without causing the particulate layer to be degraded, thus spawning product, process and apparatus claims. The proviso regarding availability must, of course, not be lost sight of. Where the patent which is incorporated is a South African patent, no problem arises. As regards a foreign patent, it seems to me that (in the absence of a rule or guideline similar to

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that adopted in the United States of America) its availability to trade rivals (or potential trade rivals) in South Africa must be a question of fact to be determined in the circumstances of each case.

In the present case there is no evidence on this point. Nor is there any suggestion by Dr Caveney in his second affidavit that the United States patents referred to in the portion of the alternative amendment relating to the definition of composite compact were not available to appellant. It was apparently conceded by appellant in the Court below that it bore the onus in regard to the objections raised by it to the amendment and appellant's counsel did not argue differently before this Court. Moreover, the concession would seem to be well-founded (see Interfelt Products (Pty) Ltd v Feltex Ltd 1972 (3) SA 335 (T), at p 343 A; Colgate-Palmolive Company v Unilever Limited (1981) BP 121, at

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p 126 A; 1983 (4) SA 249 (T), at p 252 F); at any rate, in my view, there was at least an onus upon the appellant to adduce evidence on this issue. The absence of such evidence must, therefore, redound to the detriment of the appellant; and I find that the appellant's first ground of objection based upon the incorporation of the United States patents to be not well-founded.

It was further submitted by appellant's counsel that the incorporation by reference of the teaching of the three United States patents gives rise to what was picturesquely described as "a marsh of uncertainty" in that —

- (a) the contents of the United States patent specifications may vary from time to time and it is not clear whether the reference in the proposed alternative amendment is to the specifications as originally published or as sub-

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sequently amended and published from time to time;

- (b) the United States patent specifications themselves refer to prior art and prior United States specifications;
- (c) the United States patent specifications contain numerous examples and embodiments and teach or disclose both products and processes and there is no indication as to which of these teachings was intended; and
- (d) there is an inconsistency between the incorporation by reference of the three United States patents and the sentence which comes after the definition of "composite compact" (see quotation above) and which speaks of "certain types of composite compact".

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It seems to me, with respect, that these problems are chimerical rather than real. As to (a), I am not convinced that the reference to the teaching of the United States patents should be read to include subsequent amendments, but apart from this there is no evidence to suggest that according to United States patent law a patent once granted can be amended in any significant manner; nor is there evidence, if such amendment can in law take place, to indicate that this has occurred, or is likely to occur, in the case of the three patents in question. And in this connection it is worthy of note that when Dr Caveney deposed to his second affidavit (on 14 September 1983) each of these patents had been running for about ten years of its appointed term of seventeen years. The absence of such evidence must again redound to the detriment of the appellant.

As to (b) and (c) above, an examination of the specifications of the three United States patents reveals the following:

/ (1) United.....



(1) United States patent no 3,743,489, issued on 3 July 1973, is entitled "Abrasive bodies of finely-divided cubic boron nitride crystals" and from the summary of the invention it appears that the patent relates to the production of cubic boron nitride compacts, by employing various alloys as bonding media and the production of tools wherein the cubic boron nitride compact is bonded to a sintered carbide support block. The specification further explains that the composites produced in the practice of the invention will usually be bonded to a larger body, eg a tool shank or drill bit for presentation to the tool to be cut. The specification disclosed products and processes for making the same.

(2) United States patent no 3,745,623, issued on

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17 July 1973, is entitled "Diamond tools for machining". The summary of the invention discloses that it relates to the preparation of diamond-tipped machine tools in which the working diamond content is present, either in the form of a mass of diamond crystals bonded to each other or in the form of a thin skin of diamond crystals bonded to each other, such diamond content being directly bonded to a mass of extremely stiff cemented carbide substrate, significantly larger than the diamond material being supported thereon. Elsewhere the specification speaks of this diamond content as a "diamond compact". Both products and processes are disclosed.

- (3) United States patent no 3,767,371, issued on 23 October 1973, is entitled "Cubic boron nitride/sintered carbide abrasive bodies". The summary

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of the invention shows that it concerns the production of abrasive compacts comprising combinations of cubic boron nitride crystals and sintered carbide. The specification again discloses various products and processes.

It is true that these specifications contain references to previous United States specifications, but as I read them these references are merely for the purpose of describing the existing state of the art, matters which I imagine the patentee could have assumed would be known by the skilled addressee. For example, under the heading "Background of the invention" reference is made in patent specification no 3,743,489 to a prior patent in which the preparation of cubic boron nitride is disclosed and to another patent which discloses the bonding together of cubic boron nitride crystals to form a compact abrasive body. And in a description

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of one preferred embodiment a high pressure, high temperature apparatus, as disclosed in another prior patent, is referred to. And, in any event, Dr Caveney does not, in his second affidavit, appear to raise these cross-references to earlier patents as an objection to the amendment.

More specifically, in regard to (c) above, Dr Caveney stated in his second affidavit, taking one of the United States specifications by way of example, that if the words "made in accordance with the teaching" of the patent meant in accordance with the disclosures in the body of the specification, including the examples, different products with different characteristics would be obtained depending upon which example was followed. This, according to him, introduced uncertainty. In answer to this respondent's counsel contended that there was no uncertainty at all: the words quoted meant that the term "composite compact",

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as used in the specification of the patent in suit, included all composite compacts made in accordance with the teaching of each of the United States patents, however much the compacts might differ from one another in content or characteristics. Thus the definition, so he argued, might run to a large number of diverse compacts, but this did not render the claiming of the patent in suit vague or uncertain, whatever other consequences it might have. It seems to me that this contention is correct and that it completely disposes of this ground of objection. In substance, too, it represents Mr Bovenkerk's answer on affidavit to Dr Caveney on this point.

As to (d) above, I do not think that there is any inconsistency between what is to be inserted by the alternative amendment into the definition of "composite compact" and what appears in the later sen-

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tence. Clearly the three United States patents do disclose certain types of composite compact and methods for making the same and it is these composite compacts that are made the subject-matter of the definition.

For these reasons I have come to the conclusion that none of the appellant's objections to the proposed amendment of respondent's patent specification is well-founded. While I fully subscribe to the importance of requiring a patentee to demarcate his monopoly with reasonable certainty, I do not think that in this case appellant has shown that the proposed amendment will render claim 1 of the specification invalid on the ground of uncertainty of claiming.

The appeal is dismissed with costs, including the costs of two counsel.

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CORBETT JA.

HEFER JA)  
NESTADT JA)  
KUMLEBEN JA) CONCUR.  
BOSHOF AJA)