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File Number: T 686/89 - 3.3.2

Application No.: 81 101 656.7

Publication No.: 0 035 777

Title of invention: Abrasion resistant silicon nitride based articles

Classification: C04B 35/58

DECISION
of 12 November 1992

Applicant: GTE Laboratories Incorporated

Opponent: 01) Fried. Krupp GmbH
02) Sandvik Aktiebolag

Headword: Cutting tool/GTE II

EPC Articles 54, 56 and 123(2)

Keyword: "Novelty - yes (after amendment)"
"Inventive step - not yet considered by Opposition Division -
remittal"



Case Number : T 686/89 - 3.3.2

D E C I S I O N
of the Technical Board of Appeal 3.3.2
of 12 November 1992

Appellant :
(Proprietor of the patent)

GTE Laboratories Incorporated
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Representative :

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Respondent :
(Opponent 01)

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Representative :

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Respondent :
(Opponent 02)

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Representative :

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Decision under appeal :

Decision of the Opposition Division of the
European Patent Office dated 10 August 1989
revoking European patent No. 0 035 777 pursuant
to Article 102(1) EPC.

Composition of the Board :

Chairman : P.A.M. Lançon
Members : I.A. Holliday
E.M.C. Holtz

Summary of Facts and Submissions

- I. European patent No. 0 035 777 was granted on the basis of seventeen claims contained in European patent application No. 81 101 656.7.
- II. Oppositions were filed against the granted patent by
Fried Krupp GmbH (Respondent I), and
Sandvik Aktiebolag (Respondent II).

Eight documents were cited in the course of the opposition proceedings of which the following is relevant to the present decision:

- (5) Tai-Il Mah et al., "Fracture Toughness and Strength of Si_3N_4 -TiC Composites", Ceramic Bulletin Vol. 60, No. 11 (1981), pp. 1229-1231 and 1240.

Claim 1 read as follows:

"A densified composite cutting tool consisting essentially of hard particles of refractory metal carbides or nitrides or combinations thereof, uniformly distributed in a two-phase matrix containing silicon nitride and at least an additive, the first phase of said matrix consisting essentially of silicon nitride, c h a r a c t e r i z e d i n t h a t the second phase of said matrix comprises silicon nitride and a densification aid selected from yttrium oxide, hafnium oxide, cerium oxide and/or mixtures thereof, wherein said hard refractory particles comprise from 1 to 60 volume percent of said cutting tool."

- III. The Opposition Division revoked the patent on the grounds that Claims 1, 14 and 15 lacked novelty having regard to the disclosure of document (5).

Although (5) was published after the priority date of the patent in suit, the Opposition Division considered that its disclosure belonged to the state of the art within the meaning of Article 54(2) EPC since it was originally presented at the Fall meeting of the Basic Science and Nuclear Division of the American Ceramic Society in New Orleans on 15 October 1979.

The Opposition Division added that having regard to the lack of novelty of the claimed subject-matter, it was not necessary to question the formal admissibility of the above-mentioned claims.

- IV. The Appellant (Proprietor of the patent) lodged an appeal against the said decision. The main argument was that since the document (5) had been twice revised before publication, it was by no means clear that an oral disclosure had in fact taken place at the meeting in October 1979.

The Appellant also argued that the preferred densification aids of the opposed patent, yttrium oxide and hafnium oxide were not disclosed in document (5).

- V. Both Respondents refuted the arguments of the Appellant maintaining that in the absence of any evidence to the contrary, the contents of document (5) must be considered as having been disclosed orally in October 1979.

Respondent I also objected that the limitation of Claim 1 to include a specific reference to cerium oxide amounted to added subject-matter which offended Article 123(2).

- VI. In accordance with Article 110(2) EPC, the Board issued a communication dated 30 December 1991. The Board expressed

a provisional opinion that Claims 1, 14 and 15 offended Article 123(2) insofar as cerium oxide was not mentioned in the originally filed documents, which referred generally to the "lanthanide rare earth oxides", without specifically mentioning cerium.

It was also the provisional view of the Board that since the Appellant had produced no evidence that the oral disclosure in October 1979 differed from that published in document (5), the reasons given by the Opposition Division for revoking the patent remained valid.

VII. Accompanying a letter dated 9 March 1992, the Appellant filed new Claims 1 to 14 as a basis for further prosecution. Claims 1 to 11 related to a densified composite cutting tool and independent Claim 12 to a powder composition for the production of an oxidation and abrasion resistant material. Independent Claim 13 and Claim 14 related to a process for preparing a composite article by densifying a powder composition.

VIII. Oral proceedings took place on 12 November 1992.

The Board indicated that Claims 1 and 3 appeared to offend Article 123(2) since the originally filed Claims 1, 15 and 30 referred to the first phase consisting essentially of crystalline silicon nitride; the said objections were supported by the original description on page 6 (lines 34 to 36) and page 8 (lines 8 to 13).

The Appellant requested the insertion of the word "crystalline" in Claims 1 and 3 and also the corrections of clerical errors in Claims 3, 5 and 13.

The Respondents accepted the formal admissibility and novelty of the amended claims.

IX. Claim 1 presented at the oral proceedings reads as follows:

"A densified composite cutting tool consisting essentially of hard particles of refractory metal carbides or nitrides or combinations thereof, uniformly distributed in a two-phase matrix containing silicon nitride and at least a densification aid, the first phase of said matrix consisting essentially of crystalline silicon nitride,

characterized in that the second phase of said matrix comprises silicon nitride and at least said densification aid which is selected from the group consisting of yttrium oxide, hafnium oxide, and/or mixtures thereof in an amount of from 1 to 25 percent by weight of said matrix, wherein said hard refractory particles comprise from 1 to 60 volume percent of said cutting tool, and wherein said cutting tool is oxidation resistant and has a density in excess of 90 percent theoretical."

Independent Claim 3 relates to a densified composite cutting tool in which the densification agent is restricted to yttrium oxide. Independent Claim 12 relates to a powder composition and independent Claim 13 to a composite article as indicated under VII above.

X. The Appellant requested that the decision of the Opposition Division be set aside and the case be remitted to the Opposition Division for further prosecution.

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. Amendments
 - 2.1 Claim 1 is in effect a combination of Claims 15, 18, 22 and 23 as originally filed. It is to be noted that original Claim 15 refers to the first phase of the matrix consisting essentially of crystalline silicon carbide (cf. point VIII above).
 - 2.2 Claim 3 is based on Claims 15, 17, 18, 22 and 23 as originally filed.
 - 2.3 Claims 2, 4, 5, 6, 8, 9 and 10 are based respectively on the original Claims 16, 19, 20, 7, 10, 11 and 12. Claim 7 is supported by the description on page 7, lines 19 to 21. Claim 11 is based on the originally filed Claims 13 and 27.
 - 2.4 Independent Claim 12 is based on the original Claim 29 together with the description on page 7, lines 28 and 29.
 - 2.5 Independent Claim 13 is supported by a combination of the originally filed Claims 30 and 23 together with the original description on page 4, lines 22 to 38. Dependent Claim 14 is based on the original Claim 31.
 - 2.6 Insofar as the densification aid is now restricted to yttrium oxide and hafnium oxide and the first phase of the matrix is limited to crystalline silicon nitride, the scope of the present claims is narrower than that of the claims as granted.

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2.7 The requirements of Articles 123(2) and 123(3) are accordingly satisfied.

3. Novelty

3.1 Document (5) on which the novelty objection of the Opposition Division was based relates to the preparation of dense silicon nitride-titanium carbide composites using cerium oxide as a densification aid. The claims of the patent in suit are now restricted to the use of yttrium oxide and hafnium oxide and are thus novel over the disclosure of (5).

3.2 At least as far as novelty is concerned, it is no longer necessary to consider whether or not document (5) is to be considered as state of the art within the meaning of Articles 52(2) EPC.

3.3 None of the other documents cited during the opposition procedure, nor those mentioned in the European Search Report, appear to prejudice the novelty of the claims now on file. Novelty of the said claims was not questioned by the Respondents at the oral proceedings before the Board. Accordingly, the claims on file relate to novel subject-matter.

4. Inventive step

4.1 The decision of the Opposition Division was reached without oral proceedings and without the issue of a communication in accordance with Article 101(2) EPC. The sole reason given for the revocation of the patent in suit was the lack of novelty of the claims then on file.

4.2 The Opposition Division could have foreseen that a simple amendment, namely the deletion of the reference to cerium oxide, was all that was necessary to meet the outstanding

novelty objection. Nevertheless, it chose not to express any opinion concerning inventive step. Notwithstanding the fact that the present case dates from 1981, in the opinion of the Board, it would be inappropriate in the circumstances to deprive the parties of an instance of jurisdiction.

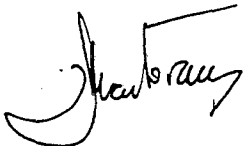
- 4.3 In addition to the documents already considered during the opposition and appeal procedure, other documents arising during examination, for example US-A-4 184 882, may well be of interest with regard to inventive step. It is accordingly the decision of the Board to use its powers under Article 111(1) EPC to remit the case to the Opposition Division for further prosecution.

Order

For these reasons, it is decided that:

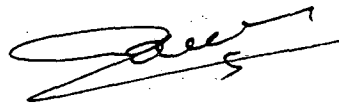
1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division for further prosecution on the basis of Claims 1 to 14 as submitted during the oral proceedings.

The Registrar:

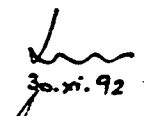
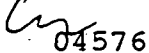


P. Martorana

The Chairman:



P.A.M. Lançon


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