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File Number: T 570/89 - 3.3.3
Application No.: 82 304 064.7
Publication No.: 0 076 027
Title of invention: Powder metallurgy articles

Classification: C22C 38/24

DECISION
of 2 November 1992

Proprietor of the patent: CRUCIBLE MATERIALS CORPORATION
Opponent: 01) Uddeholm Tooling Aktiebolag
02) Voest-Alpine Stahl AG

Headword:

EPC Article 56

Keyword: "Uncontested evidence - inventive step denied"



Case Number : T 570/89 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 2 November 1992

Appellant :
(Opponent 02)

VOEST-ALPINE STAHL AG
Postfach 2
Turnstrasse 41
A - 4031 Linz (AT)

Other party :
(Opponent 01)

Uddeholm Tooling Aktiebolag
S - 683 05 Hagfors (SE)

Representative :

Hynell, Magnus
Hynell Patenttjänst AB
Box 236
S - 683 02 Hagfors (SE)

Respondent :
(Proprietor of the patent)

CRUCIBLE MATERIALS CORPORATION
PO BOX 88
Parkway West & Route 60
Pittsburgh
Pennsylvania 15230 (US)

Representative :

Sheader, Brian N.
Eric Potter & Clarkson
St. Mary's Court
St. Mary's Gate
Nottingham NG1 1LE (GB)

Decision under appeal :

Decision of Opposition Division of the European
Patent Office dated 5 July 1989 rejecting the
opposition filed against European patent
No. 0 076 027 pursuant to Article 102(2) EPC.

Composition of the Board :

Chairman : R.A. Lunzer
Members : H. Fessel
W. Moser

Summary of Facts and Submissions

- I. European patent No. 0 076 027 was granted on 12 November 1986 on the basis of application No. 82 304 064.7 filed on 2 August 1982, having a priority date of 28 September 1981 derived from US application No. 0 306 040.
- II. On 31 July and 12 August 1987, oppositions were lodged respectively by the first Opponent, and by the second Opponent (the sole Appellant) on the grounds of Articles 100(a) and (b) EPC, alleging lack of inventive step (Article 56 EPC), and lack of sufficiency of disclosure (Article 83 EPC).
- III. The Patentee (Respondent) took no part in the proceedings before the Opposition Division, and did not reply other than formally to the grounds of opposition. By its decision given in writing on 5 July 1989, the Opposition Division dismissed the oppositions, holding that no valid grounds of opposition existed against the maintenance of the patent as granted. Independent Claim 1 was in the following form:

"A powder metallurgy article formed from compacted prealloyed powder, characterised in that the powder is of an alloy having the composition, in weight percent:-

Manganese	:	0.2 to 1.5
Silicon	:	2 max
Chromium	:	1.5 to 6
Molybdenum	:	0.50 to 6
Sulfur	:	0.30 max
Vanadium	:	7 to 10, optionally partially replaced by up to 5% tungsten and 5% niobium

Carbon : 0.25 min, 0.40 max, plus
0.16 x % vanadium plus the
stoichiometric amount required to
balance any tungsten and niobium
present
Cobalt : up to 5
Balance, iron and incidental elements and impurities
characteristic of steelmaking practice,

and in that the article has a fully martensitic structure with no carbon in the steel matrix in excess of the carbon necessary to combine with the vanadium and any tungsten and niobium present to form vanadium, tungsten and niobium carbides and to ensure the fully martensitic structure."

- IV. In its decision, the Opposition Division dealt with the objection of lack of inventive step, identifying document (1) FR-A-2 436 824 as the closest prior art, and observing that it did not give any pointer towards lowering the carbon content, as was taught by the patent in suit. It regarded the other cited documents as being further away, and concluded that the objection of lack of any inventive step was not established.
- V. An appeal against the decision of the Opposition Division, and the supporting Grounds of Appeal, were filed on 24 August 1989, and the appeal fee was paid on 25 August 1989. In the Grounds of Appeal, the Appellant contended that the objection of lack of inventive step had wrongly been rejected. It was clear from the patent specification page 3, line 6 that vanadium carbide of the M_4C_3 type has a stoichiometric proportion of 0.176, while the other carbides such as M_4C , M_2C , and $M_{22}C_6$ require still lower proportions of carbon. The skilled worker also would have

known that a proportion of vanadium would remain inevitably in the matrix, so that a proportion of 0.16% carbon for each 1% of vanadium is that which had long been known as appropriate to tool steels. In addition it was anomalous and confusing to take into account the carbide forming properties of tungsten and niobium, while at the same time ignoring the presence of the still stronger carbide formers chromium and molybdenum.

VI. The Appellant requested that the decision under appeal be set aside, and the patent revoked. Although the Respondent did not take any part in the appeal, it is deemed to have requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. Novelty

Novelty was not in issue on appeal, and the Board is satisfied that none of the documents cited discloses powder metallurgy articles having all the features set out in the independent Claim 1. Therefore the subject matter of Claim 1 is novel within the meaning of Article 54 EPC.

3. Inventive step

3.1 The Board agrees with the Opposition Division in identifying document (1) as the closest prior art. Like the patent in suit, document (1) relates to an alloy which is to be used in the form of a compacted powder, the composition of which includes 6 to 11% vanadium, 1.6 to 2.8% carbon, 1.5 to 6% chromium, and 0.5 to 6% molybdenum. On page 1, lines 30 to 31 it indicates that the

stoichiometric proportion of carbon to vanadium for a carbide of the type MC is 0.20% carbon to 1% vanadium. The alloy disclosed in document (1) which comes closest to the alloys in accordance with the alleged invention is alloy CPM 10V, disclosed in Table 1. Its analysis is close to, but not identical to, that of Alloy 1 in Table 1 of the patent in suit, its carbon content being marginally above the upper limit of the carbon content now claimed.

3.2 If the matter had rested there, and there had been no material before the Board apart from the contents of document (1), the Board might have agreed with the Opposition Division in holding that there was no convincing attack on inventiveness. However, the matter does not rest there. In the Statement of Grounds of Opposition filed by the first Opponent on 31 July 1987 it is stated in relation to document (1) as follows:

"It is clearly seen that the claimed composition is almost identical with the known composition, and that the only "novelty" is the selection of a specified carbon range which mainly falls within the limits of the known composition. However, it is conventional to adjust the carbon content of a steel with a given alloy composition in order to achieve desired features in terms of hardness, wear resistance or impact strength, etc., since carbon combines with the alloying elements to form carbides at the same time as carbon existing in the matrix of the steel monitors the microstructure of the steel."

3.3 It is then pointed out in that statement that it is well known that tool steels normally have a martensitic structure, that any excess carbon is known to be deleterious, and is avoided in order to avoid loss of impact strength, and that therefore limiting the carbon content cannot be regarded as inventive.

3.4 These allegations of fact are uncontested by the Respondent, who has taken no active part in the present proceedings, whether at first instance or on appeal. The Board finds the said facts credible, and fully consistent with its own understanding of the background to the subject matter of the present patent. In addition, the above mentioned facts find further support in the Appellant's own Statement of Grounds of Opposition, particularly on page 8 thereof, and equally in its statement of Grounds of Appeal.

3.5 In the absence of any challenge to the facts asserted on the part of both opponents at first instance, and by the Appellant in the present appeal, the Board is satisfied that workers skilled in this art, if confronted with the problem of ensuring that there is no free carbon in an otherwise martensitic matrix of an alloy of the kind here in question, would as a matter of course have known that the solution to that problem resided in controlling the carbon content of the alloy in proportion to the content of carbide forming elements, vanadium, tungsten, and niobium. Consequently, the Board is unable to acknowledge the existence of any inventive step.

4. Conclusion

For the reasons given above, the Board concludes that the alleged invention involves no inventive step, and therefore fails to meet the essential requirement of Article 56 EPC. The patent must therefore be revoked.

Order

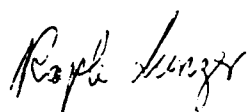
For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:


E. Görgmaier

The Chairman:


R. Lunzer