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D E C I S I O N
of 8 May 1996

Case Number: T 0893/91 - 3.2.5

Application Number: 83850266.4

Publication Number: 0106822

IPC: B22D 41/08

Language of the proceedings: EN

Title of invention:
Nozzle for injection lance

Patentee:
IFM Development AB

Opponent:
Didier-Werke AG

Headword:
-

Relevant legal provisions:
EPC Art. 56, 108

Keyword:
"Inventive step - no"
"Form of appeal - admissible (yes)"

Decisions cited:
T 0220/83

Catchword:
-



Case Number: T 0893/91 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 8 May 1996

Appellant: IFM Development AB
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Respondent: Didier-Werke AG
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 20 September 1991
revoking European patent No. 0 106 822 pursuant to
Article 102(1) EPC.

Composition of the Board:

Chairman: G. O. J. Gall
Members: C. G. F. Biggio
A. Burkhardt

Summary of Facts and Submissions

I. An opposition was filed against the grant of the European patent No. 0 106 822 on the grounds that the subject-matter of the European patent did not involve an inventive step (Article 100(a) EPC).

II. Claim 1 as granted reads as follows:

"1. A nozzle for an injection lance for injecting powderous material and/or gas into a metal bath, for example a steel bath, onto the bath or into a casting nozzle, through which lance said material is transported all the way to the lance tip (3), at which the powderous material and/or gas passes out through at least one nozzle (4) comprising a through passageway for said material and/or gas, said nozzle (4) being made of a material with very high wear resistance of the order of wear resistance of highly purified Al_2O_3 , and with a fusion point, which is substantially higher than the fusion point of said metal bath, characterized in that the nozzle (4) is tubular with an outer diameter substantially smaller than the average outer diameter of the lance tip (3), which nozzle (4), as a separate piece, is attached in and to the lance tip (3)."

III. The patent was revoked pursuant to Article 102(1) EPC. In its decision the Opposition Division held that the independent claim 1 of the patent as granted did not involve an inventive step with respect to the documents:

- E1: "Technische Mitteilungen", 1976, p. 628 and
Figure 17, and
E2: DE-A-2 819 714,

having regard to "ISO 1109-1975, Detailed classification of fireclay products, 29th PRE Recommendation - 1968" (E3).

IV. The appellant (proprietor of the patent) lodged an appeal on 20 November 1991 against this decision of the Opposition Division and paid the appropriate fee on 21 November 1991. The appellant requested that the decision under appeal be set aside and that the patent be maintained. The statement of grounds was filed on 17 January 1992.

V. In support of his request the appellant submitted essentially the following:

The object of the present invention was to obtain a lance tip having a long service life with a substantially constant jet geometry at low cost. This object was achieved by providing a nozzle according to claim 1, having a high wear resistance, and which was attached in and to the lance tip as a separate piece. In this way the nozzle, which determined the jet geometry and which was of a relatively expensive material, could be kept small, whereas the lance tip could be made of a relatively simple and cheap material without affecting the service life of the lance. This inventive idea was not suggested in any of the references.

The appellant also stated that "claim amendments limited to dense sintered, highly purified Al_2O_3 with over 99% Al_2O_3 are being considered and will be filed within short if decided on".

- VI. The respondent (opponent) requested to dismiss the appeal. The respondent also questioned the admissibility of the appeal, since the statement of grounds would not contain a concrete challenge of the reasoning of the impugned decision.
- VII. In a communication pursuant to Article 110(2) EPC dated 16 February 1995 the Board expressed the opinion that the appeal was admissible, but that nothing in the argumentation of the appellant seemed to justify that the decision under appeal should be reversed, and that a limitation of claim 1 to dense sintered, highly purified with over 99% Al₂O₃ would not give any support to a positive decision on the appeal.
- VIII. The submissions on the substantive issues of the appellant were contested by the respondent who contended that the teaching of claim 1 was obvious in the light of the documents E1 and E2 in connection with ISO 1109-1975 (E3).
- IX. Although the appellant was duly invited to file observations to both the Board's communication and the respondent's submission (Section VII and VIII above), no further arguments were submitted by the appellant to rebut the analyses put forward in said communication and submission. A formal auxiliary request to maintain the patent in amended form on the basis of a limited claim 1 (see Section V) was also not filed.

Reasons for the Decision

1. *Admissibility of the appeal*

- 1.1 The notice of appeal was filed and the appeal fee was paid within the time period as set out in Article 108 EPC, first and second sentence. The appeal also complies with Articles 106 and 107 and with Rule 1, paragraph 1, and Rule 64(b) EPC.

There remains the question whether the written statement filed within four months after the date of the notification of the decision was sufficient to set out grounds of appeal in accordance with Article 108, third sentence, EPC or whether the appeal has to be rejected as inadmissible under Rule 65(1) EPC.

- 1.2 The statement of grounds must indicate the legal and factual reasons why the contested decision should be set aside (T 220/83, OJ EPO 1986, 249, reasons No. 4).

- 1.3 In his statement of grounds the appellant put forward that it was the object of the invention to obtain a lance tip having a long service life with a substantially constant jet geometry and that the features of the invention he considered inventive over the cited prior art and which solved that object were the extremely special geometry of the nozzle and its very high wear resistance. Hence the Board is satisfied that the requirements of Article 108 EPC, third sentence, were met.

- 1.4 Consequently, the appeal is admissible. However, the appeal will fail for the following reasons.

2. *Novelty*

It is not disputed by the parties that none of the cited documents discloses a nozzle comprising all the features of claim 1 as granted.

The subject-matter of claim 1 is therefore new within the meaning of Article 54 EPC.

3. *Inventive step*

3.1 The present invention relates to a nozzle for an injection lance for injecting powderous material and/or gas into a metal bath. Such nozzles are subject to wear, so that the jet geometry tends to change over time. In many applications however a constant jet geometry must be maintained over a long time, which requires a constant shape of the nozzle. It is known to employ as material for the lance tip a material with very high wear resistance of the order of the wear resistance of highly purified Al_2O_3 , and with a fusion point, which is substantially higher than the fusion point of the metal bath. However, such material is relatively expensive.

Thus the problem to be solved can be defined as providing a nozzle for an injection lance with a long service life and constant jet geometry, at low total cost. This problem is solved by providing a small tubular nozzle piece attached in and to the lance tip with a high wear resistance, whereas the lance tip itself can be of a comparatively simple material.

3.2 Document E1 discloses (see Figure 17 and page 627, right column, line 2) a nozzle for an injection lance made of a material with a high wear resistance, which, as a separate piece, is attached in and to the lance tip.

As suitable material, a material with a high alumina content ("hochtonerdehaltiges Material") is mentioned. As an example of such a material a material with 98% Al_2O_3 is mentioned on page 625. A cross-section of the nozzle insert according to document E1 (see Figure 17) shows parallel side walls, suggesting that the nozzle is tubular in form, although this is not stated expressis verbis in the text.

3.3 Document E2 discloses (see Figure 1 and page 8, line 2) a nozzle for an injection lance made of a ceramic material with a very high wear resistance, which is a separate piece, is tubular in form and is attached in and to the lance tip and has an outer diameter substantially smaller than the average outer diameter of the lance tip.

3.4 The Opposition Division held that document E1 disclosed all the features of the preamble of claim 1. Since the object of the embodiment according to Figure 1 of document E2 was to increase the service life of the lance (cf. page 6, last paragraph), the person skilled in the art seeking to provide a nozzle with a long service life would apply the teaching of document E2 to the nozzle according to document E1 and would arrive at the subject-matter of the invention without performing an inventive step.

3.5 The appellant was informed by the Board that his arguments why the decision under appeal was wrong in assessing inventive step were not considered convincing but did not submit further arguments.


3.6 The Board concurs with the finding of the Opposition Division that claim 1 lacks inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar:



A. Townend

The Chairman:



G. Gall