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Datasheet for the decision of 30 January 2007

Case Number: T 1125/04 - 3.2.03

Application Number: 95915728.0

Publication Number: 0804309

IPC: B22D 41/50

Language of the proceedings: EN

Title of invention:
Submergent entry nozzle

Patentee:
VESUVIUS CRUCIBLE COMPANY

Opponents:
Didier-Werke AG
Staverma Fabrik für hochfeuerfeste
SMS Demag AG

Headword:
-

Relevant legal provisions:
EPC Art. 84
EPC R. 64

Keyword:
"Admissible appeal (yes)"
"Claims - clarity (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1125/04 - 3.2.03

D E C I S I O N
of the Technical Board of Appeal 3.2.03
of 30 January 2007

Appellant: (Patent Proprietor)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 20 July 2004 revoking European patent No. 0804309 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: U. Krause
Members: G. Ashley
J. Seitz

Summary of Facts and Submissions

I. European Patent EP-B1-0 804309, which concerns a submerged entry nozzle for metal casting, was revoked by the opposition division for lack of novelty of claim 1 of the main request and lack of inventive step of claim 1 of the auxiliary request; the written decision was posted on 20 July 2004. The patent proprietor filed notice of appeal against the decision on 17 September 2004, paying the appeal fee at the same time. A statement containing the grounds of appeal was submitted on 25 November 2004, together with two sets of amended claims as the main and auxiliary requests.

II. The grant of the disputed patent to Vesuvius Crucible Company (appellant) had been opposed by Didier-Werke (respondent I), Staverma Fabrik (respondent II) and SMS Demag (respondent III). In response to the appeal, the respondents argued that the appeal is not admissible, that the amendments to the granted claims do not meet the requirements of Articles 123(2)&(3) and 84 EPC, and that the claimed subject-matter lacks novelty and/or inventive step (Articles 54 and 56 EPC respectively).

III. The Board summoned the parties to oral proceedings and, in accordance with Article 11(1) Rules of Procedure of the Boards of Appeal, set out its provisional opinion regarding the above matters. In a letter dated 9 January 2007, respondent III announced that it would not be attending the oral proceedings. The oral proceedings were held on 30 January 2007 in the absence of respondent III. During the oral proceedings, the appellant replaced the claims on file by two sets of

further amended claims as the main and auxiliary requests.

IV. Claims Relevant for this Decision

(a) Claim 1 of the granted patent reads as follows:

"1. A submerged entry nozzle (30) for flowing liquid metal therethrough, comprising a vertically disposed entrance pipe section (30b) having a first cross-sectional flow area and generally axial symmetry; a diffusing transition section (34) in fluid communication with the pipe section (30b), the transition section (34) arranged to substantially continuously change the nozzle's cross-sectional flow area from the first cross-sectional flow area to a second cross-sectional flow area which has a greater cross-sectional flow area than the first cross-sectional flow area and to substantially continuously change the nozzle's symmetry from having generally axial symmetry to generally planar symmetry; and a divider section in fluid communication with the transition section (34) to divide the flow of liquid metal from the transition section (34) into two streams angularly deflected from the vertical in opposite directions."

(b) Independent claim 2 of the main request, as submitted during the oral proceedings, is as follows:

"2. A submerged entry nozzle (30) for flowing liquid metal therethrough, comprising a vertically disposed entrance pipe section (30b) having a first cross-

sectional flow area and generally axial symmetry; a diffusing transition section (34) in fluid communication with the pipe section (30b), the transition section (34) arranged to substantially continuously change the nozzle's cross-sectional flow area from the first cross-sectional flow area to a second *elongated* cross-sectional flow area which has a greater cross-sectional flow area than the first cross-sectional flow area and to substantially continuously change the nozzle's symmetry from having generally axial symmetry to generally planar symmetry; and a divider section in fluid communication with the transition section (34) to divide the flow of liquid metal from the transition section (34) into two streams angularly deflected from the vertical in opposite directions, *the divider section including a flow divider (32)*

characterized in that

the divider section includes a pair of curved deflecting sections (35, 37; 38, 42, 40, 44), the flow divider (32) being disposed between the deflecting sections (35, 37; 38, 42, 40, 44) downstream of the transition section (34), the deflecting sections having side walls (38a', 39a', 38a, 42a, 38b, 42b, 40a, 44a, 40b, 44b) which diverge from the vertical at a predetermined angle, the side walls (38a, 42a, 40a, 44a) being generally parallel to the side walls (38b, 42b, 40b, 44b) provided by the flow divider (32), wherein the transition section (34) has side walls (34a, 34b; 34c, 34f) which diverge at a certain angle from the vertical and wherein the deflecting sections (35, 37; 38, 42, 40, 44) provide a deflecting angle from the vertical in the range of about 10 to 80 degrees on each side, and the deflecting sections (35, 37; 38, 42, 40,

44) have respective terminal portions (42a, 44a) at which the corresponding walls diverge at an angle from the vertical appreciably greater than the said certain angle."

The Board has introduced italics to show the amendments made to claim 1 of the granted patent, and the amendments made during the oral proceedings are underlined.

Independent claim 2 of the auxiliary request filed during the oral proceedings reads the same as that of the main request, but with the deletion of the word "appreciably" from the expression "appreciably greater than the said certain angle".

V. The following arguments concerning the issues relevant to this decision were put forward by the parties.

(a) Admissibility of the Appeal

Respondent I alleged that the appeal is inadmissible, since the appellant has failed to state the extent to which the contested decision should be amended or cancelled, contrary to Rule 64(b) EPC.

The appellant replied by indicating that the French wording of Rule 64(b) EPC refers to the term "révocation", the translation of which in the English version of the rule is "cancellation ". Hence the statement in the grounds of appeal: "Il est demandé de révoquer la décision attaquée dans son entièreté." makes it clear that the appellant seeks cancellation of

the decision in its entirety, and meets the requirements of Rule 64(b) EPC.

(b) Article 84 EPC

Concerning the subject-matter of independent claims 2 of both the main and auxiliary request, respondent I submitted *inter alia* that defining curved deflection sections as having side walls which diverge from the vertical at a predetermined angle is unclear. The walls of a curved section diverge from the vertical at many different angles and the skilled person has no idea which one relates to the "predetermined angle".

The appellant argued that independent claims 2 define deflecting sections which are curved and also include a straight terminal portion. This is made clear in the description, particularly in the embodiments shown in Figures 1, 7, 9, 13 and 15. It is evident to the skilled person that the predetermined angle of the side walls of the deflecting section must refer to the straight wall of the terminal portion.

VI. Requests

The appellant request that the decision be set aside and a that the patent be maintained on the basis of the claims of the main or auxiliary requests filed during the oral proceedings before the Board.

The respondents request that the appeal be dismissed.

Reasons for the Decision

1. Admissibility of the Appeal

Rule 64(b) EPC requires that the notice of appeal shall contain a statement identifying the decision which is impugned and the extent to which amendment or cancellation of the decision is required. The French version of Rule 64(b) states that "L'acte de recours doit comporter une requête identifiant la décision attaquée et indiquant la mesure dans laquelle sa modification ou sa révocation est demandé."

The request of the appellant, filed with the notice of appeal, to "révoquer la decision attaquée dans son entièreté", and the submission of claims as main and auxiliary requests (with the grounds of appeal) makes the wishes of the appellant clear, i.e. to have the decision cancelled and the patent maintained on the basis of the submitted claims; thus, the requirements of Rule 64 EPC have been met.

2. Article 84 EPC

The following discussion applies to independent claims 2 of both the main and auxiliary requests. Both of these claims require that the divider section includes a pair of curved deflecting sections (35, 37; 38, 42, 40, 44) having side walls (38a', 39a', 38a, 42a, 38b, 42b, 40a, 44a, 40b, 44b) which diverge from the vertical at a predetermined angle. This feature is an amendment to the sole independent claim of the granted patent, and hence, in accordance with Article 102(3)

EPC, must meet the requirements of the EPC, including that of clarity (Article 84 EPC).

The Board agrees with the submission of respondent I, that the walls of a curved section lie within a range of angles, and it is inherently unclear to define such walls as diverging from the vertical at a predetermined angle. The patent specification provides the skilled person with little help in interpreting this feature. A nozzle having curved deflecting sections is shown in Figure 1, as submitted by the appellant, and is discussed in paragraphs [0026] to [0032]; a comparison of this embodiment with the subject-matter of claims 2 is as follows.

The liquid metal flows from the pipe section 30b of the nozzle into a transition section 34. This transition section preferably has six walls (34a to 34f), four of which are referred to in claim 2, namely 34a to 34c and 34f. Walls 34c and 34f each diverge at an angle of 10 degrees from the vertical, whereas walls 34a and 34b converge at an angle of about 3.8 degrees from the vertical (see column 7, line 54 to column 8, line 5). Claim 2 defines the walls as diverging from the vertical at a "certain angle", which presumably only refers to walls 34c and 34f, and not to walls 34a and 34b.

The metal leaves the transition section 34 at exits 35 and 37, which are at 10 degrees relative to the horizontal (see column 8, lines 39 to 41), and enters curved sections 38 and 40 (column 8, lines 51 to 53, incidentally, the reference here to exits 35a and 37a appears to relate to the embodiment shown in Figure 13).

The curved sections bend the metal through a further 20 degrees and terminate at lines 39 and 41, where the metal enters straight pipe sections 42 and 44 before exiting the nozzle at ports 46 and 48 (column 9, lines 1 to 8).

Claim 2 defines the curved deflecting sections as including straight pipe sections 42 and 44, which is somewhat contradictory. The walls of the curved deflecting section are said to diverge at a "predetermined angle" from the vertical, which could mean either the 10 degrees angle at the beginning of the curved section (exits 35 and 37), or the 30 degree angle at the end (lines 39 and 41), or indeed, any point in between. This is not clear from the wording of the claim.

Claim 2 refers to the terminal portions (42a, 44a) of the deflecting sections (35, 37; 38, 42, 40, 44). References 42a and 44a concern the inner wall of straight pipe sections 42 and 44, and hence are not relevant to the curved deflecting sections. The terminal portions (42a, 44a) are defined as diverging at an angle from the vertical that is (appreciably) greater than the "certain angle", i.e. the angle of the walls of the transition section. Given that the walls of the transition section are at different angles to the vertical (see above), this feature is also not clear. Since it is clear from the description that the deflecting section comprises a curved part and a straight terminal portion, it is possible that the angle of the walls of the terminal portion of claim 2

corresponds to the "predetermined angle", but this is not defined in the claim and is mere speculation.

It appears from the description that the gist of the invention is that the final straight sections of the nozzle diverge at an angle from the vertical that is greater than that of the walls of the transition section. However, claim 2 does not define this; the claim has been drafted with inconsistencies such that it is not possible to determine clearly the subject-matter of the invention for which protection is sought, contrary to Article 84 EPC.

3. Since independent claims 2 according to both the main and auxiliary requests fail to comply with Article 84 EPC, it is not necessary for the Board to consider the other substantive issues raised by the respondents.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Counillon U. Krause