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Datasheet for the decision of 25 July 2006

Case Number: T 0523/05 - 3.2.02

Application Number: 00930801.6

Publication Number: 1287169

IPC: C21C 5/46

Language of the proceedings: EN

Title of invention:
Method and apparatus for delivering metallurgically improved molten metal

Applicant:
TETRON, INC.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 84, 123(2)

Keyword:
"Clarity, novelty, inventive step (yes, after amendment)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0523/05 - 3.2.02

D E C I S I O N
of the Technical Board of Appeal 3.2.02
of 25 July 2006

Appellant: Tetron, Inc.
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Representative: Lamb, Richard Andrew
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 6 December 2004 refusing European application No. 00930801.6 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: T. Kriner
Members: D. Valle
M. Vogel

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal on 9 February 2005 against the decision of the examining division posted on 6 December 2004 refusing the European patent application 00 930 801.6. The fee for the appeal was paid simultaneously and the statement setting out the grounds for appeal was received on 18 April 2005.

II. The examining division held that the application did not meet the requirement of Articles 84 (lack of clarity), 54 (lack of novelty) and 56 EPC (lack of inventive step) having the regard to the teaching of

D1 = US - A - 4 854 550.

III. Oral proceedings took place on 25 July 2006.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of:

Claims: 1 to 8, and
Description: pages 1 to 9

all filed during the oral proceedings, and

Figures: 1 to 3 as originally filed.

IV. Claim 1 reads as follows:

"A method of improving metal pouring processes with a metal pouring vessel (22) containing molten metal and a

discharge opening (28) in said vessel, the method comprising:
forming a vortex inhibitor from a mixture of steel ballast, refractory material, and at last one of a particulate carbonaceous material, silica and silicate based glass to increase the resistance of said body to penetration by molten metal and slag in the ladle (22), wherein said body has a specific gravity less than required to buoyantly support the body in said molten metal and greater than required to buoyantly support said body in a slag layer on top of said molten metal;
introducing the vortex inhibitor to the metal pouring vessel (22)
closing the metal pouring vessel (22) with a cover (90); and
maintaining said vortex inhibitor enclosed in said metal pouring vessel (22) for a prolonged period of time until a discharge of said molten metal is terminated."

V. In support of his request the appellant relied essentially on the following submissions.

The new main claim 1 was directed to a method of improving metal pouring process and did overcome the objection of lack of clarity raised against the previously filed object claim. The subject-matter of the new claim 1 was also new and inventive. No document of the prior art disclosed and suggested to provide a vortex inhibitor composed of a mixture of different components like the claimed invention.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

Claim 1 is derived from claims 12 and 20 and page 8, paragraphs 1 and 2 as published (WO-A-01/88209). Claims 2 to 5 are based on the published claims 13 to 16 respectively. Claim 6 is based on the published description, page 8, last line, to page 9, first line. Claims 7 and 8 are based on published claims 6 and 10, respectively.

The description has been adapted to the newly filed claims.

Consequently the amendments made are allowable with respect to Article 123(2) EPC.

3. *Clarity*

The expressions "penetration inhibitor material" and "non-wetting agent" which were considered as being vague and unclear in the decision under appeal are not contained in the present claims.

These claims are clear and concise and supported by the description, the present version of the application is not objectionable under Article 84 EPC.

4. Novelty

D1 discloses a method of improving metal pouring processes with a metal pouring vessel (8) containing molten metal and a discharge opening (14) in said vessel, the method comprising:
forming a vortex inhibitor from a composition of steel ballast (6, 7), refractory material (3) (see Figure 3), and silica (see column 3, lines 11 to 13) suitable for increasing the resistance of said body to penetration by molten metal and slag in the vessel, wherein said body has a specific gravity less than required to buoyantly support the body in said molten metal and greater than required to buoyantly support said body in a slag layer on top of said molten metal (see figures 2 and 3, and the paragraph bridging columns 1 and 2);
introducing the vortex inhibitor to the metal pouring vessel and maintaining said vortex inhibitor enclosed in said metal pouring vessel for a prolonged period of time until a discharge of said molten metal is terminated.

However, D1 does not disclose that said composition is a mixture and that the metal pouring vessel is closed with a cover. A mixture is a result of putting together or combining two or more substances so that the constituents or particles of each are diffused among those of the others. On the contrary the ballast of the vortex inhibitor according to D1 is in the form of a heavy core having the shape of a cube or of a right-angled parallelepiped with square cross-sections surrounded by two half-shells of refractory material (see column 3. lines 3 to 20). Additionally, ballast

can be provided in the half-shells in the form of metal bars embedded therein (see column 3, lines 44 to 56).

The further documents of the state of the art are further away from the claimed invention than D1.

Accordingly the subject-matter of claim 1 is novel.

5. *Inventive step*

Starting from D1, the object underlying the present application is to improve the known method of metal pouring process.

This object is achieved by the steps of using a mixture for the composition of the vortex inhibitor and closing the metal pouring vessel with a cover. During the operations the vortex inhibitor is subjected to a deterioration. Since the vortex inhibitor according to the invention is made of a mixture, that is each of its constituents or particles is interspersed or diffused more or less evenly among the rest, the deterioration does not alter the specific gravity of the vortex inhibitor which can therefore fulfil its function of terminating the discharge of metal from the ladle before slag floating on top of the molten metal mixes with the molten metal layer independently of the grade of deterioration.

Since the available prior art does not suggest the use of a mixture for the formation of a vortex inhibitor, the claimed invention is not obvious. Therefore, the subject-matter of the claim 1 involves also an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent on the basis of:

   Claims: 1 to 8, and
   Description: pages 1 to 9

   all filed during the oral proceedings, and

   Figures: 1 to 3 as originally filed.

The Registrar: The Chairman:

V. Commare T. Kriner