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D E C I S I O N
of 11 January 2002

Case Number: T 0769/98 - 3.2.2

Application Number: 92307196.3

Publication Number: 0553533

IPC: C22C 1/02

Language of the proceedings: EN

Title of invention:

Method for grain refining of aluminium and grain refining alloy

Applicant:

ELKEM ALUMINIUM ANS

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 54

Keyword:

"Novelty (yes) after amendment"

Decisions cited:

-

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0769/98 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 11 January 2002

Appellant: ELKEM ALUMINIUM ANS
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N-0483 Oslo 4 (NO)

Representative: Rees, David Christopher
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 6 March 1998
refusing European patent application
No. 92 307 196 .3 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: R. Ries
Members: S. S. Chowdhury
R. T. Menapace

Summary of Facts and Submissions

I. European patent application No. 92 307 196.3 (publication no. EP-A1-0 553 533) was refused on 9 March 1998 by decision of the Examining Division for the reason that the subject matter of product claims 4 to 7 was not novel having regard to the prior art document

D4: "The Silicon-Boron System": Nature, volume 187, 2 July 1960, pages 54/55.

II. The appellant (applicant) lodged an appeal on 4 May 1998 against the decision of the first instance. A statement of grounds was submitted on 9 July 1998.

III. The Board of appeal issued a communication wherein, with respect to the question of novelty of the claimed subject matter, it further referred to the documents

D1: "Boron Silicon": Binary Alloy Phase Diagrams, volume 1, Th. Massalski, American Soc. for Metals, (1987), page 384

D2: "The Boron-Silicon System": Bulletin for Alloy Phase Diagrams, volume 5, No. 5, (1984), pages 478 to 484

D3: EP-A-0 372 918

D5: GB-A-1 437 362 & DE-B-2 328 417

D6: J. Hesse: "Löslichkeit und Ausscheidungskinetik von Bor in polykristallinem Silizium", Zeitschrift Metallkunde, volume 59, (1968), No. 6, pages 499

to 502

IV. Enclosed with its letter of 28 September 2001 in response to the Board's official communication dated 14 February 2001, the appellant submitted a revised set of method claims 1 to 3 to be substituted for all earlier requests and requested grant of the patent based thereupon. Oral proceeding were requested, should a negative decision be contemplated by the Board. The wording of independent method claim 1 reads as follows:

"1. A method for grain refining aluminium and aluminium alloys, characterised in that a solid siliconboron alloy containing from 0.01 to 4% by weight of boron is added to molten aluminium or aluminium alloy in such an amount that the resulting melt of aluminium or aluminium alloy contains at least 50 ppm boron."

The appellant referred to point 3 of the official communication from the Examination division dated 28 January 1997 and to point 6 of the official communication issued by the Board of appeal, both indicating that a set of claims restricted to method claims 1 to 3 would be favourably considered.

Reasons for the Decision

1. The appeal complies with Rule 65(1) EPC and is, therefore, admissible.

2. *Amendments*

Independent claim 1 derives from original claim 1 with

the further limitation that a "solid" siliconboron alloy is added to the molten Al or Al-alloy as a grain refiner. Apart from being typical in the art, the addition of a solid Si-B alloy to the aluminium melt is also disclosed in example 1, column 3, lines 37 to 40 of the Al publication (page 5, lines 19 to 24 of the specification as filed). Dependent claims 2 and 3 correspond to the originally filed claims 2 and 3.

The amendment to the claims, therefore, satisfies the requirements of Article 123(2) and Article 84 EPC.

3. *Novelty*

3.1 The present application is concerned with a method for grain refining aluminium or aluminium alloys by adding a Si-(0.01 to 4.0%)B alloy as a grain refining agent to the molten Al or Al-alloy. After casting and cooling, very small crystal grains at a very low boron content are obtained in the Al or Al alloys while at the same time the "fading effect", which reflects the experience that the grain refining effect of the agent decreases with the holding time during casting, is substantially reduced.

3.2 Documents D1, D2, D4 and D6 exclusively relate to the binary Si-B phase diagram, but neither of them is directed to the possibility of using these alloys as a grain refining agent for aluminium or aluminium alloys. Document D3 is concerned with the continuous production of a silicon powder product having a particle size between 0.1 and 1000 μm and including optionally i.a. 0 to 0.5% boron (cf. D3, page 2, lines 30 to 52), whereas document D5 is directed to an electrode comprising a metallic substrate consisting e.g. of a

Si-B alloy and an electroconductive surface that is inert to anodic attack by aqueous sodium chloride (cf. D5, claim 1; page 2, lines 74 to 80; page 9, line 114 to page 5, line 6).

- 3.3 This evaluation of the contents of documents D1 to D6 shows that none of the cited prior art documents discloses the method for grain refining Al alloys by adding a specific Si-B alloy as proposed by the application. Consequently, the subject matter of claim 1 is novel.

The dependent claims 2 and 3 relate to preferred embodiments of the method given in claim 1 and, therefore, these claims equally meet the requirement of Article 54 EPC.

4. Given that the reason of lack of novelty set out in the decision of the Examining Division for refusing the application no longer applies, the Board cannot support the decision under appeal and it is, therefore, set aside. The first instance has not yet examined whether or not the present application as amended meets the requirements of Article 56 EPC (inventive step). It is, therefore, considered appropriate in accordance with Article 111(1) EPC to remit the case to the first instance for further prosecution.
5. Since the request for oral proceedings was conditional on the intention of the Board to issue a negative decision, which condition is not met, no oral proceedings are necessary.

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 for further prosecution on the basis of the following documents:

claims: 1 to 3 submitted on 28 September 2001

description: pages 2 to 5 submitted on 28 September
2001
pages 1, 6 to 8 as originally filed

drawings: sheets 1/2 to 2/2 as originally filed.

The Registrar:

The Chairman:

V. Commare

R. Ries