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D E C I S I O N
of 8 March 2005

Case Number: T 0777/02 - 3.2.2

Application Number: 94919835.2

Publication Number: 0714989

IPC: C21C 5/28

Language of the proceedings: EN

Title of invention:
Steel manufacturing method using converter dephosphorisation

Patentee:
NIPPON STEEL CORPORATION

Opponent:
Thyssen Krupp Stahl AG

Headword:
-

Relevant legal provisions:
EPC Art. 123(2), (3)

Keyword:
-

Decisions cited:
G 0001/93

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0777/02 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 8 March 2005

Appellant: (Proprietor of the patent)	NIPPON STEEL CORPORATION 6-3 Otemachi 2-chome Chiyoda-ku Tokyo 100-71 (JP)
Representative:	VOSSIUS & PARTNER Postfach 86 07 67 D-81634 München (DE)
Respondent: (Opponent)	Thyssen Krupp Stahl AG August-Thyssen-Stra e 1 D-40211 Düsseldorf (DE)
Representative:	Simons, Johannes, Dipl.-Ing. COHAUSZ & FLORACK Patent- und Rechtsanwälte Bleichstrasse 14 D-40211 Düsseldorf (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted 15 May 2002 revoking European patent No. 0714989 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: T. K. H. Kriner
Members: R. Ries
A. Pignatelli

Summary of Facts and Submissions

I. On 24 July 2002 the appellant (patentee) lodged an appeal against the decision of the opposition division, posted on 15 May 2002, revoking European patent No. 0 714 989. The fee for appeal was paid simultaneously and the statement setting out the grounds of appeal was received on 25 September 2002.

II. In the opposition proceedings, the division introduced of its own motion a ground for opposition based on Article 100(c) EPC. The division held that at least one technical feature of claim 1 according to the main request and the auxiliary requests 1A to 3A had no support in the application as originally filed. The introduction of the technical feature prior to grant constituted added subject matter contrary to Article 123(2) EPC. Given that the critical feature was rated as having a technical significance to the ambit of claim 1, the division concluded that with respect to Article 123(3) EPC the protection was materially affected by its deletion, which was therefore not permitted.

III. Upon request of both parties, oral proceedings were appointed by the board of appeal which took place on 8 March 2005.

With its letter of 8 February 2005, the respondent (opponent) withdrew its request for oral proceedings and informed the board that it would not attend.

The following requests were made:

- The appellant requested that the decision under appeal be set aside and that the case be remitted to the department of the first instance for further prosecution on the basis of the patent as granted (main request), or on the basis of the claims 1 to 4 as filed with letter of 24 September 2002 (auxiliary request).

- The respondent requested that the appeal be dismissed.

Claim 1 of the main request reads as follows:

"1. A converter refining process for obtaining a dephosphorized molten iron comprising charging a molten iron into a converter having a top- and bottom-blowing function, adding flux, top blowing oxygen and agitating the molten bath by bottom oxygen blowing, wherein said refining process comprises the steps of dephosphorizing the molten iron by controlling the amounts of charged flux, blown oxygen and charged coolants so that the CaO/SiO_2 ratio in slag becomes at least 0.7 and up to 2.5 and the molten iron temperature becomes at least 1,200°C and up to 1,450°C at the end point of the dephosphorization treatment, while the flow rate of bottom-blown gas is being controlled so that an agitation energy ε of the formula

$$\varepsilon = 0.0285 \times Q \times 10^3 \times T \times \{\log(1+L_o/1.48)\}/W$$

wherein ε is the agitation energy per ton at molten iron, Q is the flow rate of the bottom-blown gas (Nm^3/min) which is measured in a normal state, T is a bath temperature (K), L_o is a bath depth (m), W is the weight

at the molten iron (ton), becomes at least 0.5 kW/ton, interrupting the dephosphorization refining once, discharging at least 60% of the slag within the converter by tilting the converter, making the furnace stand vertically, and conducting decarbonization refining."

IV. The appellant argued as follows:

During substantive examination, it was the examining division of the EPO which suggested the amendments to the claims on the basis of which the patent was granted. Trusting in the proposals made by the examining division of the EPO, the appellant was misguided to realize that the more general feature "bottom blowing gas" in claim 1 was restricted to oxygen and innocently accepted the revised wording of the claims. Hence, the introduction of the technical feature "bottom oxygen blowing" in particular in combination with the dephosphorization step was an obvious error never envisaged by the applicant and not disclosed in the application documents as originally filed.

The opposition division's view, according to which the feature "oxygen bottom blowing" would have a technical meaning which was essential for the claimed type of steel making, since oxygen might be used as a reactive gas in the dephosphorization and decarburization step, was unfounded and not supported by the originally filed application. Upon reading claim 1 in the light of the description, the metallurgist was aware that the oxygen necessary for dephosphorizing the iron bath was supplied exclusively through a top blowing oxygen lance and not through the bottom tuyeres of the converter.

This finding was confirmed in various paragraphs of the patent specification showing that the bottom blown **gas** was exclusively used to provide sufficient agitation energy to the melt, irrespective of the type of gas. Thus, limiting the scope of claim 1 by the technical feature "bottom **oxygen** blowing" had no technical meaning since the type of gas did not matter. Having regard to the considerations given in the decision of the enlarged board of appeal G 1/93 this feature was, therefore, not to be considered as subject matter which extended beyond the content of the application as filed.

V. The arguments of the respondent submitted with its letter of 14 April 2004 related essentially to the sets of amended claims which were enclosed with the appellant's grounds of appeal (main request and auxiliary requests 1 and 2) and which were abandoned.

The claims in the form as granted (now main request) had not been objected to by the opponent in the opposition proceedings under Article 100(c) EPC, but the opponent concurred with the position of the opposition division with respect to the inadmissibility of the undisclosed technical feature "bottom oxygen blowing" in claim 1 pursuant to Article 123(2),(3) EPC.

Reasons for the Decision

1. The appeal is admissible.

2. *Ground of opposition under Article 100(c) EPC*

2.1 The opposition division holds the view that the amendments to the claims made prior to grant by the examining division failed to meet the requirements of Article 123(2) EPC. In particular, the term *"agitating the molten bath by bottom oxygen blowing during dephosphorization"*, featuring in claim 1 as granted and limiting the scope of protection, is held to infringe Article 123(2) EPC because it has no basis in the application as filed. Already for this reason the patent is held invalid (cf. point 3.1 of the impugned decision). The opposition division also holds that this technical feature has a technical meaning in that it is essential to the claimed steelmaking process and can be used during the dephosphorization and decarburisation steps. Consequently, the feature albeit introduced erroneously as argued by the patentee cannot be put right simply by deletion without broadening the claim, contrary to Article 123(3) EPC (cf. point 4 of the impugned decision).

2.2 The position of the opposition division that the selection of "bottom oxygen blowing" introduced by the examining division and limiting the broader term "bottom blown gas" originally claimed in fact constitutes a technical feature which extends beyond the application as filed has not been disputed by the appellant.

2.3 Crucial to the present decision is, therefore, to deal with the problem of a "limiting extension" arising as a result of the combined effects of Articles 123(2) and 123(3) EPC.

3. The Enlarged Board of appeal in its decision G 1/93 (OJ EPO 104, 541) has interpreted the requirements of Article 123(2) in the specific context concerning the so-called conflict between Articles 123(2) and 123(3) EPC in the case of a "limiting extension" i.e. where a European patent as granted contains subject matter which extends beyond the content of the application as filed and also limits the scope of protection conferred by the claims.

3.1 The appellant has argued in this context that the restriction of the claimed process by limiting the bottom blown gas exclusively to oxygen and excluding other gases has never been required nor intended by the applicant. Given that the amendment to claim 1 was not only approved but even proposed by the examining division of the EPO, the applicant accepted the suggestions in good faith.

The position of the Enlarged Board on this point is, however, perfectly clear. As emphasized in its decision G 1/93, point 13 of the reasons, the last two sentences, it always remains the responsibility of the applicant to ensure compliance with Article 123(2) EPC, irrespective of whether or not the amendments have been approved (or even proposed) by the examining division. The fact that the amendments to the claims have been introduced by the examining division of the EPO has, therefore, no bearing on the matter.

3.2 However, following the considerations given in G 1/93, sections 15 and 16, such a limiting technical feature has not necessarily to be regarded always as subject-matter contravening the requirements of Article 123(2)

EPC. Rather more, it depends on the circumstances whether or not the critical feature is to be rated as such subject matter. The Enlarged Board held that if the limiting feature has to be considered as providing a technical contribution to the subject matter of the claimed invention, it would give an unwarranted advantage to the patentee and would, therefore, constitute added subject matter within the meaning of Article 123(2) EPC. A typical example of this seems to be the case where the limiting feature is creating an inventive selection not disclosed in the application as filed or otherwise derivable therefrom. If, on the other hand, the feature in question merely excluded protection for part of the subject matter of the claimed invention as covered by the applications as filed, such feature cannot be reasonably considered to give an unwarranted advantage to the applicant, nor does it affect the interests of third parties.

Hence, it has to be examined whether the undisclosed limiting feature in claim 1 of the disputed patent involves an unwarranted advantage or even a new invention.

It is clearly evident from the application as filed that the dephosphorization of the iron bath and other metallurgical reactions cannot be brought to an optimum level unless the adequate agitation power is supplied to the melt while top blowing oxygen through a lance (cf. for instance Table 1, Principal conditions of Practice). Thus, the agitation energy represents one of the key features of the claimed process, and it is provided by controlling the flow rate of the bottom blown gas. Mostly, the general terms "*bottom blown gas*"

and "*bottom blown agitation energy or power*" are used in the application as filed (see for instance original claims 2 and 5). In the preferred embodiments of the claimed process disclosed in the examples, nitrogen (example 1; Table 1) or CO_2 (example 4) are used as stirring gas. Likewise, the "*bottom blown N_2 gas feed rate*" is mentioned in the description, page 5, lines 22/23. No evidence whatsoever is found anywhere in the application as filed for concluding that the type of gas is important or that a specific type of gas is preferably selected due to its beneficial effect on the process. It is, therefore, concluded that the type of stirring gas supplied through the bottom tuyeres is not critical to the process and that the restriction of the broader term "bottom blown gas" to "bottom oxygen blowing" in claim 1 of the patent at issue merely represents a disadvantageous limitation of the claimed process to an embodiment excluding patent protection for a part of the subject matter of the claimed invention as covered by the application as filed (i.e. bottom blown gas in general).

Moreover, no evidence is found in the application as filed or has been submitted by the opponent implying that the restriction to oxygen actually results in an inventive selection, i.e. in a further invention which leads to an unwarranted advantage to the patentee for something he had neither properly disclosed nor invented.

4. Given this situation and in the light of G 1/93 (see in particular headnote, section 2), the above mentioned technical feature in claim 1 as granted is not to be considered as subject matter which extends beyond the

content of the application as filed within the meaning of Article 123(2) EPC. The patent in suit can therefore be maintained without violating Article 123(2) EPC or giving rise to a ground of opposition under Article 100(c) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution on the basis of the patent as granted.

The Registrar: The Chairman:

V. Commare T. K. H. Kriner