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**DECISION**  
**of 19 September 2003**

**Case Number:** T 1149/01 - 3.2.3  
**Application Number:** 95903016.4  
**Publication Number:** 0729558  
**IPC:** F27B 7/28, F23M 5/02  
**Language of the proceedings:** EN

**Title of invention:**  
Lining of a rotary furnace and brick used therefor

**Patentee:**  
N.V. GOUDA VUURVAST

**Opponent:**  
Veitsch-Radex Immobilien GmbH

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 56, 104(1)  
EPC R. 67

**Keyword:**  
"Inventive step - (yes)"  
"Reimbursement of appeal fee - (no)"  
"Costs - apportionment - (no)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 1149/01 - 3.2.3

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.3  
of 19 September 2003

**Appellant:** N.V. GOUDA VUURVAST  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 3 August 2001  
revoking European patent No. 0729558 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** C. T. Wilson  
**Members:** U. Krause  
M. K. S. Aúz Castro

## Summary of Facts and Submissions

I. The appeal was filed on 15 October 2001 by the Proprietor of European patent No. 0 729 558 (hereinafter denoted Appellant) against the decision of the opposition division, dated 6 July 2001 and issued in writing on 3 August 2001, to revoke the patent. The appeal fee was also paid on 15 October 2001 and the statement setting out the grounds of appeal was submitted on 12 December 2001.

II. The opposition was based on the grounds of lack of novelty and inventive step, insufficient disclosure and added subject-matter. The opposition division decided that the amended claims filed by the Proprietor/Appellant met the requirements of novelty, sufficiency of disclosure and support in the original disclosure but failed to involve an inventive step in view of documents D1 and D4 of the following documents considered in the proceedings:

D1: EP-A-0 103 365

D2: copies of two pages of a brochure "feuerfest abc",  
Didier

D3: AT-B-175 069

D4: DE-A-32 35 490

D4 was submitted by the Opponent during the oral proceedings before the opposition division and introduced into the proceedings as being of particular relevance.

III. The Appellant submitted, with the statement of the grounds of appeal, new sets of claims according to a main request and ten auxiliary requests, the main request comprising an independent claim 1 directed to a wear lining and an independent claim 13 directed to a brick. In a communication issued as an annex to the summons to attend oral proceedings pursuant to Article 11(2) RPBA the Board expressed the preliminary opinion that independent claim 1 was considered to be patentable but claim 13 seemed to lack an inventive step and the dependent claim 8 was not allowable in view of Rule 57a EPC.

By fax of 18 September 2003 the Appellant submitted amended claims 1 to 15 according to a main request and four auxiliary requests, each request comprising a single independent claim 1 directed to the wear lining, and amended description pages 2 to 4.

After the opposition was withdrawn by the Opponent on 18 September 2003 the oral proceedings scheduled for 23 September 2003 were cancelled.

IV. The sole independent claim 1 of the main request reads as follows:

"1. Wear lining for a rotary furnace of an incineration installation for chemical waste, wherein the wear lining comprises tapered bricks having a main taper, wherein the tapered bricks are installed in the furnace in the form of a vaulted lining, wherein the main taper of each tapered brick is matched to the desired vaulted lining shape,

wherein the height of the tapered bricks extends in the thickness direction of the lining, wherein the tapered bricks have supplementary to the main taper an additional axial taper extending in the same taper direction as the main taper over 0,1 to 0,6 times the height of the tapered brick, which additional axial taper provides, on the inside of the lining, an increase in the gap width between adjoining bricks which decreases towards the outside of the lining, characterised in that the increased gap widths between the bricks are filled with mortar, and that the bricks are of the type having a high corundum content, which type contains at least 70% aluminium oxide and also contains oxides of one or more of the following elements: silicon, titanium, zirconium, sodium, chromium, magnesium and phosphorus."

- V. The Appellant requests that the impugned decision be set aside and that the patent be maintained on the basis of the amended claims 1 to 15 according to the main or one of the four auxiliary requests filed on 18 September 2003 together with the amended description pages 2 to 4 filed on 18 September 2003, description pages 5, 6 as well as Figures 1, 2 of the patent being unchanged. It further requests reimbursement of the appeal fee and reapportionment of costs to the detriment of the Opponent.

These requests are supported by the following arguments of the Appellant:

*Allowability of the amended claims:*

Claim 1 of the main request defined, in conformity with the description in column 4, lines 6 to 9, and claim 3 of the patent, the additional taper as being an axial taper extending in the same taper direction as the main taper over 0,1 to 0,6 times the height of the bricks. The further definition, in the auxiliary requests, of the continuous or uninterrupted additional gap widths and of the flat faces of the additional taper were clearly derivable from the figures.

Document D1 was the closest prior art but disclosed neither the application of mortar in the gaps between the bricks of the wear lining nor bricks of the type having a high corundum content. The material of the bricks, periclase, and the collapsing protrusions at the additional taper rendered the bricks unsuitable for an incineration installation for chemical waste. Whilst a brick material of high corundum content was disclosed in D2, without however mentioning the suitability for incineration devices for chemical waste, D3 and D4 taught the use of mortar as a filler of gaps between the bricks of the lining for various purposes, in particular for absorbing the thermal expansion of the bricks by softening or melting (D3, D4) or for providing structural rigidity and compensating installation errors (D4). However, these purposes related to the gaps between bricks having at most a single taper and would be inconsistent with D1 where the gaps between the bricks in the region of the

additional taper should allow for free expansion of the bricks. Further, none of those documents contained any suggestion that they could be combined.

*Reimbursement of the appeal fee and apportionment of costs:*

Document D4, which was considered by the opposition division as suggesting filling the increased gap widths with mortar, was submitted by the Opponent during the oral proceedings before the opposition division, ie at the latest stage possible, although it must have been aware of this document before and, from the annex to the summons to the oral proceedings, of the necessity of submitting further evidence in support of the use of mortar in conjunction with tapered bricks. The Appellant was given the opportunity to comment on this document only after the end of the decision forming process of the opposition division which included this document. Its proposal to terminate the oral proceedings and to continue in writing was not followed.

- VI. Before withdrawing the opposition the Opponent in its position as Respondent requested dismissal of the appeal and submitted essentially the following counterarguments.

*Allowability of the amended claims:*

The added feature concerning the additional "axial" taper extending in the same taper direction as the main taper was contrary to the disclosure in the patent and in the original application where, as pointed out in

the decision under appeal (see point 4 of the reasons), the main taper extended in a radial direction. This new feature also caused problems under Article 100(b) EPC because it was impossible to combine an additional axial taper with a radial main taper. As to the auxiliary requests, a continuous gap was inconsistent with the bonded brickwork of Figure 2, and the claimed specific shape of the bricks or gap could not be considered as implicit to the disclosure because it was only one of a plurality of possibilities for providing additional room for expansion.

The teaching of D1 was not limited to periclase but included bricks made of any refractory material, which may be alkaline material such as periclase as well as acidic material such as aluminium oxide. Mortar was known from D3 and D4 for filling the gaps between the bricks in vaulted furnace linings. A skilled person faced with the problem of improving the resistance of the lining to chemicals and of absorbing the thermal expansion of the bricks would not disregard this known teaching solely because the gaps of D1 had an additional taper. An additional beneficial effect such as improved protection against chemical attacks could not render claim 1 inventive if it was obvious in view of known effects such as the absorption of thermal expansion, uniform pressure distribution etc.

*Reimbursement of the appeal fee and apportionment of costs:*

Document D4 belonged to a predecessor in rights and the Respondent was not aware of this document until immediately before the oral proceedings. The Appellant



was given time, during a break of the oral proceedings, to study this document, and did not indicate that this time was insufficient.

### **Reasons for the Decision**

1. The appeal meets the requirements of Rule 65(1) EPC and is, therefore, admissible.
2. Whereas pursuant to Rule 60(2) EPC opposition proceedings may be continued, at the discretion of the opposition division, when the opposition is withdrawn, withdrawal of the opposition by the Respondent in appeal proceedings has no procedural significance since the appeal proceedings are always determined by the appellant which is the patent proprietor. In this case the Board of Appeal has to examine the substance of the opposition division's decision of its own motion. The Respondent ceases to be party to the appeal proceedings in respect of the substantive issues, but remains party to them as regards apportionment of costs (see T 629/90, OJ 1992, 654; T 789/89, OJ EPO 1994, 482).
3. *Added subject-matter and insufficient disclosure (Articles 100(b) and (c) EPC)*

Claim 1 of the main request corresponds to claim 1 of the main request considered in the decision under appeal and differs from granted claim 1 in substance by defining the additional taper as being an axial taper extending in the same taper direction as the main taper over 0.1 to 0.6 the height of the brick. The combination of an axial main taper with an axial

additional taper is disclosed in column 4, lines 6 to 9, of the patent, corresponding to page 4, lines 23 to 25, of the original application, and shown in the figures where, in conformity with the definition of the taper extensions in paragraph 0015 of the patent, the joint or gap defined by both tapers extends in an axial direction. This is distinguished from the circumferential direction of the joints or gaps in a circumferential taper. Since, according to this definition, a taper may extend either in an axial or in a circumferential direction, the expression "in the same taper direction" employed in claim 1 cannot mean anything else but an axial taper if the additional taper is an axial taper. This does not exclude an additional common radial extension of the joint or gaps, as referred to in the decision under appeal (see point 4 of the reasons). The grounds of Article 100(b) and (c) EPC do not, therefore, prejudice maintenance of the patent on the basis of the main request.

4. *Novelty and inventive step (Article 100(a) EPC)*

4.1 Concerning the grounds of lack of novelty and inventive step the Board shares the view of the parties that the subject-matter of amended claim 1 is considered to be novel and that document D1 represents the nearest prior art.

This document discloses a lining of a rotary kiln with tapered bricks (page 3, first paragraph) having a main taper (15a) and an excess taper (15b) extending over about half of the height of the brick to obtain a desired amount of thermal expansion allowance at the hot face of the brick (see figures and page 3, line 18,

to page 4, line 6). During construction of the lining the thermal expansion space at the hot ends of the bricks is secured by small raised portions (22) at the excess taper which collapse when the structure is heated (page 4, line 34, to page 5, line 4), whereas the bricks are closely adjoining in the region of their main taper (15a) to provide a tight structure (page 5, last paragraph). A preferred material for the bricks is "high-purity periclase" or "high fired periclase-chrome brick" but any known refractory material may be used for application "in any known structure where refractory brick are used"(page 5, lines 19 to 25).

It can be concluded from this disclosure that the taper and the additional taper are axial tapers in the sense of the patent, whereby the main taper is matched to the desired vaulted shape of the lining in a rotary furnace and the excess taper provides an increase in the gap width between adjoining bricks on the hot inside of the lining. The suitability for incinerating chemical waste will depend to some extent on the material of the bricks but the mention of "any known refractory material" will encourage the skilled person to make a selection amongst the commonly known materials, according to the conditions to be met, preferring known refractory materials with a high content of aluminium oxide for conditions prevailing in waste incinerations over periclase (ie magnesia) which was known to be unsuitable, as was set forth in the decision under appeal (see point 7 of the reasons) and remained undisputed.

4.2 The remaining feature distinguishing the subject-matter of claim 1 from the wear lining of D1 is, therefore, that the increased gap widths between the bricks are filled with mortar. With regard to inventive step it will therefore have to be determined whether the skilled person would consider, in view of the available prior art, filling the free space between the additionally tapered sections (15b) of adjoining bricks in the wear lining of D1 with mortar.

4.3 It was held, in the appealed decision, that, "as could be seen from D4 ... it was usual at the time of D1 originating from 1983 to fill the gaps between the non-tapered bricks of the vaulted lining of rotary furnaces with mortar". This was held to be still more obvious for double-tapered bricks forming increased gaps according to D1. The Respondent argued along the same lines, stating that filling wedge-shaped interstices between adjoining bricks in vaulted wear linings was known from D3 and D4 for various reasons such as absorbing thermal expansion of the bricks, obtaining a uniform pressure distribution in the bricks, providing structural rigidity and compensating installation errors, and that a skilled person would not disregard this known teaching in the case of the double-tapered bricks of D1.

4.4 The Board cannot follow this argument. It is not disputed that a mortar filling is known for the purposes referred to by the Respondent. However, it must be taken into account that these purposes refer to a mortar filling separating the load-carrying adjoining faces of the bricks. For example, the uniform pressure distribution expressly concerns the contacting surfaces

of the bricks (D4, last paragraph of page 2), installation errors can be compensated and structural stability can be provided only by applying mortar between those load-carrying faces. Since, in D1, the load-carrying faces of the bricks are the main tapered sections (15a), a skilled person considering the use of mortar for obtaining the beneficial effects mentioned in D3 and D4 in the wear lining of D1 would provide a mortar filling between the adjoining main tapered sections (15a), instead of installing the bricks with direct mutual contact. There is no reason to apply the mortar also to the increased gap between the additional tapered sections (15b) because this would be inconsistent with the function of this gap, in D1, to permit free expansion of the brick at the hot end, once the raised portions (22) are collapsed, and would not lead to any improvement with regard to the known objects of the mortar filling since the brick faces at the additional tapered section are not load-carrying.

As a consequence, the consideration of filling mortar in the increased gap widths cannot be based on the effects described in D3 and D4 but requires further considerations of a skilled person. In fact, an improvement with regard to resistance of the bricks to chemicals or protection of the lining against aggressive attack could be a potential basis for such considerations, but there is no suggestion in the available prior art that mortar could be used for such a purpose. Hence, the available prior art cannot provide a pointer towards the claimed solution which, therefore, has to be considered as involving an inventive step.

4.5 The grounds of Article 100(a) do not, therefore, prejudice maintenance of the patent on the basis of amended claim 1 of the main request either. The further claims 2 to 15 are directly or indirectly dependent on claim 1 and can, therefore, also be maintained.

4.6 Since the patent can be maintained on the basis of the main request there is no need to consider the claims of the auxiliary requests.

5. *Reimbursement of the appeal fee*

5.1 Pursuant to Rule 67 EPC the reimbursement of the appeal fee shall be ordered where the Board of appeal deems an appeal to be allowable, if such reimbursement is equitable by reason of a substantial procedural violation.

Whilst the appeal is deemed allowable, the Board does not consider a reimbursement as being justified, as will be set out below.

5.2 According to point 3 of the minutes of the oral proceedings before the opposition division the opposition division deliberated, during an interruption of the proceedings from 10.57 to 11.35 hours, on the main request and the auxiliary requests I and II as well as on the relevance of document D4, and came to the provisional conclusion that the subject-matter of claims 1 and 14 (of the main request) was lacking an inventive step and that document D4 was so relevant that it had to be introduced into the proceedings. It cannot be determined from the minutes alone whether the conclusion on the patentability of claims 1 and 14 was

based on document D4 or on documents D1 to D3 which had been discussed before the interruption. By referring to the decision (see points 7 and 8 of the reasons) it is clear that the opinion on claim 14 must have been based on D1 and D2, whereas D4 played a role with regard to claim 1 only. Thus, document D4 was irrelevant as regards the grounds for not allowing claim 14, prejudicing the maintenance of the patent, and no procedural irregularity therefore occurred as regards the final decision to revoke the patent.

- 5.3 The fact that the proceedings were interrupted again, after issuing the opinion, to allow the Appellant to study D4 and to formulate further requests could have made the appellant believe that the opposition division had already come to a final decision on claim 1 as well as on claim 14, giving the impression to the Appellant that he had no opportunity to comment on the issue of inventive step of claim 1 in view of D4. Even if this issue had no decisive effect on the final decision regarding the main request and the auxiliary requests I and II for the reasons set out above, such an impression should be avoided at all costs since, depriving the Appellant of an opportunity to comment would, if it had happened, be a procedural irregularity.

However, it must be taken into account that the conclusion was clearly a provisional one, with no decision on claim 1 having been taken, and that the Appellant was in fact free to maintain, after studying document D4, the requests in unamended form and argue in favour of inventive step. Considering the shortness of D4 (about 5 pages of text) the further interruption of the oral proceedings from 11.45 to 12.30 for

studying the document cannot be seen as insufficient, and the Appellant never contended that he was unable, for any reasons, to consider this document during the oral proceedings. The Appellant recalls having proposed "that if D4 is to be allowed the oral proceedings are to be broken off and to be followed by new oral proceedings or procedures in writing", which seems to suggest a particular conduct of the procedure by the opposition division without indicating any reasons why it should proceed in this way. Whilst the opposition division would have been free to adopt this approach, they were also free to consider whether the Appellant could be expected to study the document in the time given to it and thus to avoid having to postpone the oral proceedings.

5.4 Thus, the appellant was not deprived of its right to be heard and any possible procedural irregularity was not a substantial procedural violation which would warrant a reimbursement of the appeal fee.

6. *Apportionment of costs*

6.1 The request for apportionment of costs is based on the argument of the Appellant that document D4 was submitted by the Respondent during the oral proceedings before the opposition division, ie at the latest stage possible, although it must have been aware of this document before and, from the annex to the summons to the oral proceedings, of the necessity of submitting further evidence in support of the use of mortar in conjunction with tapered bricks.



6.2 According to Article 104(1) EPC each party to the proceedings shall meet the costs he has incurred unless a different apportionment of costs is justified for reasons of equity. Based on this principle a different apportionment could be ordered in case of late-filed documents which could have been submitted at an earlier date, provided that this late-filing resulted in higher costs for the other party. The latter condition is not met in the present case because the document was considered during the oral proceedings which were likewise requested by the Appellant, causing no undue complication or lengthening of the procedure. The request for an apportionment of costs must therefore be refused irrespective of whether or not the Opponent must have been able to produce document D4 earlier.

**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 maintain the patent as amended in the following version:

Claims:

1 to 15 of the main request submitted by fax on 18 September 2003

Description:

pages 2 to 4 submitted by fax on 18 September 2003  
pages 5, 6 as granted

Figures 1 and 2 as granted

3. The request for reimbursement of the appeal fee is refused.
4. The request for apportionment of costs is refused.

The Registrar:

The Chairman:

A. Counillon

C. T. Wilson