

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 21 December 1999

Case Number: T 0452/97 - 3.2.3

Application Number: 90306692.6

Publication Number: 0408204

IPC: B02C 2/06

Language of the proceedings: EN

Title of invention:
Gyratory crusher

Patentee:
LOKOMO OY

Opponent:
Svedala-Arbra AB

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 102(3)

Keyword:
"Novelty (yes)"
"Inventive step - exclusion of hindsight"
"Maintenance - in amended form"

Decisions cited:
-

Catchword:
-



Europäisches
Patentamt

European
Patent Office

Office européen
des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number: T 0452/97 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 21 December 1999

Appellant: Svedala-Arbra AB
(Opponent) S-23300 Svedala (SE)

Representative: Wallin, Bo-Göran
AWAPATENT AB
Box 5117
S-20071 Malmö (SE)

Respondent: LOKOMO OY
(Proprietor of the patent) PL 306
FI-33101 Tampere (FI)

Representative: Wilson, Peter
Fitzpatrick's
Cardinal Court
23 Thomas More Street
GB-London E1W 1XU (GB)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 7 February 1997,
posted on 4 March 1997, rejecting the opposition
filed against European patent No. 0 408 204
pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: F. Brösamle
J.-P. Seitz

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal on 29 April 1997 - paying the appeal fee on the same day - against the decision of the opposition division of 7 February 1997, posted on 4 March 1997, rejecting the opposition against European patent No. 0 408 204. The statement of grounds of appeal was filed on 19 June 1997.

II. The appellant requested to set aside the impugned decision and to revoke the patent.

III. Following the board's Communication pursuant to Article 11(2) RPBA oral proceedings were held on 21 December 1999 in which the proprietor - respondent in the following - modified his request to dismiss the appeal into the request to set aside the impugned decision and that the patent be maintained on the basis of his **main request** filed during oral proceedings or on the basis of **auxiliary requests** filed with letter of 22 November 1999.

IV. Claim 1 of the **main request** reads as follows:

"1. A gyratory crusher comprising a spindle shaft (2) mounted in a bore of a rotatable wabblers shaft (4), said bore having a longitudinal axis inclined to an axis of rotation of the wabblers shaft (4), a lower end of the spindle shaft (2) is supported through a thrust bearing (9) by a vertically movable piston (6), characterised in that the piston (6) has an open-top cylinder shape, wherein the said piston mounts the

wabblers shaft (4) through bearings (8) located between the exterior of the said shaft (4) and the inside of the said piston so that radial forces of the spindle shaft (2) are transmitted to a frame of the crusher through the piston (6)."

V. With respect to respondent's **main request** the parties argued essentially as follows in the oral proceedings:

(a) appellant

- claim 1 is based on a vertically movable piston without excluding by its wording that the piston is stepped - as in Figure 6 of (D3) i.e. US-A-3 423 033, see reference signs "55, 50" - and without restricting the claimed gyratory crusher to a direct support of the spindle shaft on the movable piston and to an overlap of the spindle shaft and the movable piston;
- from Figure 6 of (D3) it is known to incline the spindle shaft, see Figure 6 and wabblers shaft "47" upper and lower ends which have differing wall thicknesses on their left hand and right hand sides, and to transmit radial forces from this shaft to a frame of the crusher through the movable piston;
- (D3) is therefore seen as a novelty destroying document with respect to the subject-matter of claim 1;
- even if (D3) were not accepted by the board as a novelty destroying document claim 1 does not

define inventive subject-matter in view of (D8) i.e. Pamphlet "Pegson" (unknown publishing date) and (D1) i.e. GB-A-2 025 538 or (D5) i.e. Leaflet "H-200 Hydrocone", 30.12.87, Svedala-Arbra/Allis Mineral as the starting point of the invention;

- with respect to the issue of inventive step it is observed that the question whether or not the spindle shaft is inclined does not contribute to the solution of reducing the overall height of the crusher;
- a combination of Figures 6 and 1 of (D3) or of Figure 6 and (D8) leads a skilled person directly to the crusher defined in claim 1, see sketches (A1) to (A4) submitted in the appeal proceedings, since it is sufficient to shorten the spindle shaft and to realize an open-top piston; the type of the bearings is irrelevant in this respect since it has no influence on the overall height of the crusher; the driving system whether movable with the piston or being fixed on the frame has nothing to do with the issue of height reduction and the transmission of radial forces from the spindle shaft to the frame of the crusher;
- summarizing, the **main request** of the respondent should be rejected.

(b) respondent

- the objection under Article 54 EPC is a new

ground of opposition and should not be allowed by the board;

- since Figure 6 of (D3) does not disclose an inclined spindle axis, (D3) is not a novelty destroying document with respect to the subject-matter of claim 1; (D3) is moreover not even the closest prior art document since (D1) or (D5) both disclose an inclined spindle axis;
- starting from (D1) or (D5) as the nearest prior art, EP-B1-0 408 204, see column 1, lines 10 to 16, deals with the problems of gyratory crushers with respect to their height and the transmittal of radial forces to the crusher frame;
- (D3) and its Figure 6 relates to a crusher without an inclined spindle shaft whereby a piston which can be seen as "an open-top cylinder shape" within the meaning of claim 1 is missing since the spindle shaft and the piston do not overlap due to the fact that the spindle shaft is too short and ends well above the piston "55" since "50" in Figure 6 of (D3) cannot be seen as part of the piston rather as an axial extension of the piston having not the function of a piston;
- in contrast to (D1) and (D5) the piston "55" of (D3) **and** its extension in an axial direction "50" are movable together so that a skilled person would not envisage a combination of (D1/D5) with (D3);

- since an overlapping spindle shaft with a piston in its proper sense is not known from (D3) and since Figure 3 of (D3) does disclose a stepped piston the characterizing feature of claim 1, namely "the piston (6) has an open-top cylinder shape" is not fulfilled;
- it is not allowable to combine single features known **per se** and knowing the claimed invention with respect to the issue of inventive step since this would be the result of inadmissible hindsight, see sketches (A1) to (A4), which were drawn knowing the claimed invention;
- even if claim 1 is silent about the type of radial bearings it is evident that the spindle shaft is well guided within the bore of the piston which arrangement cannot be seen from (D1/D5) and (D3);
- summarizing, the subject-matter of claim 1 is based on an inventive step within the meaning of Articles 56 and 100a) EPC so that the patent should be maintained on the basis of the documents submitted in the oral proceedings according to the main request.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Amendments*

2.1 In claim 1 it is now made clear that the **piston** and not the **cylinder** mounts the wabblers shaft "4", see granted Figure 1, which makes it absolutely clear that the piston "6" mounts the wabblers shaft.

2.2 The opening of the description in which the independent claim 1 is recited has been made consistent with the above amendment to claim 1 as granted by replacing the words "cylinder" in column 1, lines 29 and 31 of EP-B1-0 408 204 by the words "said piston".

2.3 The above amendments to claim 1 and to the description are therefore fully in line with the requirements of Article 123(2) and (3) EPC.

3. *Novelty*

3.1 Respondent's argument that the novelty objection constitutes a fresh ground of opposition was rejected by the board since claim 1 was amended with respect to granted claim 1. In the case of amendments made by the proprietor "the patent and the invention to which it relates (shall) meet the requirements of the Convention" according to Article 102(3) EPC; this provision includes the issue of novelty so that novelty in the present case does not constitute a fresh ground of opposition which could only be considered with the agreement of the proprietor.

3.2 After an intensive discussion in the oral proceedings the board came to the result that the spindle shaft of Figure 6 of (D3) is not inclined since the inclination

of this shaft is neither described nor unambiguously derivable from Figure 6 itself. Since figures in patent specifications normally are only schematic drawings not to scale it is not permissible to derive an inclination of a spindle by measuring the wall thickness of the wabblers shaft "47" at its top and bottom and its right hand and left hand side and to conclude on this basis an inclination of its supported spindle shaft "44".

3.3 Whether or not (D3) discloses an open-top cylinder shape it is observed by the board that it cannot be a novelty destroying document since the board is not convinced that Figure 6 of (D3) is a clear basis for an inclination of the spindle shaft. These findings are also supported by **Figure 7** of (D3) in which again two parallel lines indicating vertical axes are to be seen.

3.4 Summarizing, the subject-matter of claim 1 is novel, Articles 54 and 100a) EPC.

4. *Nearest prior art, problem and solution*

4.1 In contrast to (D3) documents (D1) or (D5) are based on a bore of a wabblers shaft which **is inclined** to an axis of rotation of the wabblers shaft. Since both documents fully disclose all other features of the preamble of claim 1 they are dealt with as the nearest prior art and as starting point of the invention in the following.

4.2 In EP-B1-0 408 204 a known crusher is dealt with by considering radial forces to be transmitted to the crusher frame and the height of the crusher construction, see column 1, lines 10 to 16.

4.3 Starting from this background the claimed invention suggests an open-top cylinder shape of its vertically movable piston which said piston mounts the wabblers shaft through bearings located between the exterior of the said shaft and the inside of the said piston so that radial forces of the spindle shaft are transmitted to a frame of the crusher through the piston.

4.4 With the features of claim 1 it is achieved that the overall height of the gyratory crusher can be reduced yet enabling in a favourable manner the transmission of axial and radial forces to the open-top cylinder shape piston, namely by the overlapping arrangement of the spindle shaft and the piston. Apart from the gain with respect to the overall height of the crusher a stable construction is achieved in which axial loads can **directly** be transmitted to the bottom of the open-top piston and in which radial forces can be transmitted within the overlapping area between the spindle shaft and the cylinder wall of the open-top piston i.e. over a substantial axial length.

4.5 The board has come to the conclusion that (D3) is neither a novelty destroying document nor a document which leads a skilled person confronted with the aspects of radial force transmittal and the overall height of the crusher directly and unambiguously to the subject-matter of claim 1.

4.6 The piston arrangement in Figure 6 of (D3) was differently interpreted by the appellant and the respondent since the former understands as piston reference signs "55" **and** "50", i.e. the piston itself **and** its axial, stepped extension "50", and since the

latter argues that only "55" can be seen as a piston in the proper sense.

4.7 Apart from this interpretation of the parties with respect to the "piston" it has to be observed that the words "open-top **cylinder shape**" of the characterizing clause of claim 1 **exclude any stepped** configuration of the piston as in Figure 6 of (D3) since a cylinder shape necessitates a uniform cross section over its **complete** axial length not being fulfilled in Figure 6 of (D3). The Board points out in this respect the difference between defining a part as a "cylinder", i.e. having a particular function, or as having a "cylinder shape", i.e. having a specific geometrical shape.

Even if the **hollow** piston "55" in Figure 6 of (D3) were to be seen as open-top its axial, stepped extension "50" cannot fall under the definition "cylinder shape" of claim 1.

The board comes therefore to the conclusion that only that part with the reference sign "55" can be seen as a piston, so that the spindle shaft "44" and the piston "55" are **not overlapping** - contrary to claim 1. In this context it is not true that (D3) discloses a crusher of a reduced overall height since Figure 6 clearly discloses an open space between the lower end of "47" and "55" filled with oil and contributing to the crusher's height.

4.8 Under these circumstances the transmittal both of **axial** forces - shaft "44" **does not reach** piston "55" in

Figure 6 of (D3) rather is axially supported via a shoulder within wabblers shaft "47" i.e. **indirectly** - and of **radial** forces is problematic since no overlapping arrangement is achieved by the prior art construction according to Figure 6 of (D3) so that again no **direct** support of the spindle shaft over a substantial length is possible even if in claim 1 it is not prescribed in detail how the axial and radial forces are transmitted. What counts is, however, that a direct transmittal of axial/radial forces **is enabled** by the claimed invention according to claim 1.

It is evident that Figure 1 of EP-B1-0 408 204 can directly be followed for achieving a favourable arrangement with respect to axial/radial forces and their transmittal to the piston or to the crusher's frame.

4.9 (D3) can therefore only be considered a useful document to the skilled person if he exercises hindsight and knows the invention, see sketches (A1) to (A4) which are based on speculation to arrive at the gyratory crusher of claim 1.

4.10 The further prior art is also not suited to lead a person to the claimed subject-matter since for instance (D8) **per se** discloses the possibility to incline the spindle axis without, however, considering the aspects of a reduced overall height of the crusher and the way in which axial and radial forces in combination with the reduced overall height can be favourably dealt with. This is also true for (D1) or (D5) which are relevant for the features of the preamble of claim 1 but not for its characterizing clause.

4.11 Combinations of the above prior art would be considered only by an ex post facto analysis which is, however, not the correct way for assessing inventive step since the question to be answered is not what a skilled person **could** have done when confronted with a technical problem, but rather what a skilled person **would** have done (not knowing the claimed invention). It is therefore not justified to split the features of a claimed invention into features contributing to the solution of a problem and into non-contributing features as done by the appellant, see inclination of the spindle axis and the bearings in claim 1 and according to Figure 6 of (D3) and the issue of the driving system which latter feature is not at all addressed in the claimed invention, see complete patent specification EP-B1-0 408 204.

4.12 Summarizing, claim 1 defines novel and nonobvious subject-matter so that this claim in combination with claim 2 which relates to a preferred embodiment of the invention can form the basis for maintenance of the patent in amended form.

Auxiliary requests

5. The **main request** being allowable it is not necessary to deal with the **auxiliary requests** of the respondent.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the first instance with the order to maintain the patent as amended with the documents submitted during the oral proceedings.

The Registrar:

The Chairman:

N. Maslin

C. T. Wilson