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D E C I S I O N
of 27 January 2000

Case Number: T 0246/98 - 3.2.1

Application Number: 89311007.2

Publication Number: 0367485

IPC: B21B 1/02

Language of the proceedings: EN

Title of invention:
Edging press with horizontally opposed dies

Patentee:
ISHIKAWAJIMA-HARIMA JUKOGYO KABUSHIKI KAISHA

Opponent:
SMS Schloemann-Siemag AG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0246/98 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 27 January 2000

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 23 December 1997 rejecting the opposition filed against European patent No. 0 367 485 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: F. Gumbel

Members: S. Crane
P. Mühlens

Summary of Facts and Submissions

I. European patent No. 0 367 485 was granted on 19 October 1994 on the basis of European patent application No. 89 311 007.2.

Claim 1 of the granted patent reads as follows:

"An edging press comprising two substantially horizontally opposed dies (4a) which define between them a transport line along which, in use, a slab (1) of forgeable material is passed, the dies (4a) being mounted on respective carriers (4) mounted to reciprocate in the direction (S) parallel to the transport line and in a direction (W) transverse to the transport line, each carrier (4) being connected to a displacement mechanism (80) arranged to reciprocate it in the direction (S) parallel of the transport line and to a connecting rod (10) arranged to reciprocate it in the direction (W) transverse of the transport line, the connecting rod (10) being connected to the eccentric portion (7a;57a) of a crankshaft (7;57) supported in bearing boxes (6a,6b) and width setting means (79;81) arranged to vary the spacing of the dies (4a), **characterised** in that the bearing boxes (6a,6b) are mounted so as to be movable in the direction (W) transverse of the transport line and that the width setting means (79;81) are situated on the side of the bearing boxes (6a,6b) remote from the transport line and comprise means arranged to move the bearing boxes (6a,6b) and thus the associated connecting rod (10) in the direction (W) towards and away from the transport line."

Dependent claims 2 to 8 relate to preferred embodiments of the press according to claim 1.

II. The granted patent was opposed by the present appellants on the basis that its subject-matter lacked inventive step (Articles 100(a) und 56 EPC).

In the notice of opposition the appellants referred to the state of the art embodied in the following documents:

(D1) DE-A-2 531 591
(D2) JP-A-62 068 646
(D3) EP-A-0 224 333
(D4) DE-A-3 404 234.

Subsequently the appellants also referred to the documents:

(D5) JP-A-60 223 700
(D6) JP-A-61 074 710
(D7) EP-B-0 112 516.

III. With its decision posted on 23 December 1997 the Opposition Division rejected the opposition. In coming to its decision the Opposition Division disregarded the late-filed documents D5, D6 and D7 pursuant to Article 114(2) EPC.

IV. A notice of appeal against this decision was filed on 27 February 1997 and the fee for appeal paid at the same time. The statement of grounds of appeal was filed on 4 May 1998.

The appellants requested that the decision under appeal be set aside and the patent revoked in its entirety.

V. At oral proceedings before the Board, held on 27 January 2000, the respondents (proprietors of the patent) requested that the appeal be dismissed and the patent maintained unamended (main request) or in the alternative that the patent be maintained amended by the deletion of Figures 3 to 5 and the respective parts of the description (auxiliary request).

VI. The main arguments of the appellants in support of their request can be summarised as follows:

The basic principle of operation and general constructional layout of the edging press disclosed in Figures 11 and 12 of document D1 corresponded to what was defined in the preamble of present claim 1. Furthermore this known edging press comprised width setting means which, as required by the characterising clause of the claim, acted on transversely movable bearing boxes to move the associated connecting rod towards and away from the transport line.

Furthermore, particularly when regard was had to the embodiments of Figures 3 to 5 of the patent specification, the width setting means of this prior art had to be considered as being situated on the side of the bearing boxes remote from the transport line in the sense claimed, since in those embodiments the width setting means also included elements which were in fact situated on the side of the bearing boxes adjacent the transport line. Thus it could be seen that the subject-matter of claim 1 only differed from what was disclosed

in document D1 by virtue of constructional details to be found in the preamble of the claim, which were known *per se* from document D2 and were not of any inventive significance.

The same conclusion of lack of inventive step would also be reached if the issue were addressed by taking document D2, on which the preamble of claim 1 was based, as the starting point, and proper account was taken of the teachings of documents D4 or D6 and D7. In particular, document D4 disclosed the basic principle of laterally displacing as a whole the drive mechanism for a reciprocating metal working tool, this mechanism comprising an eccentric and a connecting rod, in order to adjust the operative end positions of the tool. Documents D6 and D7 furthermore disclosed the same basic principle applied to hydraulically or mechanically reciprocated edging press dies.

VII. The arguments of the respondents in reply were substantially as follows:

In view of the considerable functional and constructional differences between the edging press of the invention and that disclosed in document D1, the only appropriate starting point for the evaluation of inventive step was the state of the art according to document D2, on which the preamble of present claim 1 was based. Neither document D1, nor document D4, could lead to the person skilled in the art to adopt the particular form of width setting means defined in the claim in order to solve the technical problems associated with the prior art construction of document D2. It was conceded that the width setting means of the

embodiments of Figures 3 to 5 did not fully correspond with what was required by the claim with regard to their situation with respect to the bearing boxes. If necessary, the patent should therefore be maintained in amended form with these embodiments deleted, in accordance with the auxiliary request.

As for late-filed documents D6 and D7, the Opposition Division had correctly used its discretion to disregard them pursuant to Article 114(2) EPC, so that it would be inappropriate for them to be re-introduced into the appeal proceedings.

Reasons for the decision

1. The appeal complies with the formal requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC; it is therefore admissible.

2. *Background to the invention; cited state of the art*

2.1 The claimed invention relates to a horizontally opposed die type edging press for forging slabs of steel and the like, in particular for decreasing the width of a continuously moving slab upstream of a rolling line or downstream of a continuous casting line.

An edging press of this type is disclosed in document D2, which was already referred to in the application as originally filed and forms the basis for the preamble of granted claim 1. According to this state of the art each die is mounted on a respective carrier which is mounted for reciprocation by a displacement mechanism

in a direction parallel to the transport line of the slab and for reciprocation by means of a crankshaft and connecting rod in a direction transverse to the transport line. In order to allow for adjustment of the spacing of the dies to the width of the slab to be forged a width setting device in the form of a screw and worm mechanism of variable effective length is provided between the respective connecting rod and associated die carrier.

2.2 Document D1 describes with respect to Figures 11 and 12 an edging press for hot continuously moving slabs wherein each horizontally opposed die is supported by means of two connecting rods which are associated with respective eccentric portions of a driven shaft. The eccentrics are slightly out of phase and the respective pivot connecting points of the two connecting rods to the die carrier are spaced apart in the longitudinal direction of the transport line; the die carrier therefore executes a motion which in addition to the transverse working stroke includes an oscillating movement in the longitudinal direction, thus enabling the die to keep pace with the moving slab during its working stroke.

Width adjustment is performed by means of four threaded spindles which span the working line and cooperate with the respective housings in which the driven shafts are mounted for rotation. The spindles are connected for joint rotation by means of a four respective sprockets and a driven chain, located at one end of the spindles. On rotation of the spindles the housings are displaced towards or away from each other on transversely extending rails of a foundation.

2.3 Document D4 relates to apparatus for cutting metal sheet which comprises a pair of opposed cutting blades mounted on respective supports for joint oscillating movement in the plane of the sheet, with one of the blades being reciprocated perpendicularly to the sheet by means of an eccentric and connecting rod. The driven shaft of the eccentric is in itself supported by bearings in an eccentrically mounted housing. By rotating the housing the end points of the stroke of the associated cutting blade can be adjusted to the thickness of the sheet.

2.4 Document D3, which has not been referred to by the appellants in the appeal proceedings, discloses an edging press wherein the width setting means is essentially equivalent to that utilized in the edging press of document D2.

2.5 The late-filed documents D5, D6 and D7 were disregarded by the Opposition Division pursuant to Article 114(2) EPC. The appellants referred to documents D6 and D7 in one of their alternative lines of arguments in their statement of grounds of appeal but did not pursue this line at the oral proceedings. In view of the substantial differences between the construction of the edging press presently claimed and what is disclosed in the documents D5 to D7, the Board shares the view of the Opposition Division as to their relevance and will also disregard them.

3. *Inventive step*

The edging press disclosed in document D2 is the only state of the art under consideration which corresponds

to what is set out in the preamble of present claim 1. Although the appellants, in their statement of grounds, initially argued that the wording of the preamble also extended to cover the edging press of document D1, they resiled from this position at the oral proceedings but nevertheless maintained their view that any differences which existed were of an inconsequential nature. Here the Board cannot agree. The requirements of the preamble of the claim that the die carrier is reciprocated in a direction parallel to the transport line by a displacement mechanism and in a direction transverse to the transport line by a connecting rod and crankshaft cannot be directly equated to the arrangement of document D1, where the die carrier undergoes an orbital movement, which includes a tilting element, by virtue of being supported by two connecting rods to two out of phase eccentrics on a single driven shaft.

The subject-matter of claim 1 is distinguished from the state of the art according to document D2 by the features set out in the characterising clause of the claim. This requires that the bearing boxes be mounted for transverse movement and that width setting means act to move the bearing boxes accordingly, with the width setting means being situated on the side of the bearing boxes remote from the transport line. In this context the appellants have correctly pointed out that in the embodiments of Figures 3 to 5 the width setting means comprise elements which are in fact located on the side of the bearing boxes nearer the transport line, namely the pistons 70 for returning the bearing boxes in a direction away from the transport line. The wording of the claim is however in itself clear and at

the oral proceedings the respondents conceded that these embodiments did not fall within the scope of the claim and offered by way of an auxiliary request to delete them. Since, however, for the reasons explained below, the ground of opposition under Article 100(a) EPC gives no cause not to maintain the patent unamended, amendment of the patent specification to eliminate embodiments inconsistent with the terms of the claim would be inappropriate. The following considerations are therefore based on the understanding that the requirement of claim 1 concerning the location of the width setting means should be taken as meaning what it says, namely that those means are situated in their entirety on the side of the bearing boxes remote from the transport line, and should not be interpreted in a broader sense having regard to what is shown in Figures 3 to 5 of the patent specification.

In comparison with the width setting means disclosed in document D2, which are located between the connecting rod and the die carrier and are thus a load-bearing part of the mass which is reciprocated on every working stroke, the width setting means of the claimed invention are stationary and subjected only to reaction forces from the bearing boxes. Accordingly they can be of more simple design and are less subject to wear; when maintenance is nevertheless required they are also more accessible. Furthermore, in view of the reduced mass of the reciprocated parts the drive for the crankshaft requires less power. Another advantage lies in the fact that the geometry of the drive arrangement is not changed in any way when the press is adjusted to different widths of slab.

The width setting means of the edging press of document D1, in common with those of the claimed invention, also act by moving the bearings of the respective drive shaft in a transverse direction with respect to the transport line of the slab. They are thus associated with some of the advantages which the invention sets out to achieve. Nevertheless, even if the person skilled in the art were to be encouraged thereby to replace the width setting means of the press of document D2 by means of the type taught by document D1, despite the differences in the overall drive configurations of the two presses, then he would still not arrive at the construction claimed, wherein the width setting means are situated on the side of the bearing boxes remote from the transport line. In particular, what document D1 teaches in this respect is threaded spindles which span the transport line and extend through and are threadingly engaged with the respective bearing housings on opposite sides of the transport lines. It is apparent that such an arrangement does not offer the advantages of accessibility and relatively simple maintenance achieved by the invention. Furthermore, there is nothing in the state of the art which could lead the skilled person to undertake the substantial restructuring of what the result of a notional combination of the teachings of documents D1 and D2 would be which would be necessary to arrive at the subject-matter claimed.

In this context the appellants relied on the structure to be found in document D4. Here, however, the Board agrees with the respondent that the disparate nature of the apparatus involved, in particular with respect to

the magnitude of the forces being applied to the workpiece, makes it highly improbable that the person skilled in the art would make any reference to the drive arrangements of a sheet metal cutter when considering the design of an edging press.

Having regard to the above, the Board therefore comes to the conclusion that the subject-matter of claim 1 cannot be derived in an obvious manner from the state of the art and accordingly involves an inventive step (Article 56 EPC). For completeness it should be noted that the same conclusion would also inevitably result if document D1, following the preferred line of attack advanced by the appellants, were taken as the starting point for the evaluation; this can be readily seen from the fact that the combination of the teachings of D1 and D2 does not lead to the subject-matter claimed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Fabiani F. Gumbel