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**Datasheet for the decision
of 6 May 2009**

Case Number: T 1183/06 - 3.2.07

Application Number: 99850014.4

Publication Number: 0933471

IPC: D21F 3/02

Language of the proceedings: EN

Title of invention:
Shoe press

Patentee:
Metso Paper, Inc.

Opponent:
Andritz Küsters GmbH

Headword:

-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):

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Keyword:
"Inventive step (no)"

Decisions cited:
T 0507/89, T 0540/92, T 1014/92, T 0697/94

Catchword:

-



Case Number: T 1183/06 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 6 May 2009

Appellant: Andritz Küsters GmbH
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Respondent: Metso Paper, Inc.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
23 May 2006 concerning maintenance of European
patent No. 0933471 in amended form.

Composition of the Board:

Chairman: H. Meinders
Members: K. Poalas
E. Lachacinski

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the interlocutory decision of the Opposition Division maintaining European patent No. 0 933 471 in amended form.

Opposition had been filed against the patent as a whole based on Article 100(a) EPC (lack of novelty and lack of inventive step).

The Opposition Division held that the requirements of Articles 123(2) EPC, 54 and 56 EPC did not prejudice the maintenance of the patent as amended.

II. The following documents are relevant for the present decision:

D1: DE-A-27 59 035,

D3: DE-C-195 14 142,

D14: DE-C-34 08 118,

D15: DE-A-195 44 978,

D17: DE-C-195 15 832,

D19: P. Mirsberger, "Schuhpressen zum intensiven Entwässern von Papier und Karton", Das Papier, Nr. 10A, 1989, pages V130 to V138,

D20: T. Götz und P. Mirsberger, "Möglichkeiten zur Verbesserung von Qualität und Produktivität mit der Intensa-S-Presse bei Verpackungspapieren und Karton", Wochenblatt für Papierfabrikation 15, 1992, pages 596 to 601,

D21: W. Schuwerk, "Schuhpressen für grafische Papiere – Konzepte und erste Betriebserfahrungen", Das Papier Nr. 10A, 1995, pages V106 to V115,

D24: DE-A-35 03 240.

III. Oral proceedings before the Board of Appeal took place on 6 May 2009.

(a) The appellant requested that the decision under appeal be set aside and that the European patent No. 0 933 471 be revoked.

(b) The respondent (patent proprietor) requested that the decision be set aside and the patent in suit be maintained on the basis of the first auxiliary request filed with letter of 23 February 2007.

IV. Independent claim 1 according to the first auxiliary request reads as follows:

"A shoe press for applying pressure to a web (W) which is carried in a machine direction through a nip (N) between the shoe press and a counter roll (16), comprising: a press shoe (12; 12', 112; 112'; 212) adapted to be juxtaposed with the counter roll (16) and having a concave surface (14) which is generally complementary in contour to the counter roll such that the web (W) can be carried through the nip (N) defined between the counter roll (16) and the concave surface (14), the press shoe extending in a cross-machine direction along substantially a full width of the web (W);

a support (18; 18'; 118'; 218, 318) which supports the press shoe such that the press shoe is movable in a loading direction toward the counter roll (16) for applying pressure to the web (W);

a plurality of articulated hydraulic loading cylinders

(20; 20'; 120; 120'; 220; 220'; 320) spaced apart in the cross-machine direction along the press shoe, each loading cylinder including a piston member (26; 26'; 126; 126a, 126b; 226) disposed within a cylinder member (22, 24; 122, 124; 122'; 222, 224; 222', 224'; 322, 324) so as to define a working chamber (34, 36; 134', 234) pressurizable by hydraulic fluid, characterised in that one of the piston and cylinder members comprises a two-piece member having a first member fixed relative to the press shoe and a second member fixed relative to the support and spaced from the first member, and in that the other of the piston and cylinder members comprises a coupler sealingly engaging both the first and second members such that the first member is urged away from the second member in a loading direction by pressurization of the working chamber to cause the press shoe to be urged toward the counter roll (16); each coupler engaging the respective first and second members at seals (32; 237a, 237b) which enable the coupler to pivot relative to the first and second members about axes parallel to the machine direction, whereby the articulated hydraulic loading cylinders enable the press shoe to move in the cross machine direction relative to the support".

V. The appellant argued essentially as follows:

Lack of inventive step

D19, D20 and D21 present a documentation of the increasing of the operating speed of shoe presses from 800 m/min up to more than 1700 m/min achieved between 1989 and 1995. Such operating speeds caused a

temperature increase at the press nip from 60°C to up to at least 85°C.

A shoe press according to the preamble of present claim 1 is known from figure 11 of D21, showing a "NipcoFlex-Walze" (shoe press) cooperating with a controlled deflection press roll ("Nipco-P-Walze").

The skilled person having the general technical knowledge that such a shoe press and a controlled deflection roll acting as counter roll for the shoe press have the same hydraulic systems and being confronted with the problem the heat deformation poses on the functioning of the hydraulic system of the shoe press known from D21, ie seeking to compensate for the increased heat deformation, would naturally take into consideration and apply the teaching of D1 and would thus arrive at the shoe press according to claim 1 without exercising an inventive activity.

VI. The respondent argued essentially as follows:

Both D1 and D14 have been publicly available 15 years before the earliest priority date of the patent in suit and in that time nobody has come up with the idea of combining their teachings, as per the invention. According to decisions T 540/92, T 697/94 and T 507/89 (none published in OJ EPO) such a long period of time is in itself an indication for inventive step.

There exists no indication in D19, D20 or D21 that there is a problem with the hydraulic system of the shoe press due to thermal expansion. Accordingly, D21

cannot be used as "closest state of the art" for a proper "problem-solution-approach".

The hydraulic system of the shoe press shown in figure 11 of D21 is not identical with the one of the controlled deflection press roll shown in this figure. Consequently, no teaching for using one and the same hydraulic system for the press shoe and the controlled deflection press roll is derivable from D21. Therefore, the skilled person would have never combined the teachings of D21 with D1.

Even if the skilled person would have considered solutions directed to the hydraulic system, he would not have been led directly to the solution of D1, since there exists a plurality of equivalent technical solutions concerning the problem of heat deformation in shoe presses, see for example D3, D15, D17 or D24. This plurality of solutions speaks against a "one-way-street"-situation as far as it concerns the selection of the teaching of D1.

The problem of heat deformation in shoe presses was for example already known and solved by D3 in 1996, see column 6, line 62 to column 7, line 15. Therefore, the skilled person confronted with the heat deformation problems of the shoe press known from D21 would have incorporated therein the hydraulic system known from the shoe press of D3 rather than the hydraulic system of the controlled deflection press roll known from D1 into the shoe press of D21.

Reasons for the decision

Inventive step (Article 56 EPC)

1. The Board considers that the NipcoFlex shoe press as shown in figures 8, 9 and 11 of D21 represents the closest prior art and is, using the wording of claim 1 of the first auxiliary request, a shoe press for applying pressure to the web which is carried in a machine direction through a nip between the shoe press and the counter roll (Nipco-P-Walze), comprising a press shoe adapted to be juxtaposed with the counter roll and having a concave surface which is generally complementary in contour to the counter roll such that the web can be carried through the nip defined between the counter roll and the concave surface, the press shoe extending in a cross-machine direction along the full width of the web;
a support beam (the dark grey "Tragkörper" shown in figure 9) which supports the press shoe such that it is movable in a loading direction toward the counter roll for applying pressure to the web;
a plurality of articulated hydraulic loading cylinders (see figure 11 and the purple elements shown in figure 9) spaced apart in the cross-machine direction along the press shoe, each loading cylinder including a piston member (inner blue element shown in figure 9) disposed within a cylinder member (outer purple element shown in figure 9) so as to define a working chamber pressurizable by hydraulic fluid. This was not disputed by the respondent.

Thus, a shoe press according to the preamble of present claim 1 is known from D21.

The shoe press of claim 1 differs from the one disclosed in D21 by the features of the characterising portion, which have the effect that the hydraulic system for the support beam can more easily adapt itself to heat deformation in the beam.

2. The reason why the Board has chosen D21 and not D17 (as in the impugned decision) nor D3, for that matter, is that the developments in the field of shoe presses in the years 1989 to 1995 are better documented in the sequence of documents D19 to D21, showing the origin of the problem of heat deformation, notably the increase of the machine's operating speed from 800 m/min (D19, page V130, last sentence) to more than 1700 m/min (D21, page V106, third paragraph of the right hand column). As it was argued by the appellant and also not contested by the respondent, an increase of the machine's operating speed from 800 m/min to an operating speed of more than 1700 m/min results in a temperature increase at the press nip, of which it is evident that an increased heat deformation of the different parts of the shoe press results. The hydraulic systems of the shoe press and counter roll are responsible for the application of pressure at the press nip and therefore they are responsible for the development of heat due to the high frictional forces generated at the shoe press coming into contact with the web. The resulting thermal expansion considerably affects their functioning. The problem solved can therefore be defined as how to guarantee the proper functioning of the hydraulic system under increased thermal expansion. This corresponds to the definition

of the problem in the patent in suit, see paragraph [0004].

3. The Board considers that it belongs to the general technical knowledge of the person skilled in the art that shoe presses and controlled deflection press rolls acting as counter roll for such shoe presses have the same hydraulic systems, see for example D19, chapter 2.1, lines 9 and 10 of the first paragraph; D20, chapter 2, lines 4 to 9 of the second paragraph; D21, chapter 3, lines 1 to 5 of the fourth paragraph.

The skilled person with said general technical knowledge, confronted with the problem of heat deformation in the hydraulic system of the shoe press known from D21, ie seeking to compensate the increased heat deformation, would in the opinion of the Board, take into consideration the teaching of D1 exactly for this reason, as it does not make a difference whether a hydraulic support beam supports a press shoe or a controlled deflection roll, when it comes to avoid the negative effects of thermal expansion.

4. D1 addresses the problems associated with the heat expansion and the bending deformation in such a hydraulic support beam. Instead of rigidly securing the pistons of the hydraulic system to the beam D1 proposes a system of pistons arranged in a row along the beam which allow movement of the support beam transversely to as well as in the machine direction, to accommodate bending deformations due to thermal expansion in the support beam, see column 5, lines 34 to 43 and column 6, lines 27 to 43. Further, according to column 5, lines 50 to 54 of D1 ring seals between the pistons 40, 41,

42 and the corresponding loading cylinders 22 in the support structure 1 and 43 in the support beam 44 are foreseen for this purpose as well. Said seals not only provide sealing action but they also prevent thermal contact between the respective elements of the hydraulic system.

5. The specific embodiments shown in figures 4, 7 and 14 of D1 all disclose the following features as claimed in the characterising portion of claim 1.

The hydraulic support of D1 involves a two-piece member having a first member (the part surrounding the cylinders 43) fixed relative to the support beam 44, 80 and a second member (the part surrounding the cylinders 22) fixed relative to the support structure spaced from the first member and forming two working chambers (cylinders), whereby the pistons articulated in these cylinders are in the form of a coupler sealingly engaging both the cylinders 22 and 43 of the first and second members such that the first member is urged away from the second member in a loading direction by pressurization of the working chambers to cause the support beam to be urged toward the counter roll; each coupler engages thereby the respective first and second members at seals 45 which enable the couplers to pivot relative to the first and second members about axes parallel to the machine direction, whereby the articulated hydraulic loading cylinders enable the support beam to move in the cross machine direction relative to the support.

Consequently, the structural features of the piston and cylinder arrangement in the hydraulic support of the

controlled deflection press roll of D1 are identical with the ones claimed in the characterising part of claim 1. As the hydraulic systems for shoe presses and controlled deflection rolls are the same (see point 3), the advantages obtained by the arrangement of D1 are evident to the skilled person, inciting him to apply that arrangement in the shoe press of D21.

6. Furthermore, in the last paragraph of the description of D1 it is stated that the hydraulic support element of D1 enables an appreciable reduction of the rigidity or stiffness of the controlled deflection shell 4, which is possible by virtue of the more uniform support thereof in its axial direction, and that it is even possible to replace this shell by means of a metallic or a plastic belt, which is arranged between the counter roll 7 and the support beam 80 according to figure 14.

This is another indication to the person skilled in the art that such a hydraulic support can be used in a shoe press, which also makes use of such belts. The only constructional adaptation needed is the replacement of its convex surface by a concave surface.

7. For the above mentioned reasons the Board follows the appellant's argumentation that the skilled person seeking to solve the heat deformation problem in the shoe press known from D21 due to the increased operating speed would incorporate the hydraulic support of D1 having piston and cylinder members with the structural characteristics as claimed in the characterising part of claim 1 in the shoe press of D21 without exercising an inventive activity.

8. The respondent argued that D1 and D14 had been publicly available in a period of 15 years before the earliest priority date of the patent in suit and that according to decisions T 540/92, T 697/94 and T 507/89 (supra) such a long period of time was in itself an indication for inventive step.

This argument cannot succeed for the following reasons:

Firstly, the present decision is based, as can be seen from points 1 to 7 above, on the combination of the teachings of D21 as closest prior art and D1, the former being available to the public as of 1995, ie as close as three years before the earliest priority date of the patent in suit, so that the time factor cannot apply to the extent suggested by the respondent.

Secondly, in the above mentioned decisions the time factor was only an additional indicator confirming the Board's finding on the non-obviousness of the claimed subject-matter in comparison with the available prior art, see T 507/89, point 7.5 of the reasons ("Another element to consider is the time factor..."); T 540/92, points 8.5 and 8.5.1 of the reasons, ("... following further aspects should be taken into account. The first is the time factor...") and T 697/94, point 3.10 of the reasons for, ("... the time factor of 11 years is an additional indication...").

The present Board concurs with the decision T 1014/92 (not published in OJ EPO, point 4.7 of the reasons), where the deciding Board did not accept the appellant's argument that the long period of time for which two

documents were available to the public without their teachings having been combined **is in itself** cogent evidence that there was no obvious connection between them: "This conclusion might only be drawn if evidence relating to time were corroborated by other evidence, such as long-felt-want, which was not adduced in the present case. In these circumstances, a finding of obviousness, based on an objective evaluation of the state of the art cannot be affected by the mere fact that two documents had not been combined by skilled persons for a considerable period of time".

In the present case no such corroborating evidence has been presented by the respondent.

9. The respondent's argument that since there is no mention in D19 to D21 of a problem with the hydraulic cylinders due to thermal expansion of the support beam the "problem-solution-approach" cannot be adopted as required, is not convincing either.

The "problem and solution approach" consists essentially of the steps of (a) identifying the "closest prior art", (b) assessing the technical results (or effects) achieved by the claimed invention when compared with the "closest state of the art" established, (c) defining the technical problem to be solved as the object of the invention to achieve these results, and (d) examining whether or not a skilled person, having regard to the state of the art within the meaning of Article 54(2) EPC, would have suggested the claimed technical features in order to obtain the results achieved by the claimed invention (see Case Law

of the Boards of Appeal of the EPO, 5th edition, 2006, I.D.2, first paragraph).

Step (a) has already been discussed in point 1 above.

According to steps (b) and (c) the technical problem to be solved is defined **objectively** by assessing first the technical results (or effects) achieved by the claimed invention when compared with the "closest state of the art". The objective technical problem to be solved then results in the form of "how to achieve these results (effects)". Both these steps have been performed as required by the case law, by the present Board (see points 1 and 2 above).

The Board also cannot find basis in the established case law that said problem has to be mentioned **as such** in the "closest state of the art". It suffices that this state of the art relates to said or a similar problem, which is the case for D21 relating to higher machine speeds, which produce higher frictional forces with the resultant thermal expansion of the support beam.

10. The Board also cannot accept the respondent's contention that the skilled person would not have combined the teachings of D21 with D1, since the hydraulic compartments for the shoe press shown in figure 11 of D21 are not identical with the ones in the controlled deflection press roll shown in the same figure and consequently this would speak against using the same hydraulic elements for the press shoe and the controlled deflection press roll.

In the Board's view this is already contradicted by the indications in the prior art, see point 3 above, to use the same hydraulic system for the shoe press and the controlled deflection press roll. Further, these indications in D19 to D21 are merely used by the Board in support of its opinion that the prior art provides indications to use technology known from controlled deflection roll hydraulic systems in shoe presses. Finally, this technical difference, even if there is one, poses also no hindrance to the skilled person to apply the teaching of D1 to the shoe press of D21, because the pressing elements of the shoe press on the one hand and the controlled deflection press roll on the other as shown in figure 11 of D21 have the same total pressing surface on each side and are supplied with pressurized liquid via a common conduit, see D21, chapter 3, first sentence of the fourth paragraph.

11. The Board also cannot accept the respondent's further argument that even if the skilled person would have considered solutions directed to the hydraulic systems he would not be led directly to the solution of D1 since there exists a plurality of equivalent technical solutions concerning problems with generated heat in shoe presses, see for example D3, D15, D17 or D24.

The Board notes that even if, for the sake of argumentation, the skilled person would have taken into consideration also the teachings of said documents, which according to the respondent are equivalent with each other as well as with the teaching of D1, then any selection of one out of said equivalent solutions, for example the teaching of D1, would not have required

from the person skilled in the art the exercise of an inventive activity.

12. The respondent argued finally that the problem of heat deformation in shoe presses was already known in 1996 and that it was solved satisfactorily by the shoe press known from D3, see column 6, line 62 to column 7, line 15 of D3. Therefore, the skilled person confronted with the heat deformation problems in the shoe press known from D21 would have rather incorporated the hydraulic system known from the shoe press of D3 than the hydraulic system of the controlled deflection press roll known from D1.

The Board cannot follow this argumentation either, since the mere existence of a prior art document proposing a specific solution for the heat deformation in shoe presses would not prevent the skilled person to take into consideration also other, equivalent, solutions known in the same field of paper pressing, such as the one known from D1.

13. For the above-mentioned reasons the subject-matter of claim 1 does not involve an inventive step.
14. Since the requirements of Article 56 EPC are not fulfilled for the reasons given above, there is no need for the Board to address the question whether the requirements of Article 123(2) EPC are met.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

G. Nachtigall

H. Meinders