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**Datasheet for the decision
of 22 April 2008**

Case Number: T 1252/06 - 3.2.05

Application Number: 00200334.1

Publication Number: 1035250

IPC: D21D 1/40

Language of the proceedings: EN

Title of invention:

Device for the treatment of a fibrous suspension

Patentee:

GLV Finance Hungary Kft.

Opponent:

Metso Paper Sundsvall AB

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Relevant legal provisions (EPC 1973):

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Keyword:

"Novelty, yes"

"Inventive step, yes"

Decisions cited:

-

Catchword:

-



Case Number: T 1252/06 - 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 22 April 2008

Appellant: Metso Paper Sundsvall AB
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Respondent: GLV Finance Hungary Kft.
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Representative: Hano, Christian
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 9 June 2006
rejecting the opposition filed against European
patent No. 1035250 pursuant to Article 102(2)
EPC 1973.

Composition of the Board:

Chairman: W. Zellhuber
Members: P. Michel
E. Lachacinski

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition filed against European Patent No. 1 035 250.

The Opposition Division held that the subject-matter of claim 1 as granted was new and involved an inventive step.

II. Oral proceedings were held before the Board of Appeal on 22 April 2008.

III. The appellant requested that the decision under appeal be set aside and that the European Patent No. 1 035 250 be revoked in its entirety.

The respondent (patentee) requested that the appeal be dismissed.

IV. The following documents are referred to in this decision:

D1: WO-A-98/54401

D2: US-A-3,772,144

D3: US-A-3,980,518

D8: US-A-4,024,015

D9: "Kvaerner Tvättpress - från brunmassatvätt till blekeriapplikationer", Svanberg and Bosenius, Fiberlinjekonferensen '98, pages 41 to 59, and translation thereof

D10: "Test on pulp regarding its dewatering properties", 23 May 2007, Hågglund and Norberg

V. Claim 1 as granted reads as follows:

"1. Device for the washing and dewatering of a fibrous suspension, which device incorporates two circular cylindrical filter drums (1) arranged to rotate in opposite directions to create a pinch (2) and installed with their axes of rotation in essentially one and the same horizontal plane, in which both of the said filter drums are hollow and are equipped with evacuation chambers (22) and allow evacuation of fluid radially inwards into the filter drum, in which at least one of the hollow filter drums (1) is installed in a trough (7, 8) which partly encloses the filter drum's outer surface (3), and which, in the direction of rotation of the filter drum, converges towards the outer surface of the filter drum, and where at least one pulp inflow chamber (4) is installed by the trough-equipped filter drum (1) for the introduction of pulp between the filter drum's outer surface (3) and its trough (7, 8) for the formation of a fibrous web, **characterized in that**

- the pulp inflow chamber (4) is installed in the region of the filter drum's highest point providing an initial dewatering to the outer surface of the drum
- the said trough (7, 8) is designed to enclose the outer surface (3) of the filter drum equipped with trough, from the inflow chamber (4) installed in the region of the filter drum's highest point and further round at least 230° of the outer surface's circumference, so that the said fibrous web during operation is constrained to run between the outer surface (3) of the filter drum and the trough (7, 8) round at least 230° of the circumference of the outer surface before the fibrous web reaches the pinch (2),

so that an initial dewatering using hydrostatic pressure followed by a long dewatering zone is obtained for the fibrous suspension on the filter drum equipped with trough plus a final pinch with double sided dewatering."

VI. The appellant has argued substantially as follows in the written and oral proceedings:

Document D2 discloses a device comprising a supply pipe 160 arranged "adjacent to the upper end of the drum" (Figure 11 and column 10, lines 12 to 16). Furthermore, the three baffle segments 164, 170 and 186 have a total arcuate length of at least 230°.

In the device of document D8, the pulp inflow 9 as shown in Figures 1 and 2 is arranged in the region of the filter drum's highest point. The endless wire 4 corresponds to a dewatering trough which extends around at least 230° of the circumference of the filter drum.

Claim 1 lacks thus novelty in view of the disclosure of each of documents D2 and D8.

Document D9 may be regarded as being the closest prior art. This document discloses, with particular reference to Figures 4 and 22, a device having all the features of claim 1 except for the presence of a press roll as opposed to a second filter drum and the inflow chamber not being positioned in the region of the highest point of the filter drum. These features are, however, known from document D8.

For a filter drum rotating at 20 rpm, rotation through a quarter revolution requires about 0.8s. As demonstrated by document D10, an increase in hydrostatic pressure from 1 dm to 5 dm has only an insignificant influence upon the increase on pulp consistency which can be obtained in this time. Thus, the features which distinguish claim 1 from document D8 do not have a technical effect and thus cannot contribute to an inventive step.

Alternatively, document D2 can be regarded as being the closest prior art. Referring in particular to Figure 11, this document discloses a device in which a trough surrounds the filter drum for at least 230° of its circumference, a baffle 170 being arranged within the trough. Thus, the only distinguishing feature is the arrangement of the inflow chamber to achieve a higher hydrostatic pressure. However, as noted previously, this feature has no technical effect.

Claim 1 thus lacks an inventive step in view of this document alone. Alternatively, document D2 may be considered in conjunction with either of documents D3 or D1.

In a further approach, claim 1 is considered to lack an inventive step in view of document D3 alone in view of the demonstration by document D10 that the position of the inflow chamber results in an increase in hydrostatic pressure which has a negligible effect on the initial dewatering.

VII. The respondent has argued substantially as follows in the written and oral proceedings:

Document D2 does not disclose a pulp inflow chamber which is installed in the region of the filter drum's highest point or a trough extending round at least 230° of the circumference of the filter drum. Figure 11 is merely a schematic drawing.

The device of document D8 does not have a trough or a second filter drum.

The subject-matter of claim 1 is thus new.

The closest prior art is document D3. The subject-matter of claim 1 is distinguished from the disclosure of this document by virtue of the installation of the pulp inflow chamber in the region of the filter drum's highest point and the provision of a trough extending from the inflow chamber and round at least 230° of the outer surface's circumference. These features result in an increased hydrostatic pressure in the space enclosed by the trough, so that the device is not dependant on the provision of a pump. In addition, the device can be more compact and an additional area of the filter drum surface is utilized. Furthermore, better pulp formation on the drum at the inflow is obtained, particularly at start up.

The remaining documents do not suggest moving the inflow chamber to the region of the highest point of the filter drum. The inlet of document D2 is not at the highest point and the inlet of document D1 is below the filter drum.

The test results of document D10 are flawed. It is not appropriate to carry out measurements of pulp consistency at 10 second intervals and then use a straight line extrapolation to obtain a value for 0.8 seconds. It is further inexplicable that similar results were obtained for tests at 70°C and room temperature in view of the difference in viscosity.

Document D8 discloses a device in which the fibrous web is retained on the filter drum by means of a wire, so that the drum is not enclosed. This document thus relates to a different technique from that of document D3, so that the documents cannot be combined.

The subject-matter of claim 1 thus also involves an inventive step.

Reasons for the Decision

1. *Novelty*

1.1 Document D2

As shown in Figure 11 of document D2, pulp supply occurs through a supply pipe (160) which leads to a region on the periphery of the filter drum of larger cross-section than the arcuate chamber (166). This region can be regarded as constituting a pulp inflow chamber. The pulp is thus not supplied in the region of the filter drum's highest point. Whilst the term "upper end of the drum" is used at column 10, line 16, this term is construed as referring to the upper half of the

drum, since Figure 11 does not show the pipe as being arranged at the highest point of the drum.

The filter drum is enclosed by baffles (164, 170), which extend around the filter drum from the supply pipe and have an arcuate length which is preferably between 100° and 180° (column 10, lines 37 to 40). A further baffle (186) is provided before the pinch. There is, however, no disclosure of the arcuate length of this baffle. The drawings are, however, merely schematic and it is not possible to derive a disclosure of the arcuate length of this baffle by measurement of the drawings. Even if Figure 11 were to be regarded as providing an indication of total baffle length, this would not be at least 230°.

The subject-matter of claim 1 is thus distinguished over the disclosure of document D2 in that the pulp inflow chamber is installed in the region of the filter drum's highest point and a trough is provided which extends round at least 230° of the outer surface of the filter drum.

1.2 Document D8

Figure 1 of document D8 shows an apparatus comprising an endless wire means (4) wrapped around a cylinder (1). The apparatus does not comprise a trough which converges towards the outer surface of the filter drum. Further, the apparatus does not comprise two filter drums which are arranged to rotate in opposite directions to create a pinch.

1.3 The subject-matter of claim 1 is thus new within the meaning of Article 54 EPC.

2. *Inventive step*

2.1 Closest Prior Art

The closest prior art has variously been suggested as being represented by documents D2, D3 or D9.

The subject-matter of claim 1 is distinguished over the devices disclosed in each of these documents at least in that it is specified that the pulp inflow chamber is installed in the region of the filter drum's highest point.

It was argued on behalf of the appellant that this term is not clearly defined. This is not accepted. In claim 1 of the patent in suit, it is specified that a trough encloses the outer surface of the filter drum from the inflow chamber and further round at least 230° of the outer surface's circumference, the fibrous web being constrained to run between the outer surface of the filter drum and the trough before the fibrous web reaches the pinch. Using the convention adopted in claim 3 of the patent in suit, that 0° represents the uppermost point of the drum and positive angles are reckoned in the direction of rotation of the drum, the pinch or nip is positioned at -90°. Thus, the position of the inflow chamber must be higher than 40° from the uppermost point of the drum.

As set out in section 1.1 above, document D2 does not disclose such a positioning of the pulp inflow chamber.

Document D3 similarly discloses in Figure 1 a device in which the pulp inflow is shown as being at a point above the horizontal plane in which the axes of rotation of the filter drums are arranged. The drawing is, however, schematic and there is no information in the description as to the positioning of the pulp inflow.

Document D1, with particular reference to Figure 1, and document D9, with particular reference to Figures 4 and 12, show devices in which the pulp inflow chamber is arranged at a point below the horizontal plane in which the axes of rotation of the filter drums are arranged.

The feature of the pulp inflow chamber being installed in the region of the filter drum's highest point results in a hydrostatic pressure being created in the inflow chamber and in the space between the trough and the outer surface of the filter drum in which the fibrous web is constrained to run, without the necessity of providing a pump.

It was argued on behalf of the appellant that a higher hydrostatic pressure does not give rise to a significantly improved initial dewatering. In support of this argument, reference is made to document D10, which describes test results concerning the dewatering properties of pulp.

In the tests, a drainage tester was used in which water from a pulp suspension was allowed to drain away through a perforated sheet. Differing pulp suspension heights were tested, and the pulp consistency was

calculated by measuring the amount of drained water at 10s intervals over 120s.

The conditions under which the test was carried out thus do not represent the conditions which pertain on the filter drum of a dewatering device. In such a device, the filter drum rotates through a quarter revolution in about 0.8s. It is not accepted that it is appropriate to interpolate the results on the basis of an assumed linear relationship so as to provide a value for the pulp consistency after such a short time. In addition, the pulp column is not compressed, so that drainage of water from the pulp may merely allow air to enter the pulp column without affecting the height of the column.

The arguments of the appellant based on the test results of document D10 are thus not accepted.

As indicated by Darcy's Law, the flow of fluid through a porous medium increases with an increasing pressure differential across the medium. Dewatering is thus improved by a higher pressure differential across the filter of the filter drum. Whilst it may be disputed how great this effect may be, even a small effect may be worth attaining.

2.2 Object of the Invention

The object of the invention can thus be regarded as being to facilitate an improved initial dewatering.

2.3 Solution

The only document which suggests positioning the pulp inflow in the region of the filter drum's highest point is document D8. This document discloses a device in which the fibrous web is guided around the filter drum by means of an endless wire which travels around the filter drum together with the web. The pulp is supplied to the filter drum in the form of a jet positioned before the crest of the drum, thus enabling a web to be formed before it comes into contact with the wire (column 2, lines 41 to 59). The device thus does not include a trough as specified in claim 1 of the patent in suit.

There is accordingly nothing in document D8 to suggest that positioning the pulp inflow in the region of the filter drum's highest point in conjunction with the provision of a trough as specified in claim 1 of the patent in suit could have the effect of creating a hydrostatic pressure in the space between the outer surface of the filter drum and a trough, and thereby facilitate an improved initial dewatering of the pulp.

Since neither of documents D3 and D9 discloses a pulp inflow in the region of the filter drum's highest point, as discussed above in section 2.1, these documents also cannot suggest the adoption of this feature.

2.4 The subject-matter of claim 1 thus involves an inventive step within the meaning of Article 56 EPC.

3. Claims 2 to 12 are directly or indirectly dependent from claim 1 and relate to preferred features of the device, so that the subject-matter of these claims similarly involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

D. Meyfarth

W. Zellhuber