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**Datasheet for the decision
of 22 October 2007**

Case Number: T 1486/05 - 3.3.05

Application Number: 00902279.9

Publication Number: 1154843

IPC: B01F 5/06

Language of the proceedings: EN

Title of invention:

Apparatus for introducing a first fluid into a second fluid,
preferably introduction of steam into flowing cellulose pulp

Patentee:

GL&V Management Hungary Kft, Luxembourg branch

Opponent:

Andritz Oy

Headword:

-

Relevant legal provisions:

EPC Art. 100(a)

Keyword:

"Novelty: yes after amendment"

Decisions cited:

T 0204/83

Catchword:

-



Case Number: T 1486/05 - 3.3.05

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 22 October 2007

Appellant: GL&V Management Hungary Kft, Luxembourg branch
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 7 November 2005
revoking European patent No. 1154843 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: B. Czech
Members: H. Engl
S. Hoffmann

Summary of Facts and Submissions

I. The present appeal was lodged by the appellant (patent proprietor) against the decision of the opposition division to revoke the European patent EP 1 154 843.

The opposition was based on the ground that the claimed subject-matter of the patent as granted lacked novelty over document D1: GB A 1 164 448. Lack of inventive step was also invoked as ground of opposition in view of several combinations of documents, *inter alia* in view of combinations involving D1 and two Swedish patent documents cited in the description (paragraphs [0003] and [0004]) of the opposed patent.

II. The opposition division came to the conclusion that the subject-matter of an amended claim 1 filed with a letter dated 11 March 2004 lacked novelty having regard to document D1. The opposition division *inter alia* held that the mixer disclosed in D1 was suitable for mixing steam and medium consistency pulp.

III. In its statement of the grounds of appeal, the appellant contested the finding of the opposition division, pointing to the features which in its view were not disclosed in D1.

IV. In its reply, the respondent (opponent) maintained that the subject-matter of claim 1 as filed with a letter dated 11 March 2004 lacked novelty over D1.

V. With a further letter, the appellant submitted the following documents in support of its argument that the mixing device of D1 was not suitable for mixing steam into pulp:

P1: EP 0 248 007 B1
P2: US 2001/0010659 A1
P3: US 6 371 5260 B1

VI. In its reply to this letter, the respondent discussed the contents of P1 to P3 and still maintained that D1 was novelty-destroying.

VII. In reply to the summons for oral proceedings the appellant filed an amended claim 1 and a set of amended claims 1 to 12 as main and auxiliary requests, respectively.

VIII. Oral proceedings were held on 22 October 2007, during which, following the discussion of the allowability of claim 1 of the main request on file, the appellant submitted a further amended set of claims 1 to 10 as new main request and withdrew its earlier requests. After the discussion of the allowability of these claims and of the novelty of their subject-matter, the appellant requested, in the event that the board reached a positive decision on these issues, that the case be remitted to the department of first instance for the examination of inventive step.

Claim 1 of the "main" request submitted as sole request during the oral proceedings reads as follows (features amended after grant highlighted by the board):

1. Apparatus for introducing **steam** into a **flow of a cellulose pulp having a fibre content of medium consistency, i.e. a dry substance content of 5-20%**, which **medium consistency cellulose pulp** is flowing in a pipe (2A,2B), which apparatus consists of a pipe-shaped body (10) with a through-flow channel (9) for the **cellulose pulp** of essentially constant cross-sectional area, one or more chambers (14) which extend round at least the majority of the circumference of the through-flow channel along at least a part of its longitudinal extent, a connection (19) for supplying the **steam** to the said chamber(s) from a pressure source, in which a series of through-holes (28) is arranged in the said pipe-shaped body (10) in the region of the said one or more chambers (14), through which holes the **steam** can be directed into the **flow of cellulose pulp** which is flowing through the said through-flow channel (9) under the influence of the difference in pressure between the said chamber(s) and the said through-flow channel, characterized in that downstream of the through-flow channel and in direct contact with it there is a downstream **pipe** section (2B) with a cross-sectional area which is significantly larger than that of the through-flow channel, so that an increase in area of **200 to 600%** is obtained close to the connection for supply of **steam, the increase in area being effected within a distance which is less than the diameter of the through-flow channel (9) reckoned from the through-holes (28) and viewed in the direction of flow of the cellulose pulp.**

IX. Concerning novelty of the claimed apparatus over D1, the appellant essentially argued as follows:

Taking into account the problem to be solved by the patent, *i.e.* to avoid noise (or vibrations), the mixing device disclosed in D1 would be unsuited for mixing medium consistency pulp and steam. Documents P1 - P3 indicated that in the design of pulp piping wake areas or cone transitions, as in D1, must be avoided. D1 did disclose a downstream cone section, but not a pipe section as called for by claim 1. Moreover, in the mixer shown in Figure 1 of D1, the axial through-flow channel of constant cross-sectional area extended only from the inlet of pipe (2) to the annular plate (3). Thereafter, the axial fluid flow path increased in cross-sectional area in the region surrounded by the annular orifice (6) and the inner ends of the vanes (4). The axial flow path was then narrowed by annular plate (5) at the entrance to the downstream conical expansion chamber (8). The through-flow channel with constant cross-sectional area within the axial inlet conduit (2) was not in direct contact with a downstream pipe section, as required by claim 1. The radial passages formed by vanes (4) and annular plates (3) and (6) were not arranged in the pipe-shaped body (2), but downstream thereof. Annular plate (5) protruded radially into the axial flow path, causing a vortex in the expansion chamber (8). The increase in cross-sectional area of 200 - 600% was not disclosed in D1. For all these reasons, the claimed subject matter was novel.

X. The respondent's arguments may be summarized as follows:

The mixing apparatus of D1 was suitable for mixing steam and pulp. Pulp having a dry substance content as low as 5% behaved like water and could be pumped with ordinary water pumps, albeit with higher pipe friction. The possibility of feeding a high density fluid, such as pulp, axially, and introducing a gas, such as steam, radially, was envisaged in D1. The annular plates (3) and (5) and the vanes (4) were part of axial inlet pipe (2), which had to be considered as pipe-shaped body in the sense of claim 1. The radial channels between the vanes (4) in Figure 1 provided the through-holes in axial inlet pipe (2). Annular plate (5) ended internally on the level of said pipe-shaped body (2) and was to be considered as the end of the axial pipe (2) and its through-flow channel, so that the through-holes were actually provided in the said pipe. The apparatus according to claim 1 of the patent in suit needed not comprise a downstream **pipe**, but only a pipe **section** (2B), no matter how long. Such a downstream pipe section was shown in D1. Moreover, a pipe or pipe section could also exhibit a conical shape, as in expansion chamber (8) of D1. D1 thus disclosed all the features of the claimed apparatus.

XI. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the set of claims 1 to 10 according to the main request filed during the oral proceedings.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. Allowability of the amendments
 - 2.1 The amendments to the granted claims undisputedly find a basis in the PCT application published as WO 00/44486 A1 (referred to as "application as filed" hereinafter):

In amended claim 1 the former features "*first fluid*" and "*second fluid*" are replaced by "*steam*" and of "*a flow of cellulose pulp*", respectively. A basis for this amendment is to be found *inter alia* on page 4, lines 3 - 9 and 21 - 24 of the application as filed. The additional feature according to which the said cellulose pulp has a "*fibre content of medium consistency, i.e. a dry substance content of 5 - 50%*" is originally disclosed on page 4, lines 21 - 24 of the application as filed.

The term "*downstream section (2B)*" has been amended to read "*downstream pipe section (2B)*". A basis therefore is to be found *inter alia* in claim 1 of the application as filed, which refers to a "*pipe (2A, 2B)*", as well as in claim 11 (literally) and in Figure 1 of the application as filed.

The range of "*200 to 600%*" for the increase in cross-sectional area is disclosed in claim 2 of the application as filed.

The characterising part of claim 1 was furthermore supplemented by the features of claim 5 of the application as filed.

The amended dependent claims 2 - 10 correspond to claims 3, 6 - 13, respectively, as originally filed and as granted.

2.2 Moreover, by virtue of the introduction of the additional features into claim 1, the scope of the claims has been restricted with respect to their granted version.

2.3 Amended claims 1 - 10 therefore meet the requirements of Article 123(2) and (3) EPC.

3. Novelty

3.1 *Novelty over D1*

3.1.1 Document D1 discloses an apparatus for mixing a first and a second fluid having different physical characteristics, for instance different specific gravity or temperature. The fluids may be gases or liquids. As an example, the first fluid may be a hot gas and the second fluid a cold gas or a liquid. See page 1, lines 17 - 20; page 2, lines 30 - 39.

A specific embodiment of the mixing apparatus claimed in D1 is described in Figures 1 and 2 and in the description, page 2, lines 20 - 29 and 49 - 56 of D1. In operation of the apparatus, a first fluid is introduced via a tubular axial inlet conduit (2), defining a flow channel in its interior, into a

collision zone. An annular plenum chamber having an inlet (7) for a second fluid surrounds said axial inlet (2). The plenum chamber has an annular plate (3) carrying radial vanes (4) extending between said plate (3) and annular end plate (5) to direct the second fluid via an annular orifice (6) into the said collision zone. Thus the second fluid impinges radially on the axial flow of the first fluid, as shown schematically in Figure 1. Thereafter, the flow of mixed fluids passes the radially protruding annular end plate (5), which causes further turbulence and intensifies the mixing, before it enters a downstream expansion chamber (8). The initial cross-sectional area of the expansion chamber (8) is "*substantially greater*" (cf. claim 1 of D1) than the cross-sectional area of the stream of the first fluid at the collision zone. The mixture is then accelerated in a conical section (expansion chamber (8)) before leaving the apparatus at exit (9).

3.1.2 With respect to the principles of mixing operation certain similarities with the opposed patent can be recognized - supply of a first fluid via an annular plenum chamber; circumferential and radial impingement of the first fluid on a second fluid flowing in an axial channel; exit of the flow of the mixed fluids into a downstream zone, having a greater cross-sectional area than the axial channel, thereby causing further turbulent mixing.

The board notes that, according to claim 1 of D1, the expansion chamber (8) is not required to be of conical shape. On the other hand, such a conical shape is not excluded by present claim 1, which does not require

downstream pipe section (2B) to be of constant diameter. Moreover, even according to one of the definitions relied upon by the appellant in its statement of grounds of appeal (section 4.2, 1st paragraph), "**a tubular object**" (emphasis added by the board) may be considered as a "*pipe*". Hence, the board shares the view of the opposition division that the truncated cone used as expansion chamber in D1 is a "*pipe*" within the meaning of present claim 1, and that it has an upstream "*section*" having a diameter which is greater than the diameter of the flow channel leading into it.

However, the claimed apparatus differs from D1 at least in the following respects:

a) In the apparatus shown in Figure 1 of D1, only the part forming axial inlet conduit (2) can be considered as a "*pipe-shaped body with a through-flow channel [...] of essentially constant cross-sectional area*". This part forming an axial through-flow channel for a first fluid only extends at a constant cross-sectional area from its inlet opening up to annular plate (3), which together with the vanes (4) and the annular plate (5) defines the annular orifice (6). Thereafter, in the region of the annular orifice (6), the cross-sectional area available for the axial through-flow of the fluids is wider than within the inlet pipe 2. The flow of the two combined fluids leaving the region of the annular orifice (6) is constricted by the annular plate (5) which defines a flow-through opening of having a narrower cross-sectional area than the region of the annular opening (6). Annular plate (5) is deliberately provided to function as explained on page 2, lines 49 - 56, of D1, where it is stated that "*the mixture of*

fluids entering the expansion chamber 8 is drawn back by the vortex caused on plate, so that turbulence and intensified mixing occurs during expansion in the chamber".

In contrast therewith, the apparatus of present claim 1 requires the through-flow channel of essentially constant cross-sectional area of the pipe-shaped body to be "*in direct contact*" with the downstream pipe section having a larger cross-sectional area. Even assuming purely for the sake of the argument that in the device of Figure 1 of D1 the entire flow path from the inlet opening of the axial conduit 2 to the first entrance into the expansion chamber 8 through plate (5) was to be considered as the through-flow channel in the sense of claim 1, then still this through-flow channel in D1 would not exhibit an "*essentially constant cross-sectional area*" as required by present claim 1.

b) D1 does not disclose "*through-holes arranged in a pipe-shaped body*" because neither the annular orifice (6) nor the radial flow paths for the second fluid defined by the vanes (4) and the annular plates (3) and (5) are part of the axial inlet pipe (2). In fact, since at the location of the annular orifice (6) the apparatus is of an open structure consisting of the radial vanes (4) and the annular plates (3, 5), there is nothing which could be regarded as a pipe-shaped body with holes arranged therein.

c) Furthermore, the board considers that D1 does not disclose directly and unambiguously the "*increase in area of 200% to 600% [...] close to the connection for supply of steam*" required by present claim 1. The

description (page 1, line 50) and claim 1 of D1 only disclose a "*substantially greater*" cross-sectional area of the expansion chamber (8). This unspecific expression cannot be associated with any particular numerical value and thus cannot deprive of novelty the subject-matter of present claim 1. It is also noted that Figure 1 of D1 is not a drawing true to scale but a schematic representation, and thus cannot serve as a basis for determining a numerical ratio of areas by measuring the corresponding dimensions in the drawing, such as the diameter of axial inlet conduit (2) and the initial diameter of expansion chamber (8). This view is in line with the established jurisprudence, see for instance decision T 204/83 (OJ EPO, 1985, 310; Reasons, point 7).

3.1.3 For these reasons, the subject-matter of claim 1 and, consequently, of claims 2 to 10 dependent thereon, is novel over D1.

3.2 No other novelty objection has been raised during the opposition proceedings. At the oral proceedings before the board, the respondent expressly confirmed that it did not object to the novelty of claim 1 as amended in view of any other prior art document cited by the parties.

The board is also convinced that novelty of the subject-matter of claim 1 cannot be called into question in view of those documents which have actually been filed and which are in one of the official languages of the EPO. Since this has not been disputed, detailed reasoning need not be given in this respect. This finding does not, however, apply to the two

Swedish documents cited in the description, upon which the respondent had based some of its inventive step objections in the opposition proceedings, since these documents have never been physically filed, not even in the Swedish language.

4. Remittal

The decision under appeal dealt solely with the opponent's novelty objection and no discussion of inventive step has taken place in oral proceedings before the opposition division. Under these circumstances and considering also that claim 1 has been substantially amended in the appeal proceedings, the board, in exercising its discretionary power pursuant to Article 111(1) EPC, finds it appropriate to remit the case to the department of the first instance for further prosecution, as requested by the appellant.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar

The Chairman

C. Vodz

B. Czech