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**D E C I S I O N**  
**of 21 April 1995**

**Case Number:** T 0275/91 - 3.2.5

**Application Number:** 85902968.8

**Publication Number:** 0188454

**IPC:** D04H 1/00

**Language of the proceedings:** EN

**Title of invention:**

A dry forming system for fiber products

**Patentee:**

Scanweb I/S

**Opponent:**

Yhtyneet Paperitehtaat Oy Walkisoft Engineering

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 56, 114(2)

**Keyword:**

"Inventive step - no"

"Late submitted material - document admitted (yes)"

**Decisions cited:**

T 0381/87

**Catchword:**



Case Number: T 0275/91 - 3.2.5

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.5  
of 21 April 1995

**Appellant:** Scanweb I/S  
(Proprietor of the patent) Bryggervej 21  
DK-8240 Risskov (DK)

**Representative:** Smulders, Theodorus A. H. J., Ir.  
Vereenigde Octrooibureaux  
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NL-2587 BN 's-Gravenhage (NL)

**Respondent:** Yhtyneet Paperitehtaat Oy  
(Opponent) Walkisoft Engineering  
SF-Valkeakoski (FI)

**Representative:** Hoffmann, Klaus, Dr. rer. nat.  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office dated 23 January 1991  
revoking European patent No. 0 188 454 pursuant to  
Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** C. V. Payraudeau  
**Members:** H. P. Ostertag  
W. D. Weiß

### Summary of Facts and Submissions

- I. The appellant (proprietor of the patent) lodged an appeal against the decision of the opposition division by which the European patent No. 0 188 454 had been revoked on the ground that its subject-matter lacked an inventive step with respect to the teachings disclosed by the documents EP-A-0 032 772 (D1) and US-A-4 375 448 (D2).
- II. The only independent claim of the patent as granted reads (for later reference the two characterising features are denoted (a) and (b) by the board):

"1. A dry forming system for successively laying out a layer of fibers on a moved forming wire (2), the system being of the kind which comprises a pipe (12) of a perforated classification material and means for establishing through this pipe (12) and through a return pipe system a circulating flow of an air fluidized fiber material, which is caused to be successively discharged through the perforations of the pipe (12), and means (6) for sucking air down through the forming wire (2) such that the perforated pipe (12) as located above the wire (2) is placed generally in a downwardly directed air flow, by which the fibers discharged through the perforations of the pipe (12) are carried downwardly for delivery onto the forming wire (12); inside the pipe (12) is arranged a needle cylinder (34) rotating about an axis, which is parallel with the axis of the pipe (12), but preferably located underneath this axis, such that the needles of the cylinder sweep across a longitudinal, internal area of the perforated pipe (12) at a small distance from the inner surface of the pipe (12), characterized in that

- (a) the needle cylinder (34) is adapted to be rotated with a needle tip velocity which is considerably higher than the velocity of the circulating fiber flow, and that
- (b) the perforated pipe (12) is provided with oblong perforations (50) oriented essentially in the longitudinal direction of the pipe (12)."

III. The respondent (opponent) filed a new document on 29 August 1994, shortly before the oral proceedings were to take place:

D3: **James P. Hanson**, "Air Laid Forming in the 80's (For Grades Containing Wood Pulps)", Michigan: Marketing/Technology Service - a Division of Miller Freeman Publications, Inc., August 1980, Section XI, pp. 202-8.

The respondent stated that he had only recently received knowledge of this document and claimed that the referenced Section exactly identified the drum forming system as claimed in the opposed patent.

IV. Oral proceedings were held on 13 September 1994.

- (i) The appellant (patentee) requested as main request that the decision under appeal be set aside and that the patent be maintained, and as auxiliary request that the decision under appeal be set aside and that the patent be maintained with the amendments filed at the oral proceedings.

Claim 1 according to the auxiliary request differs from claim 1 as granted in that the term "considerably higher" in the characterising part

of claim 1 is replaced by "some 10 times higher".

- (ii) The respondent (opponent) requested that the appeal be dismissed.
  
- (iii) In view of the potential relevance of document D3 the board admitted this document into the proceedings, despite it being filed late (cf. Article 114(2) EPC). Because document D3 appeared to be available to anyone before the priority date of the patent in suit for the amount of USD 5000, albeit for in-house use only, and moreover carried a Library of Congress Catalog Number, the board was of the provisional opinion that this document had to be considered as comprised in the state of the art in the sense of Article 54(2) EPC.

The appellant argued however that document D3 was not "made available to the public", since it contained purchase terms ("multiple copy policy") stipulating that purchasers had to agree to protect the report from any attempt to duplicate or redistribute that report and that all rights were reserved.

Since the document D3 was filed only 15 days before the oral proceedings took place, the board considered that, for reasons of equity, the appellant should be given an adequate time to submit evidence and arguments both on the question whether document D3 is comprised in the state of the art, and on issues of substantive law.

The representatives then addressed the board to present their arguments for and against the presence of an inventive step in the subject-matter of the independent claim with respect to the cited prior art documents D1 and D2.

- (iv) Having regard to the technical aspects, the appellant argued essentially as follows:

The invention was a further development of the dry forming system according to document D1, which was taken as the basis to formulate the preamble of claim 1 of the patent in suit. The main inventive idea of the opposed patent was that when processing long fibers the discharge capacity could be raised by using oblong perforations with a width that was small enough to withhold lump formations and with a length that was at least equally as long as the fibers, whereby the perforations were oriented in the length direction of the tube.

Document D2 disclosed a device for forming an air-laid web of dry fibers. In contrast to the present invention the fiber stream was introduced radially into the housing, whereby an air-suspended fiber stream was conveyed through a transport duct with partitions to prevent an axial flow of fibers. The fibers were discharged through a slotted screen by the co-action of a rotor bar assembly, the function of which was different from the function of the needle cylinder according to the present invention. The design of the apparatus according to document D2 and the dry forming system according to the invention were therefore totally different. The

fact that the slots of the slotted screen had their long dimension parallel to the rotor assembly had to be considered as an accidental similarity, especially since the fiber flow in the two systems was different. Moreover, it was to be noted that feature (a) was neither disclosed in document D1, nor in document D2, so that for that reason alone the subject-matter of the patent in suit was inventive over the cited prior art.

- (v) In answer, the respondent argued essentially as follows:

The whole thrust of the disclosure of document D2 was directed toward improving the throughput rates as compared to the prior art dry forming systems. According to this document, the slotted screen had slots with their long dimension parallel to the rotor assembly for the reason that "even more remarkable throughput rates are attained" (see column 20, line 52). The person skilled in the art would immediately try to apply this clear teaching to the dry forming system according to document D1 in order to improve the discharge capacity thereof.

The feature that the needle tip velocity was required to be considerably higher than the velocity of the circulating fiber flow, was no indication for inventive step, since this feature could not distinguish the claimed apparatus from the prior art, and moreover the needle cylinder according to document D1 was also said to "rotate rapidly" (see column 5, line 19).

(vi) At the end of the oral proceedings, the Chairman announced the following decision of the board:

- (1) The prior art documents EP-A-0 032 772 (D1) and US-A-4 375 448 (D2) do not prejudice the maintenance of the patent as granted.
- (2) The appellant is given a time limit of two months to present evidence and his arguments as to whether the newly cited document by James P. Hanson belongs to the state of the art and also to take a position on the facts contained therein.

V. The respondent filed an affidavit dated 21 November 1994 from Mrs Ellen Hahn, Director for Public Services and Collection Management II, Constituent Services, Library of Congress, stating that the three-volume work entitled "Air Laid Forming in the 80's (For Grades Containing Wood Pulps)" by James P. Hanson was accessioned on 27 January 1981. The affidavit also stated that the soft-bound volumes were sent for binding, which was completed in November 1981, and that the work was ready for shelving and servicing at that time, or at the latest about three months later. In a supplemental affidavit dated 14 February 1995 Mrs Ellen Hahn declared that the work by James P. Hanson was registered in the cataloging system at the Library of Congress by July 28, 1981, and that a member of the public would have been able to gain access to and read the contents of said work in February, 1982 at the latest.

VI. The appellant submitted a declaration of Mr James P. Hanson. In this declaration it was stated that thirty-one copies of the report "Air Laid Forming in the 80's" were sold by the priority date of the patent in suit and that as far as known no one violated



the purchase terms. A single copy of the report was delivered to the Library of Congress to issue its copyright protection, but that US law did not permit reproduction of this archive copy, unless the document was involved in litigation.

With respect to the affidavit the appellant admitted that the report was indeed placed on the shelves of the Library of Congress before the priority date of the patent in suit, but that it remained unclear how a visitor of this library would be directed, between the millions of books in that library, to the Hanson report. Moreover, US law at that time did not permit the visitor to borrow the work or to take photocopies.

With respect to the substantive issues the appellant admitted that feature (b) was indeed disclosed by document D3. Even if the board were to accept that this document was comprised in the state of the art, the feature about the needle tip velocity was not suggested by the cited prior art, so that the patent could be maintained as granted.

- VII. The respondent filed an affidavit by Mr James P. Hanson, stating, inter alia, that the report "Air Laid Forming in the 80's" was sold to a purchaser on or about August 13, 1980.

### **Reasons for the Decision**

1. *State of the art according to Article 54(2) EPC*

According to established jurisprudence of the boards of appeal (cf. for example T 381/87 (OJ EPO 1990, 213)) a document which is proved to have been on the shelves of

a public library before the relevant date is part of the prior art, regardless of whether any person looked at it or actually knew it was available.

In the present case document D3 was available to the public in the Library of Congress, Washington DC, at the latest at the end of February 1982, ie more than two years before the priority date of the patent in suit, 12 June 1984 (see point V above). Consequently, document D3 is comprised in the state of the art in the sense of Article 54(2) EPC.

2. *Interpretation of claim 1*

The board notes that the term "considerably higher than" in claim 1 is, when read in isolation, rather vague, and that claim 1 therefore needs interpretation. According to the description (see column 1, lines 51 ff.) the term "considerably higher" must be interpreted as meaning "of a magnitude some 10 times as high".

Since the amendment of claim 1 according to the auxiliary request entails just the above interpretation, it follows that this amendment does not contravene the provisions of Article 123(2) and (3) EPC. It also follows however that there is no need for the board to consider the auxiliary request independently, since the subject-matters of claim 1 according to the main request and according to the auxiliary request are substantially the same.

3. *Novelty*

It is not disputed by the parties that none of the cited documents discloses all the features of claim 1 of the patent in suit. There is no need for further substantiation of this matter.

The subject-matter of claim 1 of the patent as granted is therefore new within the meaning of Article 54 EPC.

4. *Closest state of the art, technical problem and solution*

4.1 There is general agreement among the parties and the board that document D1, which is equivalent to WO-A-8 102 031 mentioned in the introduction to the description of the contested patent and upon which the preamble of claim 1 is based, represents the closest prior art.

The technical problem the present invention seeks to solve is - starting from a dry forming system according to document D1 - to increase the discharge capacity thereof. This problem is solved by the characterising features (a) and (b) of claim 1 (see Summary of Facts and Submissions, point II).

4.2 Document D1 discloses (see column 3, line 42 to column 6, line 24, and Figures 1 to 4) a dry forming system for successively laying out a layer of fibers on a moved forming wire, the system being of the kind which comprises a pipe of a perforated classification material and means for establishing through this pipe and through a return pipe system a circulating flow of an air fluidized fiber material, which is caused to be successively discharged through the perforations of the pipe, and means for sucking air down through the forming wire such that the perforated pipe as located above the wire is placed generally in a downwardly directed air flow, by which the fibers discharged through the perforations of the pipe are carried downwardly for delivery onto the forming wire; inside the pipe is arranged a needle cylinder rotating about an axis, which is parallel with the axis of the pipe, but preferably located underneath this axis, such that the needles of

the cylinder sweep across a longitudinal, internal area of the perforated pipe at a small distance from the inner surface of the pipe.

The needle cylinder is provided with a pulley or similar means enabling the cylinder to be rotated "relatively fast" (see paragraph bridging columns 4 and 5). It is clear that a high rotational speed of the needles is beneficial to the discharge capacity. It is stated that the needles are mounted on the cylinder along a screw line on the surface thereof and during their rapid rotation the needles will thus act as a conveyor worm, which will promote the general material flow through the pipe (see column 5, lines 16 to 21). It is also stated that in that case it seems to be fully sufficient to use the (needle) cylinder for this purpose (see column 5, lines 27 to 30), in other words an additional means for recirculation flow may be dispensed with.

For the person skilled in the art it will be immediately evident that in this case the needle tip velocity must be considerably higher than the velocity of the circulating fiber flow (which is created by the needles themselves). Document D1 is thus seen to disclose that "the needle cylinder is adapted to be rotated with a needle tip velocity which is considerably higher than the velocity of the circulating fiber flow" (cf. feature (a)), although this document is silent about whether the needle tip velocity is "some ten times as high" as the velocity of the circulating fiber flow (cf. point 2 above).

In the view of the board an unexpected effect cannot be attributed to this particular ratio of the needle tip velocity and the velocity of the circulating fiber flow, neither is such an effect claimed by the appellant.

It follows that no positive contribution to inventive step can be seen in including feature (a) - with the interpretation as given in Section 2 above - into the dry forming system according to document D1.

- 4.3 Document D1 does not specify the classification screen material of which the pipe is made, except that it is "a net material or a perforated sheet material" (see column 3, lines 53 and 54). Hence characterising feature (b), viz. "that the perforated pipe is provided with oblong perforations oriented essentially in the longitudinal direction of the pipe", is not disclosed by document D1.

The appellant has stated that the surprisingly improved discharge capacity invention is primarily attributed to feature (b).

- 4.4 Section XI of the report "Air Laid Forming in the 80's" (D3) discloses a drum forming system developed by Dan-Webforming International ApS Ltd., a successor company of Scanweb I/S, the latter being the proprietor of the patent in suit.

Document D3 discloses a dry forming system for successively laying out a layer of fibers on a moved forming wire, comprising two perforated contra-rotating drums in the form of a "horse track", and with a needle cylinder inside. Although document D3 is less detailed than the patent specification D1, it is clear that both documents disclose substantially the same kind of apparatus.

The appellant has admitted that document D3 discloses (see the photograph on p. 208) that the pipe wall is provided with oblong perforations, which are oriented lengthwise of the pipe (cf. feature (b)).

This picture represents a clear teaching of how to design the perforations in the pipe wall for a dry forming system of a drum system.

- 4.5 The person skilled in the art would therefore regard the inclusion of features (a) and (b) in the dry forming system according to document D1 as a normal design possibility in order to solve the problem of trying to improve the discharge capacity of that system, and thus arrive at a dry forming system according to claim 1 of the patent in suit.
5. The main request of the respondent is thus to be rejected. This also applies to the auxiliary request, see point 2 above.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

  
A. Townend

The Chairman:

  
C. Payraudeau