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**D E C I S I O N**  
**of 22 January 2002**

**Case Number:** T 0170/00 - 3.2.2

**Application Number:** 87903905.5

**Publication Number:** 0321561

**IPC:** D21G 1/02

**Language of the proceedings:** EN

**Title of invention:**  
Resinous calender roll

**Patentee:**  
KINYOSHA CO, LTD

**Opponent:**  
Valmet Corporation

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 52(1), 54, 56

**Keyword:**  
"Novelty (yes) Inventive step(no)"

**Decisions cited:**  
T 0288/90

**Catchword:**  
-



Case Number: T 0170/00 - 3.2.2

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.2**  
**of 22 January 2002**

**Appellant:**  
(Opponent)

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**Respondent:**  
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**Decision under appeal:**

**Interlocutory decision of the Opposition Division  
of the European Patent Office posted 1 December  
1999 concerning maintenance of European patent  
No. 0 321 561 in amended form.**

**Composition of the Board:**

**Chairman:** W. D. Weiß  
**Members:** D. Valle  
R. T. Menapace

## Summary of Facts and Submissions

- I. The appellant (opponent) filed an appeal against the decision of the Opposition Division to maintain the patent in amended form.
- II. The patent was opposed on the ground of lack of novelty and inventive step (Article 100a EPC) and because it did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100b EPC).

The Opposition Division, in its decision now under appeal, found that the subject-matter of claim 1 as granted lacked novelty, but that the patent as amended according to an auxiliary request met the requirement of the EPC.

- III. The following documents, cited during the opposition proceedings, are still relevant for the decision:

D3: JP-A-62-042 814 (with English translation)

D4: JP-A-61-00 696 (with English translation)

D8: US-A-4 438 063

D9: EP-B-0 053 804

- IV. Following a request of both parties, oral proceedings were held on 22 January 2002. At the end of the oral proceedings the requests of the parties were as follows:

The appellant (opponent) requested that the decision

under appeal be set aside and the patent be revoked.

The respondent (patentee) requested that the appeal be dismissed and that the patent be maintained in the form underlying the decision under appeal, but with page 8 of the description being replaced by the substitute sheet filed during the oral proceedings (main request), or as in the main request, but with claim 1 being amended as submitted during the oral proceedings (auxiliary request).

- V. Claim 1 of the main request filed with letter of 12 January 1998 and found allowable by the decision under appeal reads as follows:

"A calender roll comprising a metal core, an adhesive layer formed on the metal core and a resin forming a surface layer adhered to the surface of the metal core wherein the temperature of the characteristic inflection point of the storage modulus (E') of the resin is higher than the resin temperature during operation +10°C, and is lower than the resin temperature during operation +80°C, and the shore D hardness of the resin falling in the range of 75 to 97".

Claim 1 of the auxiliary request filed during the oral proceedings the 22 January 2002 consists of claim 1 of the main request to which the following feature is added:

"said calender roll being obtained by inserting said metal core, having said adhesive layer formed thereon, in a coating mold and forming said resin layer on said metal core".

VI. The appellant (opponent) presented the following arguments: Considering that a document should be read with the eyes and knowledge of an expert in the field (see decision T 288/90, not published), document D3 disclosed all the features of claim 1 of the main submission, inclusive the adhesive layer, see page 10 of the description. Document D4 was also novelty destroying. In particular at page 10 there was stated that the roll could be used as a calender roll. The roll had an iron core (page 7, line 17) forming a metal mold on which an adhesive was applied (page 7, first paragraph) and the hardness of the resin (shore D) was of at least 70.

In any case claim 1 of the main request was not inventive having regard to the teaching of documents D3 and D8/D9.

Regarding the auxiliary request, the additional functional feature was not suitable to clearly delimit the claimed roll. Moreover, the additional feature was disclosed in document D8, column 2, from line 22.

VII. The respondent argued as follows:

Document D3 did not disclose an adhesive layer in combination with the further features of claim 1 according to the main request. In particular, the feature that the temperature of the inflection point of the storage modulus was dependent on the working temperature was not disclosed by document D3.

Document D4 did not disclose the claimed interdependence between inflection point of the storage modulus and the working temperature either.

Document D3 led away from the invention by clearly stating that the method of using adhesive was not applicable to the invention. The additional teaching of documents D8/D9 could not lead to the invention in an obvious way either because they did not disclose the constraint for the temperature of the inflexion point of the storage modulus.

Regarding the auxiliary request, the additional feature was relevant in delimiting the scope of the invention because molding the resin directly on the metal core would assure homogeneous strength characteristics in each direction.

## **Reasons for the Decision**

1. The appeal is admissible.
2. *Main request*
  - 2.1 Novelty
    - 2.1.1 Document D3 discloses a press roll (page 2, line 10) comprising a metal core (page 7, line 15), and a resin forming a surface layer fixed to the surface of the metal core (page 12, line 14), whereby the embodiment 1, Figure 5, Table 1, shows a characteristic inflection point of the storage modulus (E1) of the resin at about 150°C, see Figure 5, which is higher than the resin temperature during operation (115°C, see Table 1), +10°C (125°C), and is lower than the resin temperature during operation +80°C (205°C); the shore D hardness of the resin is 87, which in the claimed range of 75 to 97.

In the present case it is irrelevant that document D3 discloses a press roll, whereas the invention concerns a calender roll, because a press roll can be used as a calender roll in this position, see also document D4, page 10, last paragraph.

According to the patent in suit, in one of its preferred embodiments (example 1, page 4), the adhesive layer consist of the phenol-base adhesive Conap 1146. This adhesive is applied to the surface of the metal core by blasting and thereafter the surface layer (resin) is molded directly on the treated metal core. In contrast thereto, the surface layer according to document D3 has the form of a pipe which is thermally expanded and shrunk onto the metal core.

The argument of the respondent, that the claimed dependency for the temperature (T) of the characteristic inflection point of the storage modulus is not disclosed by the prior art is not pertinent. In fact, this feature corresponds to an admissible range of values of such temperature (T) for each working temperature (A). Document D3 discloses a value of 150°C for T at a working temperature (A) of 115°C which falls well within the claimed range (125-195°C).

Document D3, however, does not disclose the feature of claim 1 that an adhesive layer is formed on the metal core. Document D3 clearly states that the use of adhesive was known from the prior art but this technology was considered as not applicable to the invention claimed in document D3. For this reason document D3 does not disclose the use of an adhesive in combination with the further features of claim 1 of the patent in suit. The conclusions of the decision

T 288/90 do not apply in the present case, because the statement in document D3 concerning an adhesive layer, although representative of the general technical knowledge of the state of the art, is considered as unsuitable for the purpose of this document.

- 2.1.2 Document D4 is farther away from the claimed invention being it silent about the temperature of the inflexion point of the storage modulus relative to the working temperature.

Consequently, the subject-matter of claim 1 differs from the disclosure of document D3 essentially in that an adhesive layer is formed on the metal core.

- 2.1.3 Accordingly the subject-matter of claim 1 of the main request is novel having regard to documents D3 and D4.

## 2.2 Inventive step

Starting from document D3 as the closest prior art the technical problem to be solved by the invention consists in avoiding the risk that broken parts or fragments of the resin layer may scatter during high speed rotation and endanger the operators.

The person skilled in the art looking for a solution of this problem is aware of that the above cited document D3, pages 10 to 11, discloses that it was principally known to fit a resin covering portion on a metal roll core portion by means of an adhesive (see point 3) and that the only obstacle to using this method in the device of document D3 was that an appropriate method and adhesive was not known at the time. In particular



it was described as being technically difficult to keep the clearance between the roll core portion and the covering portion for insertion of the covering portion over the metal core. Furthermore, adhesives which could reliably withstand the linear pressure as high as 200 kg/cm<sup>2</sup> or higher at the temperature exceeding 110°C were not known, (see D3, page 11, paragraph 2).

At a later date but well before the priority date of the patent in suit, the skilled person was, however, aware of the teaching of documents D8 and D9 (equivalent to document D8). Document D8, column 3, test 1, discloses, as the best of its embodiments to mold the surface layer on a metal core and fix it by means of the adhesive Conap 1146.

The person skilled in the art will therefore take advantage of the corresponding hint given in document D3 of using an adhesive layer in order to improve resistance to scattering and, in the light of the teaching of documents D8 or D9, perform routine tests with the method and the adhesive (Conap 1146) disclosed therein. Thus he will arrive at the invention without any inventive skill being involved.

Accordingly the subject-matter of claim 1 of the main request does not involve an inventive step.

3. *Auxiliary request*

The additional feature of claim 1 of the auxiliary request is known from the documents D8/D9, see for example document D8, column 3, test 1. Accordingly also the subject-matter of claim 1 of the auxiliary request does not involve an inventive step.

**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:

V. Commare

W. D. Weiß