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D E C I S I O N
of 15 April 1999

Case Number: T 0707/94 - 3.2.5

Application Number: 90109117.3

Publication Number: 0398240

IPC: D01G 15/44

Language of the proceedings: EN

Title of invention:
High speed crosslapper

Applicant:
E.I. Du Pont De Nemours and Co.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (after amendment) yes"

Decisions cited:
-

Catchword:
-

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Case Number: T 0707/94 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 15 April 1999

Appellant: E.I Du Pont De Nemours and Company
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 25 March 1994 refusing European patent application No. 90 109 117.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. Burkhart
Members: P. Alting van Geusau
M. K. S. Aúz Castro

Summary of Facts and Submissions

I. European patent application No. 90 109 117.3 filed on 15 May 1990 and published under publication No. 0 398 240, was refused by a decision of the Examining Division dated 25 March 1994.

In that decision the Examining Division expressed the view that the subject-matter of independent claim 1, filed with letter dated 3 May 1994, was not inventive having regard to the prior art disclosed in

D1: IT-A-1 163 764 (with translation into English filed by the appellant with its letter dated 2 November 1992)

and the means of rendering a transporting belt made from synthetic fibers electrically conductive as was generally known from a number of other documents cited in the Examining Division's communication dated 8 April 1993.

II. On 3 June 1994 a notice of appeal was lodged against that decision together with payment of the prescribed fee.

The statement of grounds of appeal was filed on 21 July 1994.

III. In a communication in preparation for oral proceedings the Board expressed the provisional view that the subject-matter of claim 1 on file did not appear to involve an inventive step.

It was further observed that the appellant placed emphasis on the high speed operation of the crosslapper arrangement disclosed in the present patent application. It would appear appropriate to discuss at the oral proceedings whether the combination of the support for the belts and the material selected for the belts would be based on an inventive step.

IV. Oral proceedings took place on 15 April 1999. At the oral proceedings the appellant's representative filed new claims 1 and 2, an adapted description pages 1 to 11 and Figures 1 to 3.

The representative requested that the decision under appeal be set aside and that a patent be granted on the basis of the newly filed application documents.

Claim 1 of this request reads as follows:

"1. A crosslapper comprising:
fleece feeding means (11);
two endless, foraminous fleece transporting belts (13, 26) made from synthetic fibers for accepting fleece from the fleece feed means (11) and for conducting the fleece between them;
reciprocating belt carriage means (15, 16) for moving the fleece transporting belts (13, 26) continuously through the endless length of the belt (13) and reciprocatingly in a rectilinear path;
a fixed roller (17) around which the fleece transporting belts (13, 26) are passed between the reciprocating belt carriage means (15, 16); and
fleece delivery means (22, 23) for accepting fleece from the fleece transporting belts (13, 26) and moving

it continuously in a rectilinear path substantially perpendicular to the path of the reciprocating belt carriage means (15, 16);
characterised
in that said endless, foraminous fleece transporting belts (13, 26) made from synthetic fibers are electrically conductive and exhibits an air permeability from 101.6 to 609.6 cm^3/cm^2 s (200 to 1200 ft^3/ft^2 min) and
in that the fleece is conducted between the fleece transporting belts (13, 26) continuously from its introduction to between the fleece transporting belts (13, 26) to its separation from the fleece transporting belts (13, 26) at the fleece delivery means (22, 25) and in that the crosslapper is operated at a rate exceeding 60 meters/minute."

V. The arguments submitted by the appellant in support of its request for grant of a patent can be summarised as follows:

The crosslapper disclosed in D1 used foraminous endless belts made either of a metallic or synthetic material. However, since the fleece transporting belts were guided over separate rolls and the fleece was not supported in the area of the rolls this known arrangement was not suitable for high speed operation. The negative effect exerted by electrostatic currents was said to be insignificant in this known crosslapper.

US-A-3 558 029 (D8) cited in the description of the present application showed a crosslapper with a single roll for both belts but could not fairly be considered to suggest incorporation of continuous support of the

fleece because this rather old document neither suggested foraminous belts nor that an increase of speed could be achieved by using a single-roller support of the two belts. US-A-3 877 628 (D7), a further document cited in the description of the present application, recognised the difficulty of eddies of air which blew the fleece and disrupted the web in high speed operation and although in one embodiment a single roller support of the belts was shown, it failed to suggest its incorporation together with measures for avoiding electrostatic charges and a specific air permeability so as to arrive at operating speeds exceeding 60m/min. Therefore, since the relevant prior art did not hint at the combination of features of the claimed crosslapper it should be considered to involve an inventive step.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

2.1 Claim 1 is based on the combination of the originally filed claims 1, 2, 3 and 4.

It further specifies that the roller around which both fleece transporting belts are passed together is in fixed position and that the crosslapper is operated at a rate exceeding 60m/min.

These additional features are disclosed in combination

with the other features of claim 1 in relation to the embodiments of Figures 2 and 4 of the originally filed description (see page 6, lines 6 and lines 33 to 36 in respect of the embodiment of Figure 2 and page 7, line 28 and page 8, lines 18 to 22 as regards the fixed position of the roller and page 11, lines 3 to 6 as regards the operating speed).

Claim 2 is a repetition of the originally filed claim 5.

2.2 The description was adapted to take account of the subject-matter now claimed and includes a reference to the relevant prior art document D1.

2.3 In view of the above assessments no objections under Article 123(2) EPC arise against the present set of claims or description.

3. *Novelty*

Novelty of the subject-matter of independent claim 1 follows already from the fact that none of the available prior art documents discloses a crosslapper with endless foraminous fleece transporting belts that are made from synthetic fibers, that are electrically conductive and that exhibit an air permeability from 101.6 to 609.6 cm^3/cm^2s.

4. *Inventive step*

4.1 The closest prior art is represented by the crosslapper disclosed in D1, which document discloses the combination of the precharacterising features of

claim 1.

In this known crosslapper the fleece is not conducted continuously from its introduction to between the two endless belts to its separation from the fleece transporting belts because each of the two fleece conducting belts turns round its own supporting roller. This is one of the reasons why this known crosslapper cannot be operated at high speeds.

4.2 The crosslapper disclosed in the present patent application solves the problems of high speed operation and simplified construction (see page 3, first paragraph of the description of the present application).

This object is achieved by the combination of features of claims 1, in particular by the combination of a continuous fleece support achieved by using a single fixed roller around which the fleece transporting belts are passed, the synthetic endless belts being electrically conductive and the selection of a specific air permeability for the synthetic endless belts.

In such a manner a continuous stable fleece transport arrangement is provided which allows operating speeds in excess of 60m/min (see also comments in the description on page 4, line 1 to page 5, line 14 and the description of the embodiments of the invention shown in Figures 2 and 3).

4.3 It is to be noted that in the prior art documents D7 and D8 crosslappers are disclosed that incorporate single roller support of the two endless fleece

transporting belts.

In D7 reference is made to high speed operation (see column 2, lines 18 to 42) but this document also points at the difficulties of moving the fleece between its entry and exit without stretching or compressing it and that such risks normally tend to become greater at high speeds when eddy air flows tend to lift the fleece laid on the delivery belt.

Attention is drawn to the fact that in the discussion of the only embodiment (see column 7, lines 38 to 57, Figure 8) that incorporates a single roller for the two endless fleece transporting belts, specific reference is made to the disadvantages of this arrangement in respect of air eddies and, apparently because of the friction between the belts and the fleece material at this point, a risk of build-up of static electricity that must be discharged by known means. The single roller is mounted on a carriage for reciprocating movement in the fleece laying process. There is no mention of the properties of the fleece transporting belts.

4.4 In the Board's opinion, the skilled person looking for a solution to the problem stated would not be led to incorporate features from the embodiment disclosed in relation to Figure 8 of D7 because no suggestion is derivable from the disclosure of D7 that with a single roller support of higher speeds would be possible than with the other arrangements disclosed in D7, and because this embodiment is considered disadvantageous when compared to the multiple roller arrangement of the other embodiments disclosed in D7 such as is already

applied in D1.

Similar considerations apply to the single roller support known from D8.

4.5 Also in view of the problems encountered with static electricity build-up when using the arrangement of Figure 8 of D7, which problem does not occur in the belt arrangement of D1 (see point 5 on page 8 of the translation of D1 filed by the appellant), the skilled person would be led away from incorporating single roller support for high speed operation.

4.6 Furthermore, the cited prior art fails to give any suggestion in the direction of the claimed combination of the fixed single roller support, the specific air permeability of the transporting belt and the electrical conductivity of the belts, which make the high speed operation of the crosslapper possible.

As was submitted by the appellant's representative during the oral proceedings, this combination not only resulted in locking of the fleece between the belts during the entire transfer of the fleece but allowed improved running stability of belts while the adapted air permeability prevented blowing the fleece away from the rollers (see also page 7, lines 12 to 19 of the description and page 10, lines 15 to 20).

For the reasons explained above, indications to such adaptations of the arrangement disclosed in D1 to improve the high speed operation cannot be found in either D7 or D8.

Considering the build up of static electricity, it is true that D1 addresses this problem but explicitly states that in the arrangement disclosed in D1 the negative effect exerted by electrostatic charges is insignificant. Since metallic nets or synthetic nets are used in D1 the skilled person may be led to use metallic nets if such a problem with the build-up of electrostatic charges is not to occur.

EP-A-0 240 861 (D4) and AT-A-0 324 208 (D5) cited by the Examining Division disclose that it is known to avoid the build-up of static electricity by making synthetic belts electrically conductive but again no suggestion is derivable from this prior art that such a generally known measure would be suitable to improve the high speed performance of the netted belts used in D1.

5. Summarising, in the Board's judgment, the proposed solution to the technical problem underlying the patent in suit defined in the independent claim 1 does not follow in an obvious manner form the teaching of the available prior art and therefore this subject-matter is deemed inventive. Consequently claim 1 as well as its dependent claim 2 relating to a particular embodiment of the invention in accordance with Rule 29(3) EPC, form a suitable basis for the grant of a patent.

The current description and drawings are in agreement with the present wording and scope of the claims. Hence these documents are also suitable for grant of a patent.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division with the order to grant a patent on the basis of the following documents, all filed during the oral proceedings held on 15 April 1999:

Claims: 1 and 2,

Description: pages 1 to 11,

Figures: 1 to 3.

The Registrar: The Chairman:

A. Townend A. Burkhart