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D E C I S I O N
of 25 February 2002

Case Number: T 0417/99 - 3.2.6

Application Number: 93900567.4

Publication Number: 0614499

IPC: D04H 1/64

Language of the proceedings: EN

Title of invention:
New fiberfill battings

Patentee:
E.I. DU PONT DE NEMOURS AND COMPANY

Opponent:
Minnesota Mining and Manufacturing Company

Headword:
-

Relevant legal provisions:
EPC Art. 52(1), 54, 56, 100(a), 100(b)

Keyword:
"Novelty - yes"
"Inventive step - yes"

Decisions cited:
-

Catchword:
-



Case Number: T 0417/99 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 25 February 2002

Appellant: Minnesota Mining and Manufacturing Company
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 9 February
2002 concerning maintenance of European patent
No. 0 614 499 in amended form.

Composition of the Board:

Chairman: P. Alting Van Geusau
Members: G. C. Kadner

Summary of Facts and Submissions

- I. The mention of the grant of European patent No. 0 614 499 in respect of European patent application No. 93 900 567.4 filed on 25 November 1992 as international application No. PCT/US92/10002 and claiming a US-priority of 27 November 1991 was published on 28 August 1996.
- II. Two notices of opposition were filed against this patent on the grounds of Article 100(a) (Opponents 01 and 02) and Article 100(b) (Opponent 01) EPC. Prior to the oral proceedings before the Opposition Division Opponent 01, who in support of its opposition relied inter alia on an alleged prior use, withdrew its opposition.
- III. By decision announced during the oral proceedings on 17 December 1998 and posted on 9 February 1999 the Opposition Division maintained the patent in amended form, in which mainly independent claim 4 together with its dependent claim 5 had been deleted. Claim 1 remained unamended and reads as follows:
- "A process for preparing a bonded batt, comprising forming a blend of polyester fiberfill, in amount by weight about 70 to about 96%, intimately mixed with a binder fiber having binder material of melting point lower than the softening point of the polyester fiberfill, in amount by weight about 4 to about 30%, preparing a continuous batt from said blend, said batt having an upper face and a lower face, advancing said batt through a spray zone, whereby both faces of the batt are sprayed with resin, in total amount about 10 to 30% of the weight of the sprayed batt, including the

about resin, said resin being selected to provide, after curing, a cured resin having a glass transition temperature (Tg) of about 0 degrees Celsius or less, heating the sprayed batt in an oven to cure the resin and soften the binder material, followed by hot-rolling the heated batt to achieve intimate contact between the resin and the fibers in the faces of the batt, and cooling the rolled batt."

The Opposition Division was of the opinion that the patent as amended met the requirements of novelty and inventive step having due regard in particular to the state of the art disclosed in:

(D1): EP-A-0 297 199

(D3): WO-A-88/00 258

(D5): EP-A-0 314 433 (P) (patent family member of D2)

(D6): "Eighth Technical Symposium: Nonwovens Innovative Fabrics For The Future", March 19 to 21, 1980, Hyatt Orlando, Kissimmee, Florida, pages 121 to 129

(D7): EP-A-0 437 268 (P)

(D8): US-A-4 129 675 (P)

(D10): US-A-4 068 036

(D14): "The Technical Needs: Nonwovens for Medical/Surgical and Customer Uses", Donald F. Durso, 1986, pages 86 to 92

In the Opposition Division's opinion the disclosure of documents D15 to D18 filed by Opponent 01 as evidence for the alleged prior use did not show more than that of the published prior art documents.

- IV. On 19 April 1999 a notice of appeal was lodged against the decision together with payment of the appeal fee.

The statement of grounds of appeal was filed on 21 June 1999.

- V. In a communication dated 18 October 2001 the Board pointed out that discussion of inventive step appeared to be necessary with regard to documents D1, D3, D5, D6, D7, D8 and D14, and in particular, whether a skilled person would be led to isolate single steps of manufacturing processes disclosed in these documents for use in a new combination thus arriving at the claimed subject-matter in an obvious manner.

- VI. Oral proceedings were held on 25 February 2002.

The Appellant (Opponent 02) requested that the decision under appeal be set aside and that the European patent No. 0 614 499 be revoked.

The Respondent (Patentee) requested that the appeal be dismissed and that the patent be maintained as amended before the Opposition Division.

- VII. In support of its requests the Appellant essentially relied upon the following submissions:

The scope of the process according to claim 1 was very broad and in fact the bonded batt produced by the

process disclosed in D5 would not differ from the product resulting from the claimed process. In particular, since heat-treating of the unbonded batt was referred to in D5 in general terms, a skilled person would understand that heating step would also embrace hot-rolling because it was a well-known step of applying heat in batt-forming processes, see for example D1, D7, D8. Heat-treating in an oven and hot-rolling could hardly be performed at the same time, and therefore these steps would be carried out one after the other. With respect to the identical objectives of durability and minimized fiber leakage of the batt underlying the process of D5 and the patent in suit the additional heat-treatment by hot-rolling was obvious to the skilled person.

In view of the desired softness of the bonded batt the claimed glass transition temperature T_g of about 0 degrees Celsius or less of the resin applied to the batt was an obvious choice since it was common knowledge that the lower the T_g -value of the resin is the softer the batt-surface feels. The claimed value of 0 degrees was randomly selected from the usually applied range of T_g extending from -50 to 50 degrees Celsius as known from D14. Also D1 and D14 showed clearly that polymers having a low T_g level were suitable for the claimed process. Thus it was a straightforward measure to use such a resin, and its application did not result in an unexpected or surprising improvement.

VIII. The submissions of the Respondent are summarised as follows:

The teaching of D5 did not suggest the combination of

features of claim 1 since this known solution related to a sandwich construction which was different from the product resulting from the method as claimed. The skilled person was not led to start from a homogeneous blend of fibers and to apply two different steps of heat-treatment because heat-treatment according to the prior art was performed by either of the usual methods, i.e. by radiation or convection e.g. heating in an oven or by contact heating (see D8), but never by the combination of two steps of oven-heating and hot-rolling. Already for this reason the claimed method was not only novel but also was based on an inventive step.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty*
 - 2.1 Novelty of the process according to claim 1 was not disputed by the Appellant. The Board is satisfied that none of the prior art documents discloses a process for preparing a bonded batt comprising all steps and further features of claim 1 of the patent in suit (Article 54(1) EPC).

3. *Inventive step*
 - 3.1 The closest prior art is represented by D5 which discloses a method for preparing a bonded batt comprising forming a sandwich of polyester fiberfill core with an outer layer of fibers consisting of a blend of about 75 to about 90% polyester fiberfill in amount by weight and of about 25 to 10% binder fiber in amount by weight, advancing said batt through a spray

zone, whereby both faces of the batt are sprayed with resin, in total amount about 15% of the weight of the sprayed batt, followed by a heat-treating of the sprayed batt to activate the binder fiber and the resin-bonding agent (page 2, line 59 to page 3, line 2).

3.2 The problem addressed in the patent in suit is to easily prepare a homogeneous batting that is characterized by softness and drapability to conform to the wearer's body, good insulation performance, low levels of fiber leakage through shell fabrics, enhanced durability to laundering by washing/drying and enhanced structural integrity (see page 2, lines 24 to 29 of the patent in suit).

3.3 This problem is solved by a process comprising the method steps defined in claim 1, particularly by forming a blend of polyester fiberfill intimately mixed with a binder fiber, using a resin which, after curing, has a glass transition temperature (T_g) of about 0 degrees Celsius or less, heating the sprayed batt in an oven followed by hot-rolling the heated batt to achieve intimate contact between the resin and the fibers in the faces of the batt. Since a homogeneous blend is used there is no need to adhere an outer sealing layer to the core.

3.4 D5 already deals with the problem of fiber leakage which is comparable with one of the problems underlying the patent. However, its solution indicates a different direction. According to that prior art leakage is minimized by providing a non-homogeneous batt including a core of fiberfill and an outer sealing layer of low denier fibers which prevents the escape of fibers from

the core. Since the sealing layer is pre-formed one single step of heat-treatment is sufficient to obtain the bonded batt. No indication is given as to what kind of heat-treatment is applied nor which glass transition temperature T_g has the used resin. Therefore the prior art disclosed in D5 cannot provide any lead to the combination of steps shown in the process according to claim 1.

- 3.5 The Appellant was of the opinion that the disclosures of the other prior art documents led the skilled person to the claimed solution in an obvious manner.

It is true that some prior art documents, such as D1, D3, D6, D7 and D14, deal with the influence of glass transition temperature of polymers on the strength, durability and softness of bonded batts. It belongs to the knowledge of the person skilled in the art that, generally speaking, the softness increases while the strength decreases with lowering T_g -values. However, none of the documents proposes the range of T_g of about 0 degrees Celsius or less for the use in a batt forming process.

It is also true that the bonded batt resulting from the process according to D5 and on the other hand from the process of claim 1 of the patent is similar in that it comprises a core of fiberfill and a sealing layer on its faces. However, this sealing layer is produced in a different manner. According to D5 it is applied as a preformed layer of low denier fibers to cover the preformed core of higher denier fibers in a sandwich construction whereas the patent in suit starts from a homogeneous blend of fiberfill and binder fiber, and the sealing layer is produced by applying the

additional step of hot-rolling which is normally done under pressure resulting in a fiber-tight surface of the batt. It is evident that one additional step of hot-rolling can be performed easier than the steps of preparing two different fiber blends and joining them in a sandwich construction. Thus the claimed invention provides the benefit of simplifying the production of a bonded batt of at least comparable quality.

In each of the prior art processes heat-treating is carried out by oven heating **or** contact heating. None of the processes uses a two-step heat-treatment, in a first step by heating in an oven and in a second step by hot-rolling the heated batt. Therefore the prior art does not give any incentive towards the two-step heat application, and consequently the claimed solution would not be arrived at without the involvement of an inventive step, particularly not in combination with the selection of a resin having the defined glass transition temperature T_g as stated above (Article 56 EPC).

3.6 Summarising, for the above reasons the Board arrives at the conclusion that the subject-matter of claim 1 complies with the requirements of patentability according to Article 52(1) EPC. The same conclusion applies to the subject-matter of claims 2 and 3 which cover particular embodiments of the method according to claim 1. Therefore the patent can be maintained in the form as amended during the proceedings before the Opposition Division.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau