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D E C I S I O N
of 11 February 2000

Case Number: T 0014/97 - 3.2.5

Application Number: 90122588.8

Publication Number: 0431439

IPC: B29C 67/00

Language of the proceedings: EN

Title of invention:

Method of and apparatus for manufacturing glass fiber mat

Patentee:

UBE-NITTO KASEI CO. LTD.

Opponent:

BASF Aktiengesellschaft

Headword:

-

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0014/97 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 11 February 2000

Appellant: BASF Aktiengesellschaft, Ludwigshafen
(Opponent) Patente, Marken und Lizenzen
D-67056 Ludwigshafen (DE)

Representative: -

Respondent: UBE-NITTO KASEI CO. LTD.
(Proprietor of the patent) 1-7, Higashi-Nihonbashi 1-Chome
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Tokyo 103 (JP)

Representative: Gille - Hrabal - Struck - Neidlein - Prop -
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 16 December 1996
rejecting the opposition filed against European
patent No. 0 431 439 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: A. Burkhart
Members: W. R. Zellhuber
J. H. P. Willems

Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition against the patent No. 0 431 439.
- II. An Opposition was filed against the grant of claims 1 to 3 of the patent and based on Article 100(a) EPC. The Opposition Division held that the grounds for opposition cited in the Article 100(a) EPC did not prejudice the maintenance of the patent as granted.
- III. The following documents were cited in the notice of opposition:
- D1: DE-A 35 35 272;
- D2: US-A 4 749 613;
- D3: US-A 4 158 557.
- IV. The appellant requested that the decision under appeal be set aside and the patent revoked because the method claimed in claims 1 to 3 of the patent did not involve an inventive step with regard to the prior art as disclosed in documents D1 and D3.
- V. The respondent (proprietor) requested that the appeal be dismissed.
- VI. In the Notice of Appeal the appellant requested oral proceedings as an auxiliary request.

With letter of 13 May 1997 the respondent requested

oral proceedings in the event that the Board of Appeal is not prepared to reject the appeal without oral proceedings.

With telefax dated 5 January 2000 the Board communicated its intention to summon the parties to attend oral proceedings on 11 April 2000.

With a letter of 14 January 2000, received on 18 January 2000, the appellant communicated to the Board that he will not attend the oral proceedings scheduled for 11 April 2000 and asked for a decision on the file as it stands.

With a communication dated 1 February 2000 the parties were informed of the cancellation of the oral proceedings.

VII. The wording of independent claim 1 of the patent in suit reads as follows:

Method of manufacturing glass fiber mats (19), composed of a non-oriented fiber layer (13) shaken down onto a conveyor means (10) and a layer of bundles of uni-directional fibers (15), which fiber layers are laminated one upon the other on the conveyor means (10,11) and are needled to form the glass fiber mat, characterized in that,

the bundles (12) of non-oriented glass fibers first are shaken down onto conveyor means (10) to form the non-oriented fiber layer (13) which is dried thereafter, that the bundles (15) of uni-directional fibers are supplied onto the dried non-oriented fiber layer (13)

to laminate a uni-directional fiber layer onto the dried non-oriented fiber layer (13), the bundles of uni-directional fibers (15) being guided in parallel to each other at regular intervals in widthwise direction of the conveyor means (10,11), and that the thus formed laminate of uni-directional and non-oriented fiber layers is needed to form the glass fiber mat (19).

VIII. The opposition division rejected the opposition particularly for the following reasons:

Document D1, which was regarded as the closest prior art, describes, cf. example 2, a process wherein oriented fibres were supplied onto a non-oriented glass fibre mat to form a laminate and the laminate was thereafter needed.

The essential difference between the subject-matter of claim 1 and the method described in example 2 of D1 was seen in the provision of a drying step after shaking down the bundles of non-oriented fibers but before the uni-directional fibers are supplied.

The method claimed in claim 1 of the patent in suit comprising said feature was found not to be obvious, because, firstly, it had been recognized that blown air in the drying step would disturb the orientation of the unidirectional oriented fibers which would result in a loss of quality of the final fiber, and, secondly, the skilled person would not find any suggestion in the prior art documents whereby the additional drying step should be provided to avoid the problem caused by the disturbance of the orientation, because document D2 does not describe a method comprising a drying step and

document D3 does not use uni-directional oriented fibers, the orientation of which may be disturbed.

IX. The appellant argued essentially as follows:

Document D1, which represents the closest prior art, describes, as example 2, a process wherein uni-directional fibres are supplied onto a non-oriented, probably dry, glass fibre mat. The claimed process differs from the known process by the implementation of the drying step.

However, if wet non-oriented fibres were used, then the laminate would have to be dried, as known from document D3. It was emphasized that the person skilled in the art knew about the hydrolysis and foam forming problems arising from the use of wet fibers and, accordingly, the necessity of drying the fibers.

Thus, when starting from the method described in D1, example 2, and provided that wet fibers were used, then there were only two options to implement a drying step, namely option (a) before and option (b) after the supply of the oriented fibres. The person skilled in the art would select the first mentioned option a), because this would be easier and the person skilled in the art would take into consideration that the orientation of the oriented fibres might be disturbed by the hot air applied for drying.

X. The proprietor referred to the arguments presented in the decision under appeal.

He further noted that the cited documents were silent

about any reasons for drying and any drawbacks thereof and that the hydrolysis and foam forming problems were mentioned only in the description of the patent in suit.

Furthermore, the two alternatives (a) and (b) mentioned by the appellant were not the only ones, as could be seen from the state of the art shown in Figure 13 of the patent in suit, which described the option (b) but with the deposition of the fibers in reverse order, and documents D1 and D2, which described methods without any drying step.

The assertions of the appellant were thus the result of an inadmissible ex post facto analysis.

Reasons for the Decision

1. *Novelty*

None of the cited documents describe a process comprising all the features of claim 1.

Document D1, and also document D2, are silent as to any drying step. D3 does not describe a process wherein non-oriented **and** oriented fibres are supplied onto a conveyor to form a laminate.

Therefore, the subject-matter of claim 1 is novel within the meaning of Article 54(1) and (2) EPC.

Novelty, in fact, was not in dispute.

2. *Inventive step*

2.1 Document D1, which is regarded as representing the closest prior art, describes a process wherein oriented fibres are supplied onto a non-oriented glass fibre mat to form a laminate and the laminate is thereafter needled.

The process of claim 1 differs from the process disclosed in Document D1 by the following features:

- (a) shaking down bundles of non-oriented glass fibres onto conveyor means,
- (b) drying the bundles of non-oriented glass fibres after they were shaken down onto the conveyor means and
- (c) supplying the bundles of uni-directional fibres guided in parallel in the widthwise direction of the conveyor means.

2.2 The problem underlying the invention may be seen in providing a process for manufacturing glass fibre mats composed of non-oriented fibres and a layer of bundles of uni-directional fibres needled together which are stable and of even quality, cf. column 2 lines 47 to 51 of the patent in suit.

This problem is solved by a method as defined in claim 1, especially by the combination of the above mentioned features (a) to (c).

The fact that the oriented fibres are supplied after

the drying step has the advantage that these fibres do not pass the dryer and thus their orientation is not disturbed. Moreover, a predetermined tension may be applied to the fibres to maintain the orientation despite vibrations of the needler.

- 2.3 The process claimed in claim 1 is not rendered obvious by the prior art as disclosed in the cited documents for the following reasons:

Document D1, which describes the production of a glass fibre mat composed of a layer of oriented and non-oriented fibres is silent about any drying step. Apparently and as acknowledged by the appellant, cf. page 2, top paragraph of the notice of appeal, a dry fiber mat is used in the known process and the oriented fibres are supplied onto a non-oriented dry glass fibre mat.

Thus, starting from document D1, the person skilled in the art has to consider first the use of wet fibres in a process for forming a laminate comprising an oriented fiber layer and a non-oriented fiber layer, and in a second step he has to find out how to proceed when wet fibres are used.

In this respect, the disclosures of documents D2 and D3 cannot give any hint to the person skilled in the art.

Document D2 is silent about the use of wet fibers and any drying step during the production of glass fibre mats.

Document D3 teaches the formation of a glass fibre mat

wherein wet, but only non-oriented fibres are supplied onto a conveyor, dried thereon and needled. D3 does not teach the formation of a fibre mat composed of layers of oriented and non-oriented fibres and therefore, does not render obvious the deposition of wet fibers onto a conveyor for forming such a two layer fiber mat. Accordingly, document D3 does not teach the implementation of the drying step after shaking down oriented fibres onto the conveyor and before supplying uni-directional fibres.

- 2.4 The appellant argued that a person skilled in the art might use wet fibres in the process as disclosed in D1, example 2, and then concludes that there are "only two options" from which the person skilled in the art obviously would select the "option" suggested in the patent in suit.

However, there is no basis in D1 for the assumption that a person skilled in the art might use wet fibres in the process as disclosed in D1. As shown above, document D1 does not refer to the supply of wet fibers and neither D1, nor D2, nor D3 relate to a process wherein wet fibers are used for forming a two layer laminate comprising oriented and non-oriented fibers.

Admittedly, the patent in suit refers in its acknowledgement of the prior art to a process, wherein wet non-oriented fibers are supplied onto a layer of uni-directional oriented fibers, thereafter dried and needled to form a laminate. However, here the non-oriented fibers are supplied onto a layer of uni-directional oriented fibers and the whole laminate is thereafter passed through the drier. This procedure is

contrary to that claimed in claim 1 and does not lead to the advantages mentioned above, namely that the orientation of the uni-directional fibers is not disturbed and that predetermined tension may be applied to the fibres to maintain the orientation despite vibrations of the needler.

- 2.5 The subject matter of claim 1 therefore also involves an inventive step within the meaning of Article 56 EPC.
3. Therefore, the board concurs with the view of the opposition division that the ground of opposition according to Article 100(a) EPC does not prejudice the maintenance of the patent as granted.
4. The present decision could be taken without holding oral proceedings, because the appellant communicated to the board that he would not attend the oral proceedings and asked for a decision on the file as it stands. Such a statement is equivalent to a withdrawal of the appellant's earlier request for oral proceedings on an auxiliary basis.

As the appellant waived the right to be heard in oral proceedings and the respondent requested oral proceedings only if the Board intended not to decide in favour of the respondent, the oral proceedings were duly cancelled by the Board.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Townend

A. Burkhart