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Datasheet for the decision of 12 August 2008

Case Number: T 1040/06 - 3.2.03

Application Number: 95907562.3

Publication Number: 0741827

IPC: E04B 1/78

Language of the proceedings: EN

Title of invention:
Insulating element and method and plant for producing and packaging

Patentee:
Rockwool International A/S

Opponent:
Paroc Oy Ab

Headword:
-

Relevant legal provisions:
EPC Art. 123(2), 100(b), 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Added subject-matter - deletion essential feature (no)"
"Inventive step (yes)"
"Insufficiency of disclosure (no)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1040/06 - 3.2.03

D E C I S I O N
of the Technical Board of Appeal 3.2.03
of 12 August 2008

Appellant: (Opponent)	Paroc Oy AB Sörnäisten rantatie 23 FI-00500 Helsinki (FI)
Representative:	Suominen, Kaisa Liisa Turun Patenttitoimisto Oy P.O. Box 99 FI-20521 Turku (FI)
Respondent: (Patent Proprietor)	Rockwool International A/S Hovedgaden 584 DK-2640 Hedehusene (DK)
Representative:	Samuels, Lucy Alice Gill Jennings & Every LLP Broadgate House 7 Eldon Street London EC2M 7LH (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted 11 May 2006 concerning maintenance of European patent No. 0741827 in amended form.**

Composition of the Board:

Chairman: U. Krause
Members: G. Ashley
I. Beckedorf

Summary of Facts and Submissions

I. European Patent EP-B-0 741 827 concerns, amongst other things, a method for producing a cured non-woven mineral fibre web. Grant of the patent was opposed on the grounds that the subject-matter of the patent lacked novelty and/or inventive step (Article 100(a) EPC) and that the invention was not sufficiently disclosed for the skilled person to carry it out (Article 100(b) EPC).

II. During the opposition proceedings, the patent proprietor (Respondent in this case) submitted amendments to the description and drawings. Taking account of these amendments, the Opposition Division concluded that the patent met the requirements of the EPC; the interlocutory decision of the Opposition Division was posted on 11 May 2006. The Appellant (opponent) filed notice of appeal on 5 July 2006, paying the appeal fee on the same day. A statement containing the grounds of appeal was received 11 September 2006.

III. In accordance with Article 15(1) of the Rules of Procedure of the Boards of Appeal, the Board issued a preliminary opinion, together with a summons to attend oral proceedings, setting out its view on novelty, inventive step and sufficiency of disclosure. The oral proceedings were duly held on 12 August 2008.

IV. During the oral proceedings, the Respondent submitted, as its main request, a set of claims comprising the following claim 1:

"1. A method of producing a cured non-woven mineral fiber web comprising the following steps:

a) producing a first non-woven mineral fiber web (30) defining a first longitudinal direction parallel with said first mineral fiber web and a first transversal direction parallel with said first mineral fibre web, said first mineral fibre web containing mineral fibers predominantly arranged generally in said first longitudinal direction thereof and including a first curable bonding agent,

b) moving said first mineral fiber web (30) in said first longitudinal direction,

c) arranging segments (38, 40) of said first mineral fiber web (30) in partly mutually overlapping relationship and transversely relative to said first longitudinal direction characterized in further arranging segments (38, 40) of said first mineral fiber web (30) transversely relative to said first transversal direction so as to produce a second non-woven fiber web (50), said second mineral fiber web defining a second longitudinal direction and a second transversal direction and containing mineral fibers predominantly arranged generally transversely relative to one another,

d) moving said second mineral fiber web (50) in said second longitudinal direction,

e) folding said second mineral fiber web (50) transversely relative to said second longitudinal direction and parallel with said second transversal

direction by feeding the second web (50) from an output which is between a first pair of conveyor belts (58, 62) to a second pair of conveyor belts (58,62) while the output is moving as a vertical pendulum and the second pair is travelling slower than the first so as to decelerate the web and the vertical separation of the second pair of belts (58, 62) is greater than the vertical separation of the first pair of belts (52, 54) at the output between those belts, so as to produce a folded web (60) and decelerating the folded web (60) and thereby forming a compacted , third mineral fibre web (70), said third mineral fiber web (70) containing mineral fibers predominantly arranged generally transversely relative to one another and generally transversely relative to said second longitudinal direction and said second transversal direction,

f) moving said third non-woven mineral fiber web (70) in said second longitudinal direction, and

g) curing said first curable bonding agent so as to cause said mineral fibers of said third mineral fiber web to bond to one another, thereby forming said cured non-woven mineral fiber web."

Dependent claims 2 to 34 define preferred embodiments of the method of claim 1.

V. Prior Art

The following document, amongst others, was referred to in the contested decision:

D2: WO-A-92/10602

The Appellant cited the following documents for the first time in the grounds of appeal:

D16: SU 903362
D16a: English Translation of D16
D17: US-A-4 128 678
D18: EP-A-0 558 205

VI. Submissions of the Parties

(a) Article 123(2) EPC

The Appellant argued that claim 1 as granted has now been amended to contain the feature that the output of conveyor belts (52) and (54) is moved in the manner of a vertical pendulum. This amendment is based on an embodiment which is disclosed in the application as originally filed only in combination with a wedge-shaped arrangement of conveyor belts (52) and (54).

When limiting the claim to this particular embodiment, the Respondent is not free to select individual features, but must include all the features of the embodiment. Failure to disclose the wedge-shaped form of the conveyor belts in the claim means that the amendment was not disclosed in the original application, contrary to Article 123(2) EPC.

The Respondent argued that the wedge-shaped form of conveyor belts (52) and (54) is for compressing the web, and this is not disclosed as an essential feature for creating the vertical pendulum motion. Since there is no link between these features, the definition of a

vertical pendulum motion, without reference to the arrangement of the conveyor belts, is supported in the originally filed application.

(b) Inventive Step (Article 56 EPC)

The Appellant identified D2 as being the closest prior art, with the method of claim 1 differing in that folds are created by moving the web with a vertical pendulum motion rather than by longitudinal compression of the web. Vertical folding is a well known technique is in the art, and is described in documents D16 to D18. The technical effect achieved by both methods of folding is the same, namely that the mechanical and thermal insulation properties are improved as a result of reorientation of fibres in the vertical plane of the sheet. Although claim 1 discloses compression of the web after vertical folding, this is also common place, as described in D16a (column 3, lines 30 to 34) and D17 (column 6, lines 32 to 36).

Since the techniques of folding according to claim 1 and to D2 are alternatives that achieve the same result with no surprising effects, choosing a vertical pendulum means to replace the compression means of D2 merely amounts to an arbitrary selection that is obvious for the skilled person.

The Respondent argued that none of the cited documents, D16 to D17, provide any indication that the mechanical and thermal properties of the web would be improved by forming the folds by means of a vertical pendulum mechanism rather than by the compression mechanism of D2.

Although D16 discloses creping of a web, the method of D16 is directed to preventing the mineral fibres from sticking to the conveyor belts. There is no discussion of the mechanical and thermal properties of the web, and no indication that vertical folding should replace compression folding. In addition, claim 1 requires that the output of the conveyor belts moves as a vertical pendulum, whereas in D16 it is the input that moves in this manner.

Similarly, in contrast to the method of claim 1, it is the input to the pleating mechanism of D17 that moves up and down, while the output (that is, from belts 10c and 14a) is stationary.

Although D18 shows the output to be subjected to a pendulum motion, this document is from a different technical field, being concerned with fibre-fill for cushions, mattresses and the like. In addition, D18 fails to describe deceleration of the folded web; according to D18 resin is applied later in the process, so compaction at this stage would inhibit penetration of resin into the fibre web; in the method of claim 1, the resin is present from the outset.

Thus none of the cited documents teaches that the output of the conveyor belts moves with a vertical pendulum motion and then is decelerated to form a compacted, folded web. In addition, a vertical pendulum mechanism is a more complex method of creating folds than a compression mechanism; hence, it is not immediately obvious to replace the compression mechanism of D2. However, folding by means of a

vertical pendulum mechanism improves the properties of the web to the extent that the cutting, twisting and reassembly step of D2 can be avoided altogether.

(c) Article 100(b) EPC

The Appellant argued that if the vertical folding step of claim 1 is considered to be different to that created by longitudinal compression, the skilled person is in no position to carry out the invention, as there is no information about the nature of the folds or the process parameters necessary for achieving the desired folds.

In particular, the Appellant refers to features mentioned by the Respondent during the opposition proceedings as being essential for producing the required effect (the secondary web must be fed into a deeper space to form a deeper third web; initially an open folded structure is formed, which is then consolidated into regular lamellae; the lamellae being flat, thin elements of regular orientation); these features are not disclosed in the disputed patent.

The Respondent submitted that the description and drawings of the disputed patent provide support for each of the steps defined in claim 1, and the specific embodiment given in paragraphs [0075] onwards describe in detail how the invention is to be carried out. Consequently the requirements of sufficiency are met.

VII. Requests

The Appellant requests that the decision under appeal be set aside and that the patent be revoked.

The Respondent requests that, in setting aside the decision under appeal, the patent be maintained in amended form on the basis of the set of claims filed as the main request during the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

2. *Late-Filed Documents*

The Appellant submitted documents D16 to D18 with the grounds of appeal. These documents disclose folding of a web by vertically oscillating conveyors, and were filed in response to the interpretation of the term "folding" expressed by the Opposition Division in the contested decision. The Board therefore sees fit to allow these documents into the proceedings.

3. *Article 123(2) EPC*

Compared with claim 1 of the granted patent, the present claim contains the feature that the second web (50) is fed from an output which is between a first pair of conveyor belts (52, 54) to a second pair of conveyor belts (58, 62) while the output is moving as a vertical pendulum. This amendment is based on the disclosure at page 27, lines 4 to 14 of the application

as originally filed (WO-A-95/20708), which also states that the conveyor belts (52) and (54) are of a wedge-shaped configuration. The Appellant argues that the vertical pendulum motion is only disclosed in combination with wedge-shaped conveyor belts, hence the failure to define this feature is contrary to Article 123(2) EPC.

Conveyor belts (52) and (54) form compacting station (56) for compressing the second web, and hence are arranged in a wedge-shape in order to produce this effect. Additionally, the compacting station (56) oscillates to provide the exiting web with vertical pendulum motion, but this is regardless of the arrangement of the conveyor belts. Given that the vertical pendulum motion does not depend upon the wedge-shape arrangement of the conveyor belts, there is no requirement that both features must be defined in the claim. Consequently, there is no objection to the amendment under Article 123(2) EPC.

4. *Novelty (Article 54 EPC)*

None of the cited prior art documents discloses the combination of features defined in claim 1, hence, as acknowledge by the Appellant, novelty is not in issue.

5. *Inventive Step (Article 56 EPC)*

5.1 Document D2, which is mentioned in the introduction to the disputed patent, discloses a method of making non-woven mineral fibre boards in which a mineral fibre web is cross-lapped to form a second web, which in turn is compressed to form vertical folds in the material. The

Opposition Division and both parties consider that D2 represents an appropriate starting point for assessment of inventive step, and the Board sees no reason to depart from this point of view.

The method of claim 1 differs from that of D2 in the manner in which vertical folds are created in the second web. According to D2, a series of rollers rotate with a velocity that decreases in the longitudinal direction of the web. The web is thereby compressed in the longitudinal direction with the result that the web is repeatedly folded across its width to produce a lamellae structure. According to the method of claim 1, the second web the folds are created by oscillating the output from a first pair of conveyor belts (52, 54) in the manner of vertical pendulum; the folded web is then compacted by feeding it to a second pair of conveyor belts (58, 62) which are travelling slower than the first.

5.2 Starting from D2, the objective problem to be solved is to find an improved way of creating the folded structure.

5.3 The Appellant argues that vertical pendulum mechanisms are well known in the art, as evidenced by documents D16 to D18, and that it is an obvious choice to replace the compression folding step of D2 by a vertical pendulum mechanism; such mechanisms are commonly accompanied by a further deceleration of the folded web, as shown in D16 and D17. In addition, no particular advantage or technical effect arise from the use of a vertical pendulum mechanism.

5.4 The Board agrees with the Appellant that a vertical pendulum mechanism is well known to the skilled person as a means for creating folds in web-like materials. However, the question to be addressed is why would the skilled person replace the longitudinal compression step of D2 by a vertically oscillating device?

5.5 Fibre boards having good mechanical and thermal properties can be made by the process described in D2. A requirement of this process is that the folded web is cut into strips or lamellae, which are rotated through 90° and then glued together to form the boards. According to the method of the present invention, a board containing fewer mineral fibres and having similar properties can be achieved without the need to cut and reassemble lamellae. This is because a vertical pendulum mechanism (combined with feeding the folded material into a second pair of belts having a greater separation, as defined in claim 1) leads to the achievement of a defined orientation of fibres predominantly in a vertical plane, as compared with a varied angle of orientation which is obtained when squashing the web. Thus, a web having a greater compression strength is obtained without the need for the final cutting, rotating and gluing step employed in D2 for the same purpose. As the Respondent explained, a vertical pendulum apparatus is more complex than a compression means, but is nevertheless worth installing in order to avoid the cutting, rotating and gluing step of D2.

5.6 There is no hint in documents D16 to D18 that the compression step of D2 should be replaced by a vertical

pendulum folding step in order to improve the properties of the web.

Document D16 discloses a folding or creping apparatus in which the input to a pair of conveyor belts is moved in the manner of a vertical pendulum; the thus folded web is then subjected to compression (see Figure 1). The purpose of the invention described in D16 is to improve the performance reliability of the apparatus, in particular the sticking of the folded web to the conveyor belt, and this is achieved by a special arrangement of the components of the apparatus.

Document D17 also describes an apparatus for folding or pleating a fibre web in which the input web is subjected to a vertical pendulum motion. D17 concerns the manufacture of pipe insulating material; the corrugated web is cut longitudinally to form U-shaped arrays that provide sufficient compressive strength whilst enabling the web to be shaped around pipes.

D18 discloses the folding of a cross-lapped web by subjecting the output of a pair of conveyor belts to a vertical pendulum motion. However, D18 relates to the type of fibre material that is used as filler in quilts, pillows, seats, clothing etc (column 1, line 57 to column 2, line 4). D18 is directed to making such material with a high degree of air permeability and resistance to compression (column 2, lines 5 to 10 and column 3, lines 50 to 54).

Although documents D16 to D18 make it clear that folding by means of a vertical pendulum is well known, none of these documents provide any indication that

such a technique would provide the board of D2 with improved mechanical and thermal properties, such that the cutting, rotation and gluing step could be dispensed with. The decision to replace the folding by compression step of D2 by a vertical pendulum means can thus be made only with knowledge of the invention.

6. *Insufficiency of Disclosure (Article 100(b) EPC)*

The Appellant submits that if the vertical folding step of claim 1 is considered to be different to that created by longitudinal compression, the skilled person is in no position to carry out the invention, as there is no information about the nature of the folds or the process parameters necessary for achieving the desired folds.

Paragraphs [0080] to [0082] of the disputed patent describe the folding of the web, and this is shown in detail in Figures 1 and 3. In particular the web leaves compacting station 56 and enters processing station 64 with a vertical pendulum motion, where further deceleration completes the folding process. The basic steps for forming the vertical folds are thus disclosed and the precise details, such as speed of web, size of folds etc, could be determined by routine tests. The Board agrees with the views of the Opposition Division on this point (point 3 on page 5 of the decision), that the invention is defined in a manner sufficiently clear and complete for it to be carried out by the skilled person.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent based on claims 1 to 34 filed as the main request during the oral proceedings, and with the description and figures to be adapted.

The Registrar: The Chairman:

A. Counillon U. Krause