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**Datasheet for the decision
of 22 September 2016**

Case Number: T 1804/12 - 3.2.03

Application Number: 03026091.3

Publication Number: 1532895

IPC: A47B96/20, B29C65/50

Language of the proceedings: EN

Title of invention:

Method of continuously producing foldable panels

Patent Proprietor:

Kronoplus Technical AG

Opponent:

Flooring Technologies Ltd.

Headword:

Relevant legal provisions:

EPC 1973 Art. 100(a), 56

Keyword:

Inventive step - main request (yes)

Decisions cited:

Catchword:



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Case Number: T 1804/12 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 22 September 2016

Appellant: Flooring Technologies Ltd.
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 8 June 2012
rejecting the opposition filed against European
patent No. 1532895 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman G. Ashley
Members: V. Bouyssy
M.-B. Tardo-Dino

Summary of Facts and Submissions

- I. European patent No 1 532 895 (in the following: "the patent") concerns a method for continuously producing foldable panels.
- II. The patent had already been granted by the time of the entry into force of the EPC 2000 on 13 December 2007. Where Articles of the earlier version of the EPC apply in accordance with the relevant transitional provisions, their citations are followed by "1973".
- III. The patent as a whole was opposed on the ground of Article 100(b) EPC 1973 and on three grounds of Article 100(a) EPC 1973, namely for lack of industrial application, novelty and inventive step.
- IV. The opposition division decided to reject the opposition.
- V. This decision was appealed by the opponent (in the following "the appellant").
- VI. With the summons to oral proceedings, the Board sent a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA) indicating its preliminary opinion of the case.
- VII. Oral proceedings before the Board were held on 22 September 2016.
- VIII. Requests

The appellant requested that the appealed decision be set aside and the patent be revoked.

The patent proprietor (in the following "the respondent") requested that the appeal be dismissed (main request), alternatively that the patent be maintained on the basis of one of the set of claims filed as auxiliary requests 1 and 2 with letter dated 25 July 2016.

IX. Prior art

In the grounds of appeal, the appellant referred to the following documents, which were already filed in the opposition proceedings and are cited in the decision under appeal:

D1: DE 198 04 787 C2

D2: DE 297 15 787 U1

D3: DE 94 22277 U1

D4: Kusian, Richard et al., "Holzbearbeitung", VEB Fachbuchverlag, Leipzig, 2nd edition, 1984, pages 79, 80, 94, 201, 202 and 207, bibliographic data

In the statement of grounds of appeal, the appellant also relied on the following evidence for the first time:

D4a: Kusian, Richard et al., "Holzbearbeitung", VEB Fachbuchverlag, Leipzig, 2nd edition, 1984, front page, bibliographic data, foreword, pages 78 to 81, 94, 95, 200 to 203, 206, 207, 238 to 241

X. Claims of the respondent's main request

Independent method claim 1 as granted is directed to the following subject-matter (the feature numbering is introduced by the Board for ease of reference; it

corresponds to that used by the respondent in its submission dated 25 July 2016):

A method of continuously producing foldable panels comprising the steps of:

- 1) arranging two one-part panels each having a pair of opposing straight edges and a pair of opposing untrimmed edges into a flat side by side configuration;
- 2) aligning one straight edge of the one one-part panel with one straight edge of the other one-part panel;
- 3) trimming the untrimmed edges of both one-part panels simultaneously; and
- 4) fixing a flexible tape to each of the two opposing pairs of simultaneously trimmed edges of both one-part panels for forming two joints between the two one-part panels.

Dependent claims 2 to 13 define preferred embodiments of the method of claim 1.

Independent product claim 14 as granted reads as follows:

"14. An intermediate product for the production of foldable panels comprising two one part panels arranged in a flat side by side configuration, the panels having two opposing pairs of simultaneously trimmed edges, a flexible tape being fixed to the trimmed edges of each of these two pairs, according to the method defined in any of the claims 1 to 13."

XI. The arguments of the parties, insofar as relevant for the present decision, can be summarised as follows:

Appellant's case:

As with the method according to claim 1, the method of D1 starts from a large-format panel which is cut from an endless sheet of fiberboard (column 4, lines 33 to 51) and thus has a pair of opposing straight edges and a pair of opposing untrimmed edges, as required in feature (1). In the method of D1, this one-part panel is then cut into two half-panels (2a, 2b), before these panel parts are stacked, trimmed and joined along the trimmed edges (8a, 8b) with a single flexible tape (16) to obtain a foldable panel with the desired end dimensions. In contrast thereto, in the method according to claim 1, two one-part panels are stacked, trimmed and joined with two opposite flexible tapes to obtain an intermediate product, which is then or later cut into two foldable panels with the desired end dimensions.

To sum up, claim 1 differs from D1 only in that the step of cutting the large-format one-part panels is postponed from the beginning of the manufacturing process to the end, and in that the steps of trimming and fixing a flexible tape is carried out on two opposing ends of the stack of panels.

This modification has the effect of increasing the production rate. Thus, starting from D1, the technical problem can be defined as increasing productivity. The respondent purports that the claimed method also requires less equipment than in D1 and allows for larger alignment tolerances. However, these further effects are not achieved by all claimed embodiments.

To solve this problem the most obvious solution would be to install two continuous production lines as disclosed in D1 in parallel. This modification, however, would be very expensive and the skilled person would disregard it, as he would seek to strike a fair balance between productivity and cost.

Instead, the skilled person would try to increase productivity by only slight modifications of the continuous production line disclosed in D1. He is aware that double-end processing units are well-known in the art for simultaneously cutting, profiling, trimming and/or coating the opposing edges of furniture panels and thereby increase productivity (see e.g. D4a, page 80 and figure 2/50, page 201 and figure 3/58, page 239 and figure 4/14). The skilled person would immediately recognise that, in the production line of D1, the production rate could be increased by simultaneously processing the two ends of the stack of panels 2a and 2b, instead of processing only one end of the stack, and that this effect would come into play if the one-part panels were cut into half-panels at the very end of the process, not at the beginning. The skilled person would have no practical difficulty in modifying the production line of D1 accordingly and, after doing so, would inevitably arrive at the subject-matter of claim 1.

D1 teaches that an advantage of the method disclosed therein over prior art methods is that processing units are positioned along the side of the production line and along the panel edges, instead of above and below the panels, as this makes process control easy (column 3, lines 11 to 32; column 6, lines 17 to 30). Contrary to the respondent's view, this teaching would not

hinder the skilled person from using double-end processing units in the production line of D1.

In conclusion, claim 1 lacks an inventive step against D1 in combination with common general knowledge, as documented in D4a.

Respondent's case:

Claim 1 differs from D1 by all method steps defined in features (1) to (4). In particular, features (2) and (3) must be read in combination with feature (1), not in isolation. It is thus clear that feature (2) requires that the alignment be performed using one straight edge of each one-part panel that is oriented perpendicular to the untrimmed edges, while feature (3) requires that the two opposing pairs of untrimmed edges be trimmed simultaneously.

Thanks to distinguishing features (1) to (4), a number of technical effects are achieved over D1. The output of the production line is increased since it can produce two foldable panels at the same time. The alignment required in feature (2) can be performed to large tolerances because the step of simultaneously trimming the opposing pairs of untrimmed edges in feature (3) inevitably leads to the necessary alignment (paragraph 11 of the patent specification). In contrast thereto, in D1 the half-panels have to be aligned very precisely, because their straight cut edges are not trimmed again, and this is achieved by means of special equipment pressing the straight edges against a mechanical stop (column 5, lines 14 and 15 in D1). In the claimed method, the cutting/milling forces acting on the one-part panels are balanced while simultaneously trimming the opposing pairs of untrimmed

edges (paragraph 9 of the patent specification), and thus there is no longer need for special equipment to fasten the stacked panels to each other while trimming their edges (compare paragraph 11 of the patent specification with the pair of clamping rolls 14 in figure 2 of D1). Feature (4) results in an intermediate product which can be easily transported, whereby the front sides of the one-part panels (the "good" sides) can be protected if they contact against each other. The intermediate product may be stored and later cut to the required dimensions, for instance at a furniture production site (paragraph 12 of the patent specification). The intermediate product can be cut into two foldable panels of same size by cutting along the middle line, or alternatively into two foldable panels of different sizes by shifting the cutting line (paragraph 13 and figure 13 of the patent specification).

To sum up, features (1) to (4) lead to a method that provides increased output rates, requires less equipment, can be performed with larger alignment tolerances, provides protection for the good sides of the panels and provides more flexibility to cut the foldable panels according to customer requirements.

Starting from D1, the objective technical problem to be solved can thus be seen as how to achieve all these effects.

For a skilled person attempting to solve this problem, there is no obvious hint towards the claimed solution.

D1 leads away from features (1) and (4) because it teaches consistently that the manufacturing process should start by cutting the one-part panels into two

half-panels and that this brings several advantages: the one-part panel can easily be cut with a simple saw entering its reverse side and this helps to avoid any damage to the decorative layer on the front side (column 2, lines 24 to 34); thanks to the initial cutting step, the half-panels have straight cut edges, which do not need any additional machining or processing (column 2, lines 34 to 36); these straight edges can be used to keep the stacked half-panels aligned while they are being trimmed and joined together (column 2, lines 38 to 43 and lines 53 to 60). When cutting the intermediate product obtained in feature (4) of claim 1 into two foldable panels, the saw must enter the front side of a panel, and since this runs contrary to the teaching of D1, it would not be considered by the skilled person.

D1 also leads away from features (3) and (4) because it requires that all processing units, such as the trimming unit and the tape-applicator unit, are provided along one and the same side of the production line, so as to provide easy access to the processing units, for making adjustments and changes and allowing optical control of each processing step (column 3, lines 10 to 32; column 6, lines 17 to 30).

The skilled person would not consider the teaching of D4a because it is not concerned with the problem to be solved, let alone with the working of two stacked panels or the manufacturing of foldable panels. In any case, this document would at most suggest that, in D1, the two edges 8a and 8b could be trimmed simultaneously in a trimming unit and/or that the steps of cutting the one-part panel in half-panels 2a and 2b, and that of trimming their edges 8a and 8b could be carried out

simultaneously in one and the same processing unit.
This, however, could not lead to the claimed method.

Reasons for the Decision

1. Consideration of D4a
 - 1.1 D4a is an excerpt from a standard textbook on wood processing machinery. It was submitted for the first time with the grounds of appeal, although it could arguably have been filed before the opposition division.
 - 1.2 Nevertheless, the Board sees no reason to disregard this document, in particular because it complements the information contained in D4 about the skilled person's common general knowledge in the field of manufacturing wooden panels, and it does not introduce any new issues into the proceedings (Article 114(2) EPC 1973 and Article 12(4) RPBA).
2. Main request - Interpretation of claim 1
 - 2.1 Before turning to the question of inventive step, it is necessary to construe claim 1.
 - 2.2 Feature (1) of claim 1 requires that "two one part panels" be arranged "into a flat side by side configuration". The ordinary meaning of this feature is that one one-part panel is arranged next to, or beside, the other. However, this reading makes no technical sense in the context of claim 1. In fact, in the light of feature (4) which requires that a tape be fixed "to each of the two opposing pairs of simultaneously trimmed edges of both one part panels", it is clear that feature (1) must be understood as meaning that the

panels are laid flat on top of each other to form a stack. This interpretation is in conformity with the teaching in the description and drawings of the patent (see paragraphs 6, 25, 29 and figures 3, 8 and 14).

2.3 In the context of claim 1, features (2) and (3) have to be read in combination with feature (1), which requires that each one-part panel has a pair of opposing straight edges and a pair of untrimmed edges. Feature (2) simply means that one straight edge of one one-part panel is aligned with one straight edge of the other one-part panel. Feature (3) requires that the four untrimmed edges of the two stacked one-part panels are trimmed simultaneously.

2.4 There seems to be an internal contradiction in method claim 1: it is directed to a "method of continuously producing foldable panels" but the method steps recited in claim 1 do not result in foldable panels but instead in an intermediate product consisting of two stacked one-part panels, which are joined together by two opposing tapes (feature (4)). However, the Board shares the view of the appellant that it is implicit for a skilled reader of the claim that the method must comprise the additional step of cutting this intermediate product into two foldable panels. This interpretation is in conformity with the teaching in the description of the patent (see paragraphs 12 and 33 with figure 13).

3. Main request - Inventive step

3.1 The parties agree that the method of continuously producing foldable panels as disclosed in D1 forms a relevant starting point for the assessment of inventive step. The Board shares this view.

- 3.2 D1 discloses a method of continuously producing foldable panels (column 1, lines 52 to 54) comprising the successive steps of:
- cutting a continuously produced fiberboard into large-format one-part panels (column 4, lines 34 to 51), each having a pair of opposing straight cut edges and a pair of opposing untrimmed edges;
 - cutting each one-part panel perpendicularly to its straight edges into two half-panels 2a and 2b (figure 1), each having three straight edges (see abutting cut edges 10 and 12) and one untrimmed edge (8a, 8b);
 - arranging the panel parts 2a and 2b on top of each other, in a stack configuration, wherein their decorated front sides 4 abut each other (figure 2);
 - aligning the straight edges 10 and 12 of the panel parts 2a and 2b to each other (column 5, lines 10 to 13);
 - trimming the two untrimmed edges 8a and 8b of the panel parts 2a and 2b (column 4, lines 65 to 68, column 5, lines 23 to 36 and figure 3a);
 - fixing a flexible tape 16 to the two trimmed edges 8a and 8b for forming a foldable joint between the panel parts 2a and 2b (see "Klebeband 16" in column 5, line 38, figure 5 and claim 3), thereby obtaining a foldable panel with the desired end dimensions.

- 3.3 The method defined in claim 1 differs therefrom in that it comprises the following successive steps:
- arranging two one-part panels "each having a pair of opposing straight edges and a pair of opposing untrimmed edges" on top of each other, in a stack configuration (feature (1) and point 2.2 above);

- aligning one straight edge of one one-part panel with one straight edge of the other one-part panel (feature (2) and point 2.3 above);
- simultaneously trimming the four untrimmed edges of the stacked one-part panels (feature (3) and point 2.3 above);
- fixing a flexible tape to each of the two opposing pairs of simultaneously trimmed edges of the stacked one-part panels for forming two (foldable) joints between the two one part panels (feature (4)); and
- then or later cutting this intermediate product to obtain two foldable panels with the desired end dimensions (point 2.4 above).

3.4 The above differences allow for a significant reduction of the number of cutting, folding and trimming steps to obtain foldable panels. The intermediate product resulting from feature (4) can be cut later into foldable panels adapted to different customer requirements (see paragraphs 11, 12, 32 and 35 of the patent specification).

3.5 The respondent alleges that the claimed method achieves further technical effects over D1, namely:

- (a) it can be carried out with standard equipment (paragraph 7 of the patent specification), whereby there is no longer need for special equipment for fastening the stacked panels prior to processing their edges (paragraphs 9 and 10);
- (b) it no longer requires that the untrimmed edges of the stacked panels are aligned with precision (paragraph 11);
- (c) the two good sides of the stacked panels are protected by abutting each other (paragraph 24).

However, as argued by the appellant, it is not credible that effects (a) and (b) are achieved over the whole scope of claim 1. In fact, the wording of the claim does not exclude that special equipment be used for aligning and fastening the stacked panels. Effect (c) is already achieved in D1 (see abutting front sides 4 in figures 2 to 7). Thus, alleged effects (a) to (c) cannot be used for formulating the objective technical problem.

- 3.6 Starting from D1, the technical problem objectively solved by the distinguishing features must thus be formulated in broad and general terms as being how to improve productivity and flexibility.
- 3.7 The claimed solution to this problem is not part of common general knowledge of the skilled person and is neither disclosed nor suggested in the cited prior art documents.
- 3.8 D1 already suggests a solution to the technical problem: it teaches that, to achieve a high production rate, it is preferred to convey the panel parts past the various processing units, in particular the cutting tools, the milling tools and the tape-applicator unit, which are stationary in the production line (column 3, line 66 to column 4, line 5); alternatively it may be useful to move the processing units and the panel parts in the same or in opposite directions (column 4, lines 5 to 10). For the skilled person it would be straightforward to apply one or the other of these teachings to the process disclosed in D1 in order to speed up the production and increase throughput. In so doing he would not arrive at the claimed solution.

- 3.9 Should the skilled person not be satisfied with the solution suggested in D1, he might also use his common general knowledge to improve productivity. As documented in D4a, it is generally known in the art of wood processing to use various machines for cutting, profiling, trimming and/or edge coating one or two panel ends at a time, while the panels are conveyed along a continuous production line. The skilled person knows that these machines have pros and cons and that their use depends on practical constraints such as cost, accuracy, productivity and flexibility. With this common general knowledge in mind, he might consider modifying the continuous production line of D1 either to allow simultaneously trimming the two edges 8a and 8b of the stacked half-panels 2a and 2b, or alternatively to allow simultaneously cutting of the one-part panel into half-panels 2a and 2b and trimming of their edges 8a and 8b before stacking them. This is not, however, the claimed method.
- 3.10 Be that as it may, it is not straightforward for the skilled person to modify the method of D1 so that the one-part panels are cut into half-panels at the end of the process, instead at its beginning. It is the teaching of D1 that the manufacturing process begins with the cutting of the one-part panels into half-panels as this brings many advantages: the one-part panel can be easily and quickly cut into half-panels with an easy-to-adjust saw entering the reverse side of the panel without damaging the decorative layer on the front side (column 2, lines 24 to 34; column 3, lines 56 to 61); the half-panels have straight cut edges which do not need any further processing (column 2, lines 34 to 36) and can be used for aligning the half-panels in a stack, while trimming and joining their untrimmed edges (column 2, lines 36 to 43 and lines 53

to 60). This consistent teaching would hinder the skilled person from postponing the step of cutting the one-part panels into half-panels to the very end of the process. In particular, when cutting the intermediate product at the end of the process according to the present invention, the cutting tool inevitably enters one of the one-part panels from its front side, and D1 teaches away from such a cutting step, as it may damage the decorative layer on the front side (column 2, lines 29 to 34; column 3, lines 56 to 61).

- 3.11 Thus, when starting from D1, the subject-matter of claim 1 involves an inventive step within the meaning of Article 56 EPC 1973.
- 3.12 The above reasoning applies *mutatis mutandis* to the subject-matter of independent product claim 14 as well as that of the dependent claims.
4. In conclusion, the cited ground for opposition according to Article 100(a) EPC 1973, namely that of lack of inventive step, does not prejudice the maintenance of the patent as granted.
5. Under these circumstances, there is no need to consider the auxiliary requests of the respondent.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



C. Spira

G. Ashley

Decision electronically authenticated