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Datasheet for the decision of 21 March 2013

Case Number: T 0718/11 - 3.3.09

Application Number: 99908983.2

Publication Number: 1068074

IPC: B32B 21/08, B27D 1/00

Language of the proceedings: EN

Title of invention:
Wood based plate provided with surface and method to provide the surface

Patent Proprietor:
UPM-Kymmene Wood Oy

Opponent:
Koskisen OY

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - yes"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0718/11 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 21 March 2013

Appellant: (Opponent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 21 December 2010 rejecting the opposition filed against European patent No. 1068074 pursuant to Article 101(2) EPC.

Composition of the Board:

Chairman: W. Sieber
Members: J. Jardón Álvarez
K. Garnett

Summary of Facts and Submissions

I. This decision concerns the appeal filed by the opponent against the decision of the opposition division to reject the opposition against the European patent No. 1 068 074 in the name of UPM-Kymmene Wood Oy.

II. The patent was granted with 17 claims, independent claims 1 and 10 reading as follows:

"1. A surfaced wood-based board comprising a board-like substrate (1) made of wood material and on top of it a surfacing (2) comprising at least one thermoplastic layer, **characterized in that** the surfacing comprises a polyamide film (2b) which has been glued to the surface of the substrate (1) by means of a reactive adhesive layer (2a), the reactive adhesive layer (2a) being an adhesive film impregnated with a reactive adhesive."

"10. A method for surfacing a wood-based board, in which a surfacing material (2) comprising at least one thermoplastic layer is attached to a board-like substrate (1) made of wood material, the substrate being, for example, plywood, particle board, fiberboard, or a substrate made of sawn timber, **characterized in that** the surfacing material is produced by gluing a polyamide film (2b) to the substrate by means of a reactive adhesive layer (2), the reactive adhesive layer (2a) being an adhesive film impregnated with a reactive adhesive."

Claims 2 to 9 and 11 to 17 were dependent claims.

III. The opponent, Koskisen Oy, had requested revocation of the patent in its entirety on the grounds of Article 100(a) EPC for lack of novelty and lack of inventive step. The documents cited during the opposition proceedings included:

D5: US 4 205 107 A;

D7: US 4 143 187 A;

D10: US 1 960 176 A;

D11: WO 96/11301 A1; and

D13: EP 0 782 917 A1.

IV. By its decision announced orally on 11 November 2010 and issued in writing on 21 December 2010, the opposition division rejected the opposition.

The opposition division held that the subject-matter of the granted claims was novel because none of the documents cited by the opponent disclosed the use of a reactive adhesive layer as defined in claim 1 to glue a polyamide layer to the surface of a wood-based board.

Further, the opposition division found that the claimed subject-matter involved an inventive step. Starting from the disclosure of D7 as closest prior art, the opposition division saw the objective technical problem to be solved by the patent in "the provision of thermoplastic-surfaced wood-based substrates with improved adhesion". In its opinion the cited prior art gave no hint to solve this problem in the manner

proposed in the patent. The opposition division also held that the skilled person would not start from any of D10, D11 or D5 as closest prior art because these documents were not concerned with the problem underlying the patent in suit.

V. On 25 March 2011 the opponent (in the following: the appellant) filed an appeal and on the same day paid the prescribed fee. The statement setting out the grounds of appeal was filed on 3 June 2011 together with the following further experimental evidence and fresh documents:

D18: Results of comparative tests dated 27 May 2011 headed "Adhesion testing with various films/adhesives" (3 pages);

D19: F.F.P. Kollmann *et al.*, Principles of Wood Science and Technology, Vol. II, Wood Based Materials, Springer Verlag, 1975, pages 56-57;

D20: A. D. Wood *et al.*, PLYWOODS, Their Development, Manufacture and Application, W & A.K. Johnston, Limited, 1946, pages 84-86;

D21: ENCYCLOPÆDIA BRITANNICA, 1965, Vol. 1, pages 144-145;

D22: McGRAW-HILL ENCYCLOPEDIA OF SCIENCE & TECHNOLOGY, 6th Edition, 1987, Vol. 19, page 512; and

D23: McGRAW-HILL ENCYCLOPEDIA OF SCIENCE & TECHNOLOGY, 6th Edition, 1987, Vol. 13, pages 333-334.

The appellant requested that the opposition division's decision be set aside and that the patent be revoked.

VI. With its reply dated 19 October 2011 the patent proprietor (in the following: the respondent) disputed the arguments submitted by the appellant and requested that the appeal be dismissed. The respondent also filed 22 sets of claims as auxiliary requests 1 to 22.

VII. On 10 October 2012 the board dispatched a summons to attend oral proceedings scheduled for 21 March 2013. In a communication dated 9 November 2012, the board expressed its preliminary opinion that the subject-matter of the claims of the main request (ie claims as granted) was novel and indicated that the main issue to be discussed during the oral proceedings would be inventive step.

VIII. With letter dated 21 February 2013 the appellant put forward further arguments.

IX. On 21 March 2013 oral proceedings were held before the board. During the oral proceedings the appellant informed the board that it did not maintain its novelty objection against the claims of the main request. After the discussion of the main request the respondent withdrew its 22 auxiliary requests.

X. The arguments presented by the appellant in its written submissions and at the oral proceedings, insofar as they are relevant for the present decision, may be summarised as follows:

– The subject-matter of the patent was obvious in view of the conventional technology in the field before the priority date of the patent. In particular, the claimed subject-matter lacked inventive step starting from any of D5, D7, D10, D11 or D13 as closest prior art document.

– D11 represented the most practical selection as the closet prior art document. D11 disclosed a resin-coated overlay comprising a fibrous substrate, having a partially-cured resin-coating on at least a portion of its surface, for application to a solid substrate to impart to it a smooth and durable surface. The subject-matter of claim 1 was distinguished over the disclosure of D11 in that the surfacing comprised a polyamide film. Starting from D11 as closest prior art the objective problem was seen in how to provide an even surface or how to provide a more uniform coating layer. The replacement of the fibre mat used in D11 by a polyamide in the form of a film in order to provide an even surface was obvious for the skilled person from his own common general knowledge or from the disclosures of D13, D5 or D7, all of which disclosed such polyamide coatings.

– Alternatively, the claimed subject-matter lacked inventive step starting from D5 as closest prior art and combining it with D10 or D11; or starting from D13 as closest prior art and combining it with D10, or starting from D7 as closest prior art in view of the newly filed comparative tests, D18, or combining it with D10, D11 or D13; or starting from D10 as closest prior art and combining it with D7.

XI. The arguments of the respondent may be summarised as follows:

- D13 represented the closest prior art. The combined use of a polyamide film and an adhesive film according to claim 1 gave favourable properties to the surface of the coated board. The adhesive film impregnated with the reactive adhesive provided the surface of the board with the required hardness while the polyamide film provided the required elasticity, scratch resistance and grinding resistance. Moreover, the manufacture process of the board was simplified when compared with the extrusion process disclosed in D7.

- The cited prior art did not contain any hint for the skilled person, starting from any of the documents cited by the appellant, to arrive at the claimed boards. The appellant's arguments were clearly based on hindsight considerations.

XII. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Inventive step*

2.1 In the oral proceedings before the board the appellant did not maintain its novelty objection against the claims as granted. The board saw no reason to pursue this issue, in particular because it had already expressed its preliminary opinion that the subject-matter of the claims as granted was novel over the cited prior art in the communication dated 9 November 2012. Consequently the sole remaining issue in this appeal is inventive step.

2.2 The patent in suit is directed to a surfaced wood-based board (claims 1 to 9) and to a method for surfacing a wood-based board (claims 10 to 17).

2.2.1 In its simplest form the surfaced board of claim 1 consists of:

- a wood substrate (1), and
- on top of it a surfacing (2) comprising:
- a polyamide film (2b),
- glued to the substrate by an adhesive film impregnated with a reactive adhesive (2a) (a "reactive adhesive layer" according to the wording of the claim).

2.2.2 The appellant argued that, contrary to the wording of the claim, impregnation into a carrier was not a necessary feature of the reactive adhesive layer. In support of this interpretation the appellant referred

to paragraphs [0006], and [0027] to [0029], and, in particular, to example 1 of the patent wherein a (non-impregnated) phenolic resin was glued to the polyamide film.

2.2.3 The board disagrees with this interpretation. The wording of claim 1 requires that the reactive adhesive impregnates a film. Thus the adhesive layer has two components: the adhesive film and the reactive adhesive. The fact that the description is not limited in the same way as the claim indicates that it was not correctly adapted to the claims during the examination proceedings, but it cannot result in a different interpretation of the clear wording of the claim.

2.3 Closest prior art

2.3.1 As acknowledged in the patent specification, it is known to surface wood-based boards, such as plywood, particle board or fibreboard, with plastic surfacing to improve their surface properties, such as wear or moisture resistance. The surfacing should be durable and adhere strongly to the surface of the wood-based material (see paragraph [0002]). Thermoplastics are suitable surfacing materials. They can be worked using heat, and they can be melted/softened and solidified by adjusting the temperature, by means of which they can also be made to adhere to various surfaces. They can also be spread on surfaces by extrusion (see paragraph [0003]).

However, a drawback of thermoplastics concerns their adhesion to wood or wood-derived substrates. The high melt viscosity of the thermoplastics that are most

frequently used makes it difficult to attach the films by means of extrusion to the wood surface. In addition, the unevenness of the wood of a wood-derived substrate and its moisture-content may make it difficult to attach the film (paragraph [0004]).

2.3.2 The appellant cited several documents relating to the surfacing of wood materials and maintains that any of D5, D7, D10, D11 or D13 could be used as closest prior art document. The respondent, on the other hand, regards the disclosure of D13 as representing the closest prior art.

2.3.3 According to the established practice of the boards of appeal, in selecting the closest prior art, the first consideration is that it must be directed to the same purpose or effect as the invention. Otherwise, it cannot lead the skilled person in an obvious way to the claimed invention.

2.3.4 From the documents cited by the appellant only documents D5, D7 and D13 relate to the surfacing of wood-based boards using a polyamide film as thermoplastic coating:

- Thus, D5 discloses a continuous composite sheet material which comprises a plurality of individual cut-to-size sections bonded together, each of said sections comprising a genuine wood sheet bonded by an adhesive layer to a thermoplastic resin carrier sheet. The thermoplastic resin can be a polyamide (see claim 1). The composite sheet material is used to cover substrates, in particular profiled elements such as drawer frames. The adhesive bonding between

the composite sheet material and the substrate can take place again with the aid of an adhesive (column 6, lines 14-18). Nothing can be extracted from D5 as regards any of the adhesive layers, ie the adhesive layer between the polyamide carrier and the genuine wood sheet or the adhesive between the continuous composite sheet material and a substrate (eg the profiled element shown in figure 7);

- D7 relates to a process for coating a substantially inflexible sheet with a thermoplastic polymer in which molten thermoplastic polymer is extruded onto a face of the sheet substrate (column 1, lines 61 to 67). The preferred sheet substrate is wood (column 4, lines 49 to 50) and the preferred thermoplastic polymers include polyamides (column 4, lines 59 to 60);

- D13 discloses a board of wood coated with an elastic, thermoplastic film, the film being heat-adhered to the wood without the use of a separate gluing substance, and having a thickness of less than 0.30 mm and a melting temperature of between 90°C and 150°C (claim 1). In a preferred embodiment, the flexible film is a three-layered film comprising: a lower layer (which is equivalent to the thermoplastic film described above), an upper external layer facing the air and an intervening layer positioned between the upper and the lower layers (column 4, lines 35-42; see also figure 1). In a most preferred embodiment the upper layer consists of nylon and the intervening layer consists of high-density polyethylene (see column 5, lines 27-29).

2.3.5 The other two documents cited by the appellant, namely D10 and D11, do not relate to the use of a polyamide film for surfacing a wood-based board:

– Thus, document D11, on which the appellant mainly relies, is directed to a resin-coated overlay suitable for application to a solid substrate to impart a smooth and durable surface to the solid substrate (see page 1, lines 7-10). The resin-coated overlay comprises a fibrous substrate having a partially-cured resin-coating on at least a portion of a surface of the fibrous substrate. In an optional embodiment, the resin-coated overlay further comprises an adhesive layer (see page 4, lines 3-8). The resin compositions used in D11 contain a thermosetting or thermoplastic resin, preferably a thermosetting phenolic-based resin (page 7, lines 5-8) which forms the surface coating of the solid substrate. The only reference to a polyamide in D11 is on page 10, lines 18-22, in the context of the fibrous substrate useful for impregnation with the resin compositions (page 10, lines 24-26). However, in D11 the fibrous substrate is not the surfacing. In fact, the (preferred) phenolic resins are the coating material in D11. Document D11 does not address in any way the problem of surfacing woods with polyamides.

– Document D10 relates to adhesive papers for plywood manufacture comprising a porous open textured tissue paper sheet impregnated with an initial condensation product of an aldehyde with a phenol (claim 1). Like D11, D10 does not disclose the use of polyamide

films for surfacing wood substrates. The impregnated adhesive films of D10 are used for attaching wood layers together to form a laminate. Although it is mentioned on page 2, lines 124 - 130 that the adhesive sheets of D10 may be used for general cementing purpose, this general statement makes the disclosure of D10 less relevant than the disclosures of D5, D7 or D13, which explicitly deal with the surfacing of wood materials with polyamides.

2.3.6 It follows that in the board's view the appellant's choice of D11 or D10 as the starting point for the assessment of inventive step is flawed, because these documents do not address the objectives of the claimed invention, but rather have a different objective. Neither D11 nor D10 qualifies as the closest prior art, regardless of the number of technical features they may have in common with the subject-matter of the patent.

2.3.7 As to D5, D7 and D13, they are distinguished by the way the surfacing is carried out. Thus adhesion is achieved in D5 by using a non-specified adhesive, in D7 by directly extruding the thermoplastic polymer onto the wood and in D13 by heat-adhering the film to the wood without the use of a separate gluing substance.

2.3.8 The board considers that any of D5, D7 or D13 can be considered as an appropriate starting point for the assessment of inventive step. In view of the fact that not only the appellant but also the respondent relied upon D13 as the closest prior art, the board uses this document in the following assessment of inventive step. In any case the board would have arrived at the same

conclusion if either D5 or D7 were to be considered as the closest prior art document (see also 2.7 below).

2.4 Problem to be solved and its solution

2.4.1 According to the respondent, the technical problem to be solved by the patent in suit in view of the closest prior art D13 is the provision of an alternative polyamide based surfacing for wood-based boards. The surfacing should provide the board with favourable characteristics in terms of hardness, elasticity, scratch resistance and grinding resistance.

2.4.2 As a solution to this problem, the patent in suit proposes the surfaced boards of claim 1, wherein the surfacing comprises a polyamide film glued to the surface of the substrate by an adhesive film impregnated with a reactive adhesive.

The adhesive film impregnated with the reactive adhesive provides the surface of the board with the required hardness, while the polyamide film provides the required elasticity, scratch resistance and grinding resistance.

2.4.3 Examples 2 to 5 in the patent specification and the experiments filed by the respondent during the examination proceedings show that surfaced boards having the required properties and strongly adhering to the wood-based board can be obtained by gluing a polyamide film with a phenolic film (a paper impregnated with phenolic resin) to a wood material.

2.4.4 The appellant argued that the examples provided by the respondent did not demonstrate the alleged effect over the whole area. In its opinion, the tests showed good adhesion only with two reactive adhesives, namely resorcin resin and phenolic resin. On the contrary, the experiments filed by the appellant, D18, showed that some of the common reactive adhesives had poor ability to adhere to birch plywood.

2.4.5 In fact, some examples in D18 show that excellent adhesion is obtained when using phenol-formaldehyde resin impregnated paper (entry 1 of the table on page 1 of D18) or polyvinyl acetate-dispersion together with isocyanate hardener (entry 5 of the table of D18). These tests confirm the experiments of the patent in suit. On the other hand, when adhesives such as melamine-formaldehyde resin impregnated paper or amino-based resin impregnated paper are used (entries 2 and 3 of the table of D18) poor adhesion is achieved.

The board agrees with the respondent that, insofar as weak adhesion is obtained, these reactive adhesives represent less-preferred embodiments of the invention. Nevertheless, some degree of adhesion is still obtained. Consequently, they cannot put into doubt the finding that the technical problem is credibly solved by the measures taken.

2.5 Obviousness

2.5.1 It remains to be decided whether, in view of the available prior art documents, it would have been obvious for the skilled person to solve the above defined technical problem by the means claimed. In the

present case it is to be considered whether the skilled person would replace the three-layer system of D13 by a polyamide layer glued by means of an adhesive film impregnated with a reactive adhesive.

2.5.2 Document D13 itself does not give any hint to the claimed solution. On the contrary, it is the key teaching of D13 "that no additional gluing substance is used to attach the film to the wood" (see column 2, lines 34 to 36).

2.5.3 The board cannot accept the argument of the appellant that the skilled person reading the disclosure of D13 would immediately notice that the general idea of D13 is to obtain a flexible surfacing where the use of glue would be contra-productive. However, in embodiments wherein such flexibility was not required, the skilled person would (so it is argued) use gluing substances. In the board's view this argument is clearly made with the knowledge of the invention.

In order to arrive at the subject-matter of claim 1 the skilled person would first have to replace the three-layered material used in D13 by a polyamide film and then select an adhesive film impregnated with a reactive adhesive for gluing the polyamide film to the wood. The skilled person would not find any motivation in the prior art for such modifications to the teaching of D13. Document D11, on which the appellant relied, certainly gives no hint. As discussed above in relation with the closest prior art, D11 discloses the use of phenolic resins as surfacing material and not as reactive adhesive layer for gluing a polyamide film to a wood material. Also the fact that sheets impregnated

with phenolic-formaldehyde resins, like the ones described in D10, are suitable and commonly used for gluing plywood would not motivate the skilled person to use them because the use of such impregnated adhesive films for attaching wood layers is fundamentally different to the surfacing of a wood material with a thermoplastic resin.

2.6 Hence, the board concludes that, starting from D13 as the closest prior art, it would not have been obvious to a person skilled in the art to arrive at the claimed surfaced wood-based boards.

2.7 Similar considerations apply if either D5 or D7 is used as closest prior art document:

2.7.1 Starting from D5 as closest prior art document, and faced with the above mentioned problem, the skilled person has no motivation to modify the sheet material of D5 so that the polyamide film thereof is glued to the surface of the wooden substrate by means of an adhesive film impregnated with a reactive adhesive. The fact that phenolic resins are known as coatings from D11, or that a paper sheet impregnated with phenolic resin can be used for attaching wood layers together as in D10, would certainly not prompt the skilled person to use a film impregnated with a reactive adhesive to a polyamide film as explained above.

The combination of the teaching of D5 with the teaching of D10 or D11 appears to be made with the knowledge of the invention (*ex-post facto*) and cannot bring into question the inventive step of the claimed subject-matter.

2.7.2 The skilled person would also not arrive at the invention starting from D7 as closest prior art document. The gist of the invention of D7 is to use extrusion for coating sheet-substrates with thermoplastic polymer. A combination with any of D10, D11 or D13 would deviate from the teaching of D7 and would not be taken into consideration by the skilled person.

2.8 The arguments of the appellant based on the use of D10 or D11 as closest prior art do not need further discussion as it has already been explained why these documents do not qualify as closest prior art (see above point 2.3.6).

2.9 In view of the above, the board concludes that the person skilled in the art would not have arrived in an obvious manner at the subject-matter of claim 1. By the same token, the subject-matter of claim 10, which relates to a method for producing the surfaced boards of claim 1, and the subject-matter of dependent claims 2 to 9, and 11 to 17, also involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar The Chairman

M. Cañueto Carbajo W. Sieber