(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 545 479 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **92203657.9**

(51) Int. Cl.5: **B27N 7/00**

(22) Date of filing: **27.11.92**

(30) Priority: **29.11.91 NL 9102001**

(43) Date of publication of application:
09.06.93 Bulletin 93/23

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE

(71) Applicant: **HOUTHANDEL LAMBERT VAN DEN BOSCH B.V.**
Sportlaan 4
NL-3905 AD Veenendaal(NL)

(72) Inventor: **van den Bosch, Lambertus**
Kerkewijk 22
NL-3901 EG Veenendaal(NL)

(74) Representative: **de Wit, Gerard Frederik, Ir. et al**
Octrooi- en Merkenbureau De Wit B.V.
Breitnerlaan 146
NL-2596 HG Den Haag (NL)

(54) Pre-treatment of fibreboards.

(57) The invention provides a method which makes surfaces of parts of "medium" or "high density fibreboard" that are not part of the main surfaces, suitable for the application of paint, by causing the pores to be sealed by means of an ironing member (1,2) which has been heated to 250-350 °C and is pressed against said surface with a pressure force of 5-25 kg/cm^2. The invention also comprises a device equipped with hold-down rollers (5), one or more ironing surfaces (1,2) and hold-down members (6), for the application of the method.

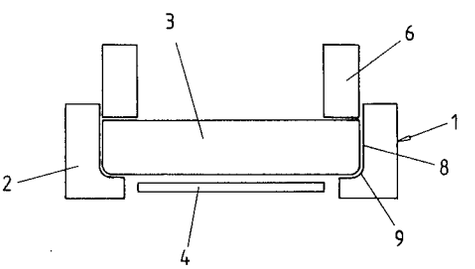

FIG. 2

EP 0 545 479 A1

The invention relates to making an edge surface of a wood fibreboard suitable for the application of paint.

In trade wood fibreboards, for which the invention is suitable, are called MDFB (medium density fibre board) or HDFB (high density fibre board). These boards consist of wood fibres and a glue that bonds these wood fibres. In general the main surfaces of the boards are easy to be painted, but in the case of surfaces that are based on material which is not part of the main surfaces, henceforth to be called edge surfaces, difficulties arise when applying paint. These are that, when no measures are being taken, much paint is absorbed without a good top coat being obtained. In practice, paint is sprayed on, which partly penetrates into the pores, this paint is left to dry, paint is re-applied by spraying, which is partly blocked by the already dried coat, the surface is sanded until smooth and then the final coat is applied. This is time-consuming and labour-intensive and, moreover, requires more paint than is needed for, for instance, one of the main surfaces of the board.

Already several solutions to the pre-treatment of such a layer have been suggested.

For a wood surface the German published patent application 1,290,849 states the polishing of a surface to be treated with artificial resins and a solvent, on certain conditions as to the concentration of the solvent.

The Australian patent specification AU-B-549776 describes a treatment which causes a sealant to penetrate into the pores by means of a heated ironing member.

DE-B-1,180,122 states a treatment at which, under pressure, a liquid thermoplastic is brought into the pores of wood fibreboards.

For the pre-treatment of a surface of wood or artificial wood, the Swiss patent specification 399,722 states a treatment at which sawdust together with artificial resin is forced into the pores. It is not clear what, at the time of this patent application, in 1961 therefore, is to be understood by artificial wood.

The American patent specification 3,219,473 describes a treatment to make a surface suitable for the application of paint, of which the issue is to remove fine hairs that may raise again in the painting process. This is effected by means of a rubbing member that is heated as a result of friction and thereby removes the small extrusions. In the process a film forming binding agent of a resinous nature is used as well.

For wood, furthermore, the German patent specification 906,189 proposes an application of a protein containing solution.

All these solutions do not deal with the important problem which underlies the invention, viz. to obtain a sealed surface, impenetrable to paint, without the use of a sealant.

The American patent specification US-A-4,197,078 described a treatment of an edge surface of a board made of compressed fibres, at which, with the application of compressive force, a heated member is moved to the edge surface and causes deformation of the edge surface. In the process a surface is obtained that is easier to paint, but the treatment of moving towards and from the edge, however, requires a relatively complicated apparatus and is time-consuming.

The invention offers a solution to the last-mentioned disadvantages by providing that the pores in the edge surface are sealed by moving the edge surface along a heated ironing surface while pressing the ironing surface against the edge surface.

In this context the Dutch patent application 6707504 is pointed out, according to the art of which fine hairs are burned off by means of a burning member heated up to ca. 500 °C. This treatment is applied as a finishing treatment of cut off wood fibre products. These prove to have a structure of three layers, the outer layer of which is submitted to this treatment. Further details on this are unavailable, but it can be assumed that this outer layer in its capacity of end layer has contained a high content of synthetic material or resin. Consequently, the problem of pores to be sealed has probably not presented itself and is, therefore, not mentioned in this patent application.

The ironing surface is preferably heated to 250-350 °C. It has been found that, in doing so, discolouration as a result of burning can be completely prevented and that, moreover, a smooth surface is obtained which, as experience has shown, forms a well adhesive sub stratum for common paints and varnishes.

The hold-down pressure is preferably 2-25 kg/cm^2. This hold-down pressure is not entirely fixed, because a resilient mounting of hold-down members and ironing members is preferably avoided. Such a resilient mounting does give a well defined hold-down force but its disadvantage is that the members must be withdrawn whenever a new object to be treated is brought in.

Therefore, a further elaboration of the invention provides that the hold-down members and the ironing surface are in a fixed position. It has been found that by doing so, the normal production variations in the thickness of profiles can completely be met by and that a prompt processing of large series is possible.

A further elaboration of the invention provides that a profile cut out off a fibre board, which has at least one edge surface reaching from the one main surface of the fibreboard to the other, is propelled in its longitudinal direction between a hold-down

member and the ironing member by means of driven rollers.

As a result it is possible to work in two directions by, for instance, pressing the profile in a horizontal as well. as a vertical direction against the same or several ironing members.

The previous case is in particular of interest when the edge surface has a flat surface and, adjacent to it and close to one of the main surfaces, a curved part and when the ironing surface has a complementary shape, while the profile is moved to the ironing surface by a hold-down member located opposite the flat surface and by one located opposite the curved surface.

It is of course possible that a hold-down member also has an ironing surface, for example when a profile with two edge surfaces located opposite each other has to be treated.

The invention also comprises a device suitable for the application of the method and a profile obtained by applying the method.

The invention is further explained in the following by means of the drawing, in which:

fig.1 shows a schematic longitudinal view of a device for the application of the invention; and

fig.2 shows a schematic cross-section at the location of the hold-down and ironing members.

In fig. 1 an ironing member is indicated with 1, which is set up alongside a track with a bearing surface 4 which has freely rotating rollers 7 underneath that rise a little above the top of the surface 4. On the top driven rollers 5 are applied, which can be pressed against a profile to be treated 3 by means of parts not drawn.

As is shown particularly in fig 2, there are two ironing members located opposite each other 1 and 2, which also serve for each other as hold-down members. These ironing members have a flat surface 8 and beneath it a small arc 9. The surfaces 8 can be positioned vertical as well as somewhat inclined. The hold-down members 6 are used for pressing the profile 3 down against the curved part 9 of the ironing members 1 and 2.

Experience shows that in this way a profile is obtained that is very easy to be painted and that can be given a finished coating in one single treatment.

Claims

1. Method for making an edge surface of a wood fibreboard (3), such as a "medium density fibre board" or a "high density fibreboard", suitable for the application of paint, **characterized in that** the pores in the edge surface are sealed by moving the edge surface along a heated ironing surface while pressing the ironing surface (1,2) against the edge surface.

2. Method according to claim 1, **characterized in that** the temperature of the ironing surface is 250-350 °C.

3. Method according to claim 1 or 2, **characterized in that** the hold-down pressure is 5-25 kg/cm^2.

4. Method according to any of the preceding claims, **characterized in that** a profile cut out of a fibreboard (3), which has at least one edge surface reaching from the one main surface of the fibreboard to the other, is propelled by means of driven rollers (5) in its longitudinal direction between a hold-down member (1,2,6) and the ironing member (1,2).

5. Method according to claim 4, **characterized in that** the profile is pressed by a resisting member (1,2,6) in two directions against one or more ironing members.

6. Method according to claim 4 or 5, **characterized in that** the hold-down members (6) and the ironing surface (1,2) are set up in a fixed position.

7. Method according to claims 4-6, **characterized in that** the edge surface has a flat surface and, adjacent to it and close to one of the main surfaces, a curved part and that the ironing surface (1,2) has a complementary shape, while the profile is moved to the ironing surface by a hold-down member (1,2,6) located opposite the flat surface and by one located opposite the curved surface.

8. Device for applying the method according to any of the preceding claims, equipped with driven rollers (5) opposite a conveyor surface, rollers that rise a little above the conveyor surface, a fixed hold-down member (6) with at least one pressure area parallel to the conveying direction, **characterized by** a member (1,2) set up in a fixed position, heated to 250-350 °C, with a profile that is located opposite a hold-down surface or the hold-down surfaces of the hold-down member (6).

9. Device according to claim 8, **characterized in that** the hold-down surfaces (1,2,6) are set up in a fixed position.

10. Device according to claim 8 or 9, **characterized in that** the hold-down surfaces (6) and the ironing surface (1,2) very slightly converge on the side where they accept the profiles.

11. Profile of "medium" or "high density fibreboard" with opposite located parts of a main surface of that board and at least one bordering surface located outside these main surfaces, **characterized in that** the bordering surface is smooth and sealed as a result of the fusion of glue.

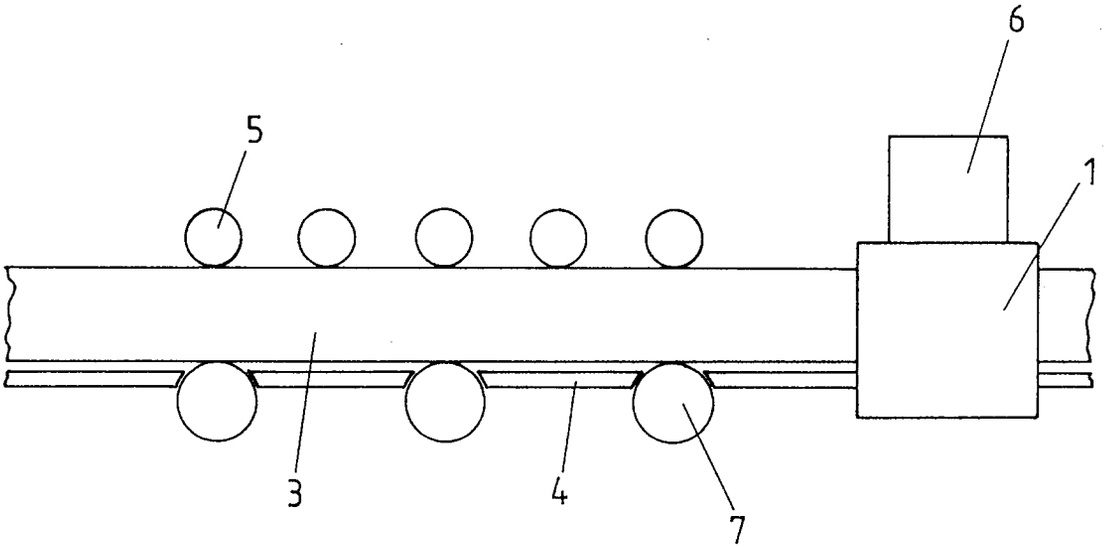

FIG. 1

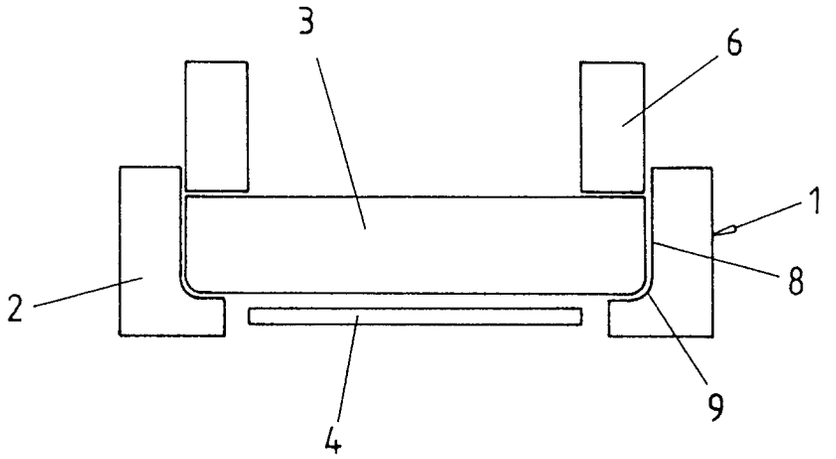

FIG. 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 20 3657

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
D,X	AU-B-549 776 (CSR LTD.) * page 3, line 3 - line 21 * * page 5, line 1 - line 19; claims *	1-11	B27N7/00
D,X	DE-A-1 180 122 (DEUTSCHE NOVOPAN GMBH) * column 1, line 43 - column 2, line 25 * * column 4, line 15 - line 21; claims; figures 2,3 *	1-11	
D,X	US-A-4 197 078 (BLOMQUIST ET AL.) * column 1, line 51 - line 68 * * column 2, line 52 - line 64 * * column 3, line 11 - line 20 * * column 6, line 1 - line 25; claims; figures *	1-3,11	
X	PATENT ABSTRACTS OF JAPAN vol. 10, no. 77 (M-464)26 March 1986 & JP-A-60 220 704 (DAIKEN KOGYO KK) 5 November 1985 * abstract *	1	
A	US-A-4 268 565 (LUCK ET AL.)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
B27N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	05 FEBRUARY 1993	SOEDERBERG J.E.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)