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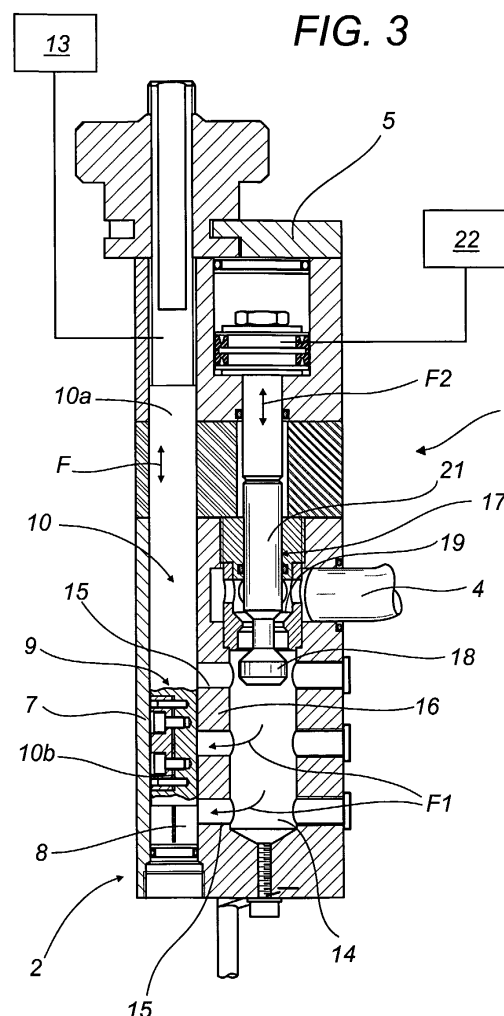
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(54) **A glue distribution unit in particular for machines which process wooden panels**

(57) A glue distribution unit (1), in particular for machines which process wooden panels comprises means (2) which distribute glue on the edges of panels or on bands to be applied to the edges of panels. The distribution means (2) are located close to a working zone. There are also means (3) which feed glue to the glue distribution means (2) through a pressurised pipe (4). The glue distribution means (2) comprise: a main body (5) with a surface (6) which makes contact with and distributes glue on the edge or band; the surface (6) having a longitudinal slot (7) through which the glue passes from a first chamber (8), inside the main body (5), to the outside of the main body (5); means (9) for adjusting the glue passage opening which operate on the slot (7) to vary the size of the slot (7) according to the thickness of the edge of the panel or the band.



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Description

[0001] The present invention relates to a glue distribution unit, in particular, but without limiting the scope of the invention, for machines which process wooden panels.

[0002] The wood-working machines, or machining centres, which will be indicated as examples of use of the present invention, without limiting the scope of application of the invention, are so-called edge banding machines. These machines apply a band of material, usually synthetic, by gluing to the edge of the panel with profiles which may even not be straight.

[0003] For panels with straight profiles, there are so-called "pass" machines, that is to say, linear edge banding machines for the application of edging bands on the edges of panels, in which the panel is fed forward relative to the edge banding device, which is fixed: in these cases, the glue may be applied both on the edging band and, preferably, on the panel.

[0004] In contrast, for panels with profiles which are not straight, there are machines which generally comprise a work table on which a panel to be edge banded is placed and band application means. In a first solution the work table and band application means move relative to one another to apply the band to the entire edge of the panel by gluing.

[0005] These solutions may involve the use of pre-glued edging bands which, immediately before application to the panel, are subjected to a glue heating - reactivation step. However, this method has a disadvantage in that the layer of ready-applied glue, having to be reduced, is not always sufficient to "cover" the porous zones on the edge of the panel. Basically, it may be said that these machines sometimes "lack glue".

[0006] Alternatively, there are band application units in which the band application means consist of a unit with a vertical, motor-powered main shaft, supporting and driving a roller which makes contact with the edge of the panel, turning freely about its vertical axis which coincides with the main shaft. On opposite sides of the contact roller there are glue feed means and there is at least one main band presser roller, in turn attached to the main shaft and able, in some solutions, to turn relative to the shaft according to the shape of the panel profile.

[0007] The means which distribute the glue, normally of the polyurethane type, on the edge of the panel or on the band (of particular interest in the present invention) comprise a tank for the glue, which is kept at a predetermined temperature by special heating means, and which can be fed to a distribution unit which may consist of a spatula element for contact with the edge of the panel.

[0008] At present, this type of glue distributor has the disadvantage of limited precision of the means (normally a knurled steel roller) which apply glue on the edge of the panels. This is due to the structure of the applicator

means which is not very adaptable and, above all, is difficult to adjust to production requirements, which often involve the edge banding of panels with a variety of thicknesses. Moreover, this makes it highly likely that the adhesive will be dispersed beyond the edge, or, as already indicated, distribution on the edge will be limited, with negative effects on the final quality of the panel.

[0009] The aim of the present invention is, therefore, to overcome the above-mentioned disadvantage by providing a glue distribution unit for machines which process wooden panels which is compact and extremely practical, precise and rapid when applying glue.

[0010] The technical task and preset aims are substantially fulfilled by a glue distribution unit, in particular for machines which process wooden panels comprising means which distribute glue on the edges of panels or on bands to be applied to the edges of panels. The distribution means are located close to a working zone. There are also means which feed glue to the glue distribution means through a pressurised pipe. The glue distribution means comprise: a main body with a surface which makes contact with and distributes glue on the edge or on the band. This surface has a longitudinal slot through which the glue passes from a first chamber, inside the main body, to the outside of the main body; means for adjusting the glue passage opening which operate on the slot to vary the size of the slot according to the thickness of the edge of the panel or the band.

[0011] The technical characteristics of the invention, with reference to the above aims, are clearly described in the claims below and its advantages are apparent from the detailed description which follows, with reference to the accompanying drawings which illustrate a preferred embodiment of the invention provided merely by way of example without restricting the scope of the inventive concept, and in which:

- Figure 1 is a perspective view with some parts cut away to better illustrate others, of a glue distribution unit, in particular, but without limiting the scope of application of the present invention, for machines which process wooden panels, made in accordance with the present invention;
- Figure 2 is a top plan view of the glue distribution unit illustrated in Figure 1;
- Figure 3 is a cross-section in a plane indicated by the line III - III in Figure 2.
- Figure 4 is a perspective view with some parts cut away and other parts in cross-section, of a detail of the unit illustrated in Figure 3.

[0012] With reference to the accompanying drawings, and in particular with reference to Figure 1, the glue distribution unit as disclosed herein may be used, in particular, but without limiting the scope of application of the present invention, for machines which edge band wooden panels.

[0013] This glue distribution unit, labelled 1 as a

whole, basically comprises means 2 which distribute glue on the edges of panels or on bands to be applied to the edges of panels (not illustrated here).

[0014] These distribution means 2 are located close to a working zone, not illustrated, where the panels to be edge banded can be fixed in position, with distribution means 2 that are mobile or vice versa according to the type of machine used and/or the profile of the panels to be edge banded.

[0015] The numeral 3 is used to denote means which feed glue to the glue distribution means 2, for example, by means of a pressurised pipe 4, illustrated by way of example with cartridge containers 3a and 3b. As also illustrated in Figures 2 and 3, the glue distribution means 2 comprise: a main body 5 and glue passage adjusting means 9.

[0016] More precisely, the main body has a surface 6 which makes contact with and distributes glue on the edge or band and a longitudinal slot 7 in the surface 6 for the passage of glue from a first chamber 8, inside the main body 5, to the outside of the main body 5.

[0017] The glue passage adjusting means 9 operate upon the slot 7, varying the size of the slot 7 according to the thickness of the edge of the panel or the band to be applied.

[0018] Specifically, as illustrated in Figures 3 and 4, the adjusting means 9 comprise a secondary plate body 10 which complementarily engages the main body 5 at the slot 7 along its entire length.

[0019] The secondary body 10 is operated upon by drive means 11 which allow the secondary body 10 to slide in both directions (see arrow F in Figures 3 and 4), adjusting the zone through which glue passes in the slot 7.

[0020] The above-mentioned drive means 11 may comprise a pin 12 attached to the secondary plate body 10, consisting of a cylindrical portion 10a and a plate portion 10b, and controlled by an adjusting and actuating unit 13 which may be of the electrical or mechanical type (illustrated with a generic block here).

[0021] The main body 5 comprises the first chamber 8 for the passage of the glue fed from a second chamber 14 or glue pre-feed tank (see arrow F1 in Figure 3) connected by a plurality of holes 15 made in a wall 16 which separates the two chambers 8 and 14 and at predetermined heights relative to the lower end of the main body 5. This architecture allows a uniform and constant flow of glue according to the gap allowed by the adjusting means 9.

[0022] Returning to the second chamber 14, this is operated upon by means 17 which stop or feed glue from the second, pre-feed chamber 14 to the first chamber 8.

[0023] These means 17 comprise (again see Figure 3) a head 18 which engages with a compartment 19 for the passage of the glue from a radial glue feed pipe 4. The head 18 is attached to a rod 21, controlled by control means 22 (of the known type and simplified with a block in Figure 3), designed to allow the head 18 to move (see

arrow F2) between a closed position, in which the head 18 makes contact with the compartment 19, and an open position, in which the head 18 is distanced from the compartment 19 (position illustrated in Figure 3).

[0024] This special compartment opening and closing structure allows the creation of a vacuum, when the glue supply is turned off, designed to instantly stop glue from passing through the slot. Similarly, when the glue supply is turned on again, the compartment 19 is opened by the head 18, creating a pressure designed to immediately allow glue to pass through the slot 7 again. This structure is very important both for correct distribution of the glue (normally polyurethane), and for preventing excessive quantities of glue from remaining in contact with the air close to the slot, with the risk that it may crystallise and so compromise subsequent glue distribution.

[0025] Obviously, the chambers 8 and 14 may be fitted with heating means, to keep the glue in an optimum liquid state (not illustrated here).

[0026] In addition, it is important to consider that the slot 7 can distribute glue directly on the edges or bands, but can also be used as an element for controlled glue feed onto roller or spatula means, depending on requirements or the type of machine on which the unit is fitted, without limiting the scope of application of the present inventive concept.

[0027] The glue distribution unit disclosed, therefore, fulfils the preset aims with an extremely compact structure, with rapid, precision distribution thanks to the system for adjusting the size of the slot according to the thickness required for the processing cycle.

[0028] The invention described can be subject to modifications and variations without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent elements.

40 Claims

1. A glue distribution unit (1), in particular for machines which process wooden panels, the unit (1) comprising at least: means (2) for distributing glue on the edges of panels or on bands to be applied to the edges of panels, the distribution means (2) being located close to a working zone; and means (3) for feeding glue to the glue distribution means (2), the unit (1) being **characterised in that** the glue distribution means (2) comprise:

- a main body (5) with at least one surface (6) which makes contact with and distributes glue on the edge or on the band; this surface (6) having a longitudinal slot (7) through which the glue passes from a first chamber (8), inside the main body (5), to the outside of the main body (5);
- means (9) for adjusting the glue passage open-

ing which operate on the slot (7) to vary the size of the slot (7) according to the thickness of the edge of the panel or the band.

2. The glue distribution unit according to claim 1, **characterised in that** the adjusting means (9) comprise a secondary plate body (10) which complementarily engages the main body (5) at the slot (7) along its entire length; drive means (11) operating on the secondary body (10), allowing the secondary body (10) to slide in both directions and adjust the zone through which glue passes. 5
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3. The glue distribution unit according to claim 2, **characterised in that** the drive means (11) comprise a pin (12) attached to the secondary plate body (10) and controlled by an adjusting and actuating unit (13). 15

4. The glue distribution unit according to claim 1, **characterised in that** the main body (5) comprises a first chamber (8) for passage of the glue fed from a second, glue pre-feed chamber (14), the chambers being connected by a plurality of holes (15) made in a wall (16) separating the two chambers (8, 14) and at predetermined heights relative to the lower end of the main body (5), allowing uniform passage of the glue according to the gap allowed by the adjusting means (9). 20
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5. The glue distribution unit according to claim 4, **characterised in that** the second chamber (14) is operated upon by means (17) which stop or feed glue from the second, pre-feed chamber (14) to the first chamber (8). 35

6. The glue distribution unit according to claim 4, **characterised in that** the second chamber (14) is acted upon by means (17) which stop or feed glue from the second, pre-feed chamber (14) to the first chamber (8); the means (17) comprising a head (18) which engages with a compartment (19) for the passage of glue from a radial glue feed pipe (4), forming part of the glue feed means (3); the head (18) being attached to a rod (21), controlled by control means (22) designed to allow the head (18) to move between a closed position, in which the head (18) makes contact with the compartment (19), and an open position, in which the head (18) is distanced from the compartment (19). 40
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FIG. 1

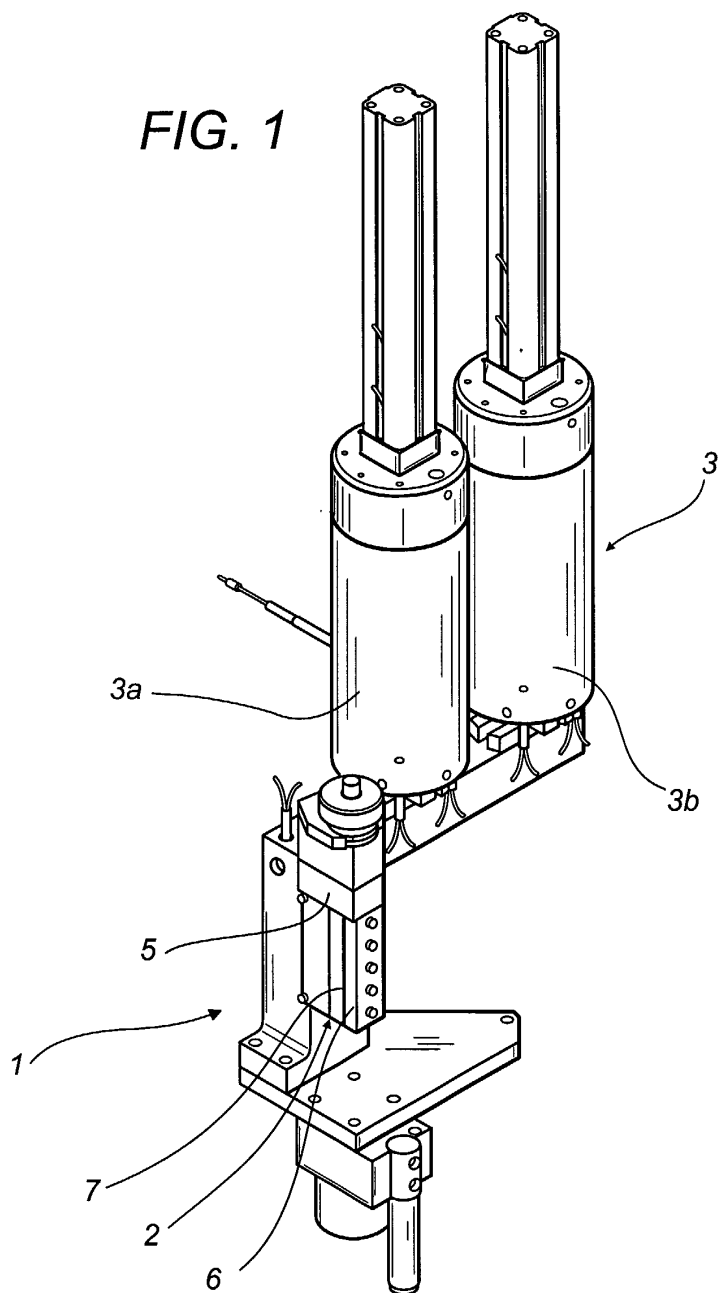


FIG. 2

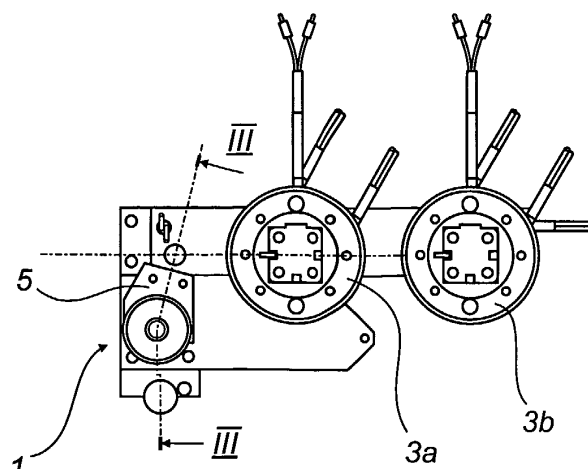


FIG. 3

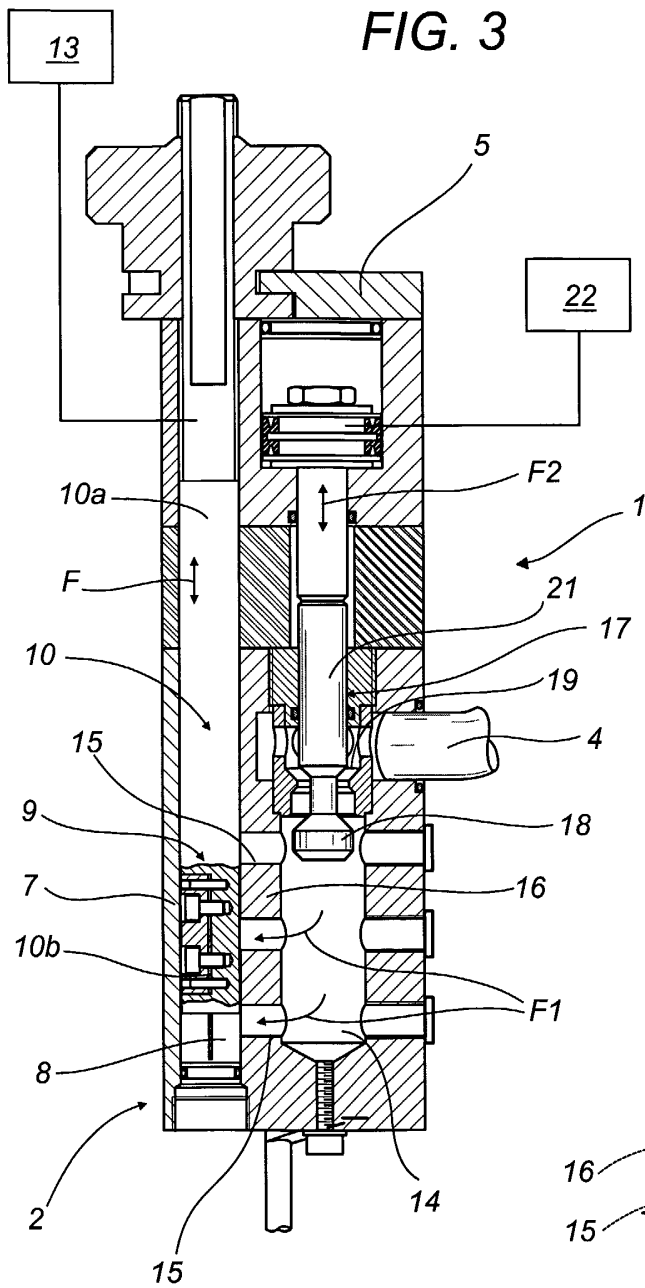


FIG. 4

