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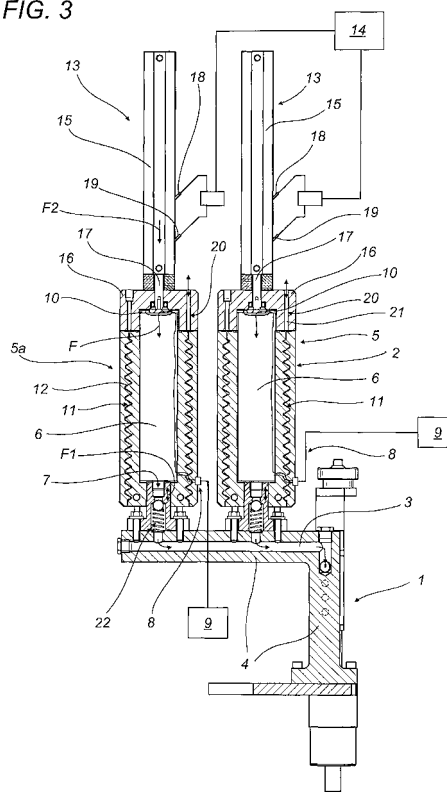
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(54) **A glue feed unit in particular for machines which process wooden panels**

(57) A glue feed unit which can be used, in particular, for machines which process wooden panels, comprises means (1) for distributing glue on the edges of panels or on bands to be applied to the edges of panels and located close to a working zone; and means (2) for feeding glue to the glue distribution means (1) through a connecting channel (3). These feed means (2) are located on a support element (4) and comprise at least one reversible airtight retaining body (5) for a glue cartridge (6), with a lower opening (7) for connection to the connecting channel (3) and pusher means (8) acting upon the cartridge (6) and designed to allow glue feed, when activated, into the connecting channel (3) and towards the distribution means (1).

FIG. 3



Description

[0001] The present invention relates to a glue feed unit which can be used, in particular, 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 embodiment 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 supply and distribute the glue, normally of the "Hot-melt" and 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 in the liquid state 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, the most common architecture for the structure which feeds glue to the distributor consists of the glue tank which is separate (in the sense that it is often physically distant) from the distributor means, and means (normally of the pump type) for feeding the glue

from the tank to the distributor. This architecture is not very practical and is difficult to manage, particularly on high productivity machines. In addition, it is important to consider that, at present, polyurethane glue (preferred to other types of glue, because it is, in practice, more resistant to high temperatures and water) is, initially, packed in cylindrical containers which are sealed to prevent contact with the air.

[0009] The aim of the present invention is, therefore, to provide a glue distributor unit for machines which process wood, structured in such a way that it optimises the use of polyurethane glue in cylindrical containers, and with an extremely rational construction architecture, compact but with an operating capacity better suited to the high productivity requirements of current machines. The above-mentioned aim is fulfilled by a glue feed unit which can be used on machines which process wooden panels, comprising means for distributing glue on the edges of panels or on bands to be applied to the edges of panels and located close to a working zone and means for feeding glue to the glue distribution means through a connecting channel. These feed means are located on a support element and comprise at least a reversible airtight retaining body for a glue cartridge, with a lower opening for connection to the connecting channel and with pusher means acting upon the cartridge and designed to allow glue feed, when activated, into the connecting channel and towards the distribution means.

[0010] 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 of a glue distribution unit for machines which process wooden panels, equipped with a glue feed unit, 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 III - III indicated in Figure 2.

[0011] With reference to the accompanying drawings, and in particular with reference to Figure 1, a glue feed unit as disclosed herein may be used, in particular, for machines which process wooden panels.

[0012] These machines may also comprise means 1 for distributing glue on the edges of panels or on bands to be applied to the edges of panels, the means 1 being located close to a working zone.

[0013] The means 1 are connected to means 2 which feed the glue through a connecting channel 3, normally under pressure.

[0014] As is also illustrated in Figures 2 and 3, the feed means 2 are positioned on a support element 4 and basically comprise: at least one reversible retaining body 5 for a glue cartridge 6, and pusher means 8 which act on the cartridge 6, designed to allow the glue to be fed, when activated, into the connecting channel 3 and towards the distribution means 1.

[0015] In particular, but without limiting the scope of the invention, the retaining body 5 consists of an airtight cylindrical body, in which the cartridge 6 is housed and sealed by an upper element 16 which forms a cap.

[0016] The opposite end of the body 5, attached to the support element 4, has a lower opening 7 for connection to the connecting channel 3.

[0017] Again as illustrated in Figures 1 to 3, the feed and distribution unit support element 4 comprises glue distribution means 1 (not described in detail here because they are not part of the present invention) and at least two retaining bodies 5, 5a, set side-by-side, and independent of one another, so that, when activated, glue continues to be fed to the distribution means 1 when one of the cartridges 6 runs out of glue.

[0018] The above-mentioned pusher means 8 may comprise, by way of example, a compressed air supply unit 9 acting in the cartridge 6 seat 10 in the retaining body 5, at the top end of the retaining body 5, allowing glue to flow towards the connecting opening 7. In other words, the glue is fed to the connecting channel 3 by pushing from the top downwards (see arrow F in Figure 3).

[0019] To control the flow of glue towards the connecting channel 3, between the retaining body 5 and connecting channel 3 there are valve means 22 which control the glue outfeed, mobile (see arrow F1 in Figure 3), when activated, from a stable position in which the lower opening 7 of the retaining body 5 is closed (see Figure 3), to a position which allows glue to pass through the lower opening 7 towards the connecting channel 3 when the pusher means 8 are activated, and vice versa.

[0020] In Figure 3, the numeral 11 denotes the heating means fitted on the retaining body 5. These heating means 11 are positioned on the retaining body 5 to allow the generation of a temperature inside the retaining body 5 which achieves and/or maintains a glue liquid state in the cartridge 6.

[0021] The heating means 11 may comprise, by way of example, a plurality of heating elements 12 extending in the retaining body 5, along its entire length and close to the zone at which the body 5 is connected to the support 4, at the site of the connecting channel 3.

[0022] In addition to the heating means 11, the retaining body 5 is equipped with means 13 which detect the glue level in the cartridge 6, which are connected to means 14 for controlling and adjusting the glue feed (a known machine control unit, simply illustrated as a block here) to activate or stop glue outfeed depending on the level in the cartridge 6.

[0023] Again by way of example, the detector means

13 may comprise a cylinder 15 attached to the top end of the retaining body 5, that is to say, on the retaining body 5 upper sealing element 16.

[0024] This cylinder 15 has a rod 17, passing through the sealing element 16, and resting on the top end of the cartridge 6, sliding with the latter so as to follow the top end of the cartridge 6 as it is lowered (see arrow F2).

[0025] The rod 17 is connected to at least one pair of sensors 18 and 19 attached to the cylinder 15 and at different heights so that they detect the lowering of the rod 17 and send a signal to the control means 14.

[0026] The use of two sensors 18, 19 for each rod 17 means that, when a first rod 17 passes its upper sensor 18, it switches on the heating in the other retaining body 5a, so that, when the cartridge 6 in the body 5 runs out of glue (the second, lower sensor 19 is passed) glue can immediately be fed from the cartridge 6 in the second body 5a.

[0027] When the cartridge 6 in one of the bodies 5, 5a is empty, heating on that body is automatically switched off and cooling means 20 fitted in each of the bodies 5, 5a cool them so that the cartridge 6 can be rapidly substituted.

[0028] The cooling means 20 may comprise, again by way of example, a plurality of longitudinal channels 21 for the passage of air from the outside to the inside (forming heat exchangers) on the upper sealing element 16.

[0029] A feed unit structured in this way, therefore, fulfils the preset aims thanks to the use of modular retaining bodies for glue in cartridges, which can be used to optimise glue feed to the distributor through a rational, simple and compact architecture.

[0030] Thanks to the modularity of the support, a larger number of cartridges can be used, according to machine productivity requirements, in a very simple way and without having to change the unit or machine architecture. Moreover, used cartridges may be substituted with new cartridges rapidly and safely.

[0031] 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.

Claims

1. A glue feed unit which can be used, in particular for machines which process wooden panels, comprising at least: means (1) for distributing glue on the edges of panels or on bands to be applied to the edges of panels, the distribution means (1) being located close to a working zone; and means (2) for feeding glue to the glue distribution means (1) through a connecting channel (3), the glue feed unit being **characterised in that** the feed means (2) are located on a support element (4) and comprise:

- at least one reversible retaining body (5) for a cartridge (6) of glue, having a lower opening (7) for connection to the connecting channel (3);
 - pusher means (8) acting upon the cartridge (6) and designed to allow the glue to be fed, when activated, into the connecting channel (3) and towards the distribution means (1).
2. The feed unit according to claim 1, **characterised in that** the retaining body (5) consists of an airtight cylindrical body, in which the cartridge (6) is housed, sealed by an upper element (16).
 3. The feed unit according to claim 1, **characterised in that** the support element (4) for the retaining body (5) also supports the glue distribution means (1).
 4. The feed unit according to claim 1, **characterised in that** the support element (4) is fitted with at least two retaining bodies (5, 5a), set side-by-side and independent of one another and, when activated, allowing glue to continue to be fed to the distribution means (1) when one of the cartridges (6) runs out of glue.
 5. The feed unit according to claim 1, **characterised in that** the pusher means (8) comprise a compressed air supply unit (9) acting in a cartridge (6) seat (10) in the retaining body (5), being cylindrical in shape, at the opposite end to that close to the connecting opening (7), allowing glue to flow towards the connecting opening (7).
 6. The feed unit according to claim 1, **characterised in that** the retaining body (5) is fitted with heating means (11) located on the retaining body (5) and designed to allow the generation of a temperature inside the retaining body (5) which achieves and/or maintains a glue liquid state.
 7. The feed unit according to claim 6, **characterised in that** the heating means (11) comprise a plurality of heating elements (12) extending inside the retaining body (5), along its entire length and covering the lower opening (7) zone of the retaining body (5) where the connecting channel (3) is located.
 8. The feed unit according claim 1, **characterised in that** the retaining body (5) is equipped with means (13) which detect the level of glue in the cartridge (6) connected to means (14) which control and adjust glue feed in such a way as to activate or stop glue outfeed depending on the level in the cartridge (6).
 9. The feed unit according to claim 8, **characterised in that** the detector means (13) comprise a cylinder (15) attached to the top end of the retaining body (5), that is to say, on an upper sealing element (16) on the body (5); the cylinder (15) having a rod (17) resting on the top end of the cartridge (6) and sliding with the top end so that it follows the lowering of the top end of the cartridge (6); the rod (17) being connected to at least one pair of sensors (18, 19) connected to the cylinder (15) at different heights so that they detect the lowering of the rod (17) and send a signal to the control means (14).
 10. The feed unit according to claim 1, **characterised in that** the retaining body (5) is equipped with means (20) which cool the retaining body (5) when the cartridge (6) is empty.
 11. The feed unit according to claim 10, **characterised in that** the cooling means (20) comprise a plurality of longitudinal channels (21) for the passage of air from the outside to the inside, made on the top end of the retaining body which forms an upper sealing element (16).
 12. The feed unit according to claim 1, **characterised in that** between the retaining body (5) and connecting channel (3) there are valve means (22) operating which control glue outfeed and are mobile, when activated, from a stable position in which the lower opening (7) in the retaining body (5) is closed, and a position which allows glue to pass through the lower opening (7) to the connecting channel (3) when the pusher means (8) are activated, and vice versa.

FIG. 1

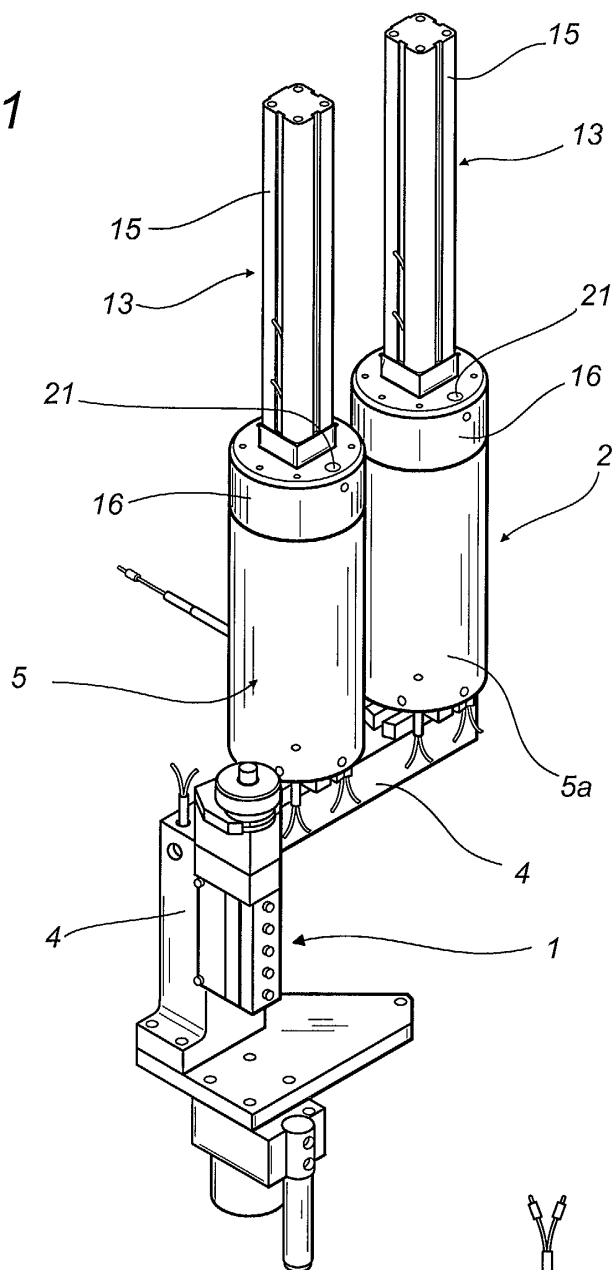


FIG. 2

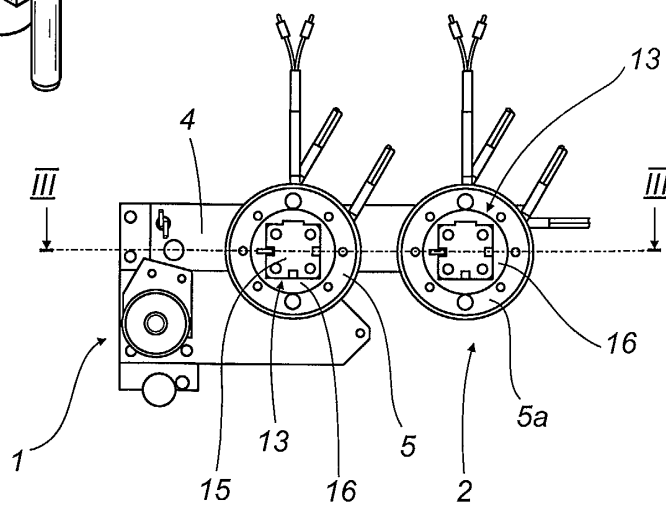


FIG. 3

