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Remarks:
Claims 19 to 28 are deemed to be abandoned due to non-payment of the claims fees (Rule 45(3) EPC).

(54) **Method for edge banding a panel and panel so obtained**

(57) A method for edgebanding a panel (1) made of wood or similar materials comprises machining an edge portion (6) of said panel (1) to obtain seat means (7), inserting into said seat means (7) a supporting element (8) and fixing on said supporting element (8) an edge element (28); before said inserting being provided said fixing and being provided cutting to desired lengths said supporting element (8) and said edge element (28).

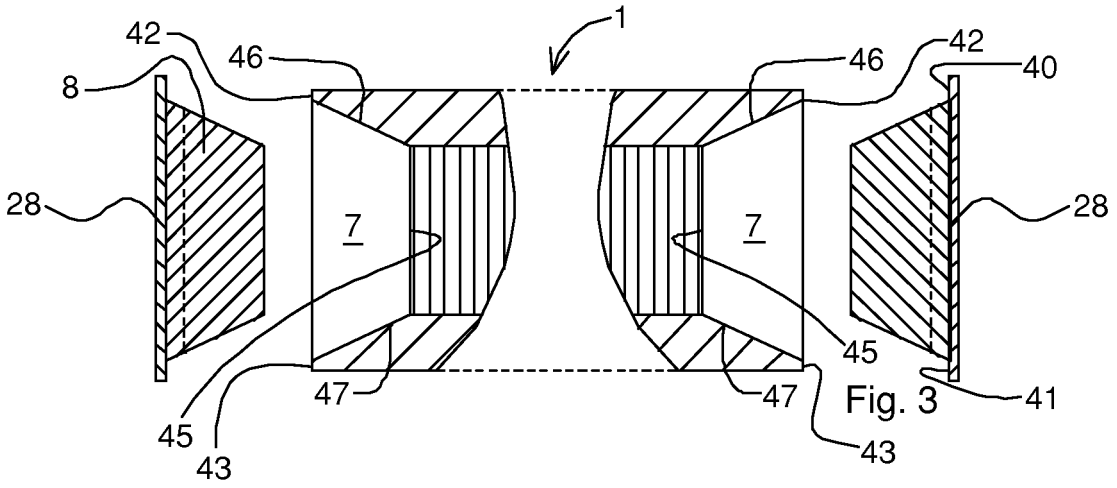

Fig. 3

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Description

[0001] The invention relates to a method for edgebanding a panel, in particular a composite panel with a light structure, and a panel so obtained.

[0002] Composite panels with a light structure are known, which are, for example, used for making furniture, shelving, shelves, doors and the like, provided with a layered or a "sandwich" structure.

[0003] This structure comprises an intermediate layer interposed between a first external layer and a second external layer, that are substantially flat and mutually opposite, and are made of wood or similar materials.

[0004] The intermediate layer is made of a filling material, made of wood or similar materials, such as, for example, cardboard sheets having a honeycomb structure, that is lighter and less resistant than the material used for making the first and the second external layer.

[0005] These panels are also provided, at edge portions thereof, with a longitudinal groove, for example having a trapezoidal or rectangular-shaped cross section, obtained by suitably milling the edge portions, in particular by milling the intermediate layer, the first external layer and the second external layer.

[0006] This groove extends from the intermediate layer up to the first and the second external layer, on internal sides of which notches are formed that are opposite one another.

[0007] Such notches are arranged, in use, for acting as stop seats for a supporting element, or list, arranged for being received in the aforesaid groove.

[0008] The supporting element, which is made of wood or similar materials, has a cross section of the same shape as that of the groove and it is arranged for reinforcing and strengthening the edge portions of the panel and for supporting an edge element made of plastics or similar materials.

[0009] The edge element, in use, is supported by and abuts on an abutting surface of the panel, defined by a first face of the supporting element, opposite a second face of the supporting element facing a bottom wall of the aforesaid groove, and by respective head surfaces of the first and of the second external layer, the first face and the head surfaces facing the edge element.

[0010] In order to edgeband the aforesaid composite panels, a method is known comprising above all cutting to size, by a first milling apparatus, a panel, that was suitably assembled previously.

[0011] Subsequently, the edge portions of the panel are milled by means of a second milling apparatus, to obtain the aforesaid groove.

[0012] Still subsequently, is provided to insert and glue the supporting element in the groove and subsequently cut the supporting element to a desired length by means of a first edgebanding apparatus.

[0013] In particular, this first edgebanding apparatus comprises first cutting means for cutting to a desired length said supporting element, a first glue distributing element arranged for distributing a first layer of glue on respective side surfaces of the aforesaid supporting element and a first pressing roller that presses and inserts the supporting element into the groove.

[0014] Still subsequently, grinding the abutting surface by a milling apparatus is provided, after which gluing the edge element on the abutting surface is provided and subsequently to cut the edge element to a desired length by a second edgebanding apparatus.

[0015] In particular, this second edgebanding apparatus comprises second cutting means for cutting to a desired length said edge element, a second glue distributing element arranged for distributing a second layer of glue on an active surface of the edge element facing the aforesaid abutting surface, and a second pressing roller that presses the edge element on the abutting surface.

[0016] Still subsequently, there is provided removing an upper part and a lower part of the edge element that exceed the abutting surface by means of a trimming apparatus, making, by means of an edging apparatus, a connecting radius between the edge element applied to the abutting surface of the panel and the respective outer surfaces of the first and of the second external layer, and lastly rounding, by a rounding/profiling apparatus, the profile of the edge element after the edge element has been applied to the panel.

[0017] A drawback of this method is that it is extremely slow and laborious to actuate, which implies low productivity with consequent loss of money.

[0018] This is essentially due to the significant number of operations to be performed.

[0019] A further drawback of this method is that it requires at least two edgebanding apparatuses to be made, in addition to a grinding apparatus, which involves an increase in the expenses to be sustained that are connected therewith, such as the purchase and maintenance cost thereof.

[0020] Further, in particular in the case machinings of panels executed in-line, this entails the need to have a sufficiently large environment available for receiving the apparatuses that are necessary for achieving the aforesaid method.

[0021] An object of the invention is to improve a method for edgebanding a panel made of wood or similar materials, in particular a composite panel.

[0022] A further object is to provide a method for edgebanding panels that is quicker, simpler and cheaper to be implemented than known methods.

[0023] Another object of the invention is to improve the panels, in particular composite panels with a light structure.

[0024] In a first aspect of the invention there is provided a method for edgebanding a panel made of wood or similar materials comprising machining an edge portion of said panel to obtain seat means, inserting into said seat means a supporting element and fixing on said supporting element an edge element, characterised in that before said inserting there is provided said fixing and in that

there is provided cutting said supporting element and said edge element to desired lengths.

[0025] Owing to the invention, it is possible to obtain a method for edgebanding panels that is particularly easy, fast and cheap to apply.

[0026] In fact, this method provides fixing said edge element on said supporting element before inserting said supporting element in said seat means.

[0027] This enables the slow and laborious grinding operation to be eliminated that made known methods particularly slow and difficult to be performed.

[0028] Further, this method provides cutting said edge element and said supporting element to desired lengths.

[0029] This makes particularly simple and fast to edgeband a corner zone of said panel in which an end wall of said edge element and a further end wall of said supporting element can be aligned and/or staggered.

[0030] Also, in order to be achieved, this method does not require a grinding apparatus and needs only a suitably modified edgebanding apparatus.

On one hand, this enables the costs to be sustained for applying this method to be diminished and on the other hand enables the overall dimensions of an apparatus that is usable for applying this method to be reduced.

[0031] In a second aspect of the invention there is provided a panel made of wood or similar materials provided with an intermediate layer interposed between a first layer and a second layer, and with an edge portion, in which there is obtained a seat comprising a bottom wall, characterised in that said bottom wall consists of an end wall of said intermediate layer and in that there is provided a supporting element arranged for being received at least partially in said seat and for supporting an edge element of said panel, said edge element and said supporting element being provided respectively with an end portion and with a further end portion for defining a corner zone of said panel.

[0032] The invention can be better understood and implemented with reference to the attached drawings that illustrate some embodiments thereof by way of non-limiting example, in which:

Figures 1 to 4 illustrate the steps of a method for edgebanding a panel;

Figure 5 is an exploded view of Figure 4;

Figure 6 is a side view of a supporting element included in the panel of Figure 5;

Figure 7 is a schematic top view of an edgebanding apparatus arranged for edgebanding panels;

Figure 8 is a perspective view of the edgebanding apparatus of Figure 7;

Figure 9 is a schematic and fragmentary top view of the panel in Figure 4 in a first configuration;

Figure 10 is an enlarged detail in Figure 9;

Figure 11 is a further enlarged detail in Figure 9;

Figure 12 is a schematic and fragmentary top view of a corner zone of the panel in Figure 4 in a second configuration;

Figure 13 is an enlarged detail of Figure 12;

Figure 14 is a further enlarged detail of Figure 12.

[0033] With reference to Figures 1 to 5, there is shown a panel 1, which is usable for making furniture, shelving, shelves, doors and the like, comprising a layered or "sandwich" structure 2.

[0034] The structure 2 comprises an intermediate layer 3 interposed between an external first layer 4 and an external second layer 5, that are substantially flat and mutually opposite, that are made of wood or similar materials.

[0035] The intermediate layer 3 is made of a filling material, made of wood or similar materials, such as, for example, cardboard sheets having a honeycomb structure, that is lighter and less resistant than the material used for making the first layer 4 and the second layer 5.

[0036] The panel 1 is further provided, at edge portions 6 thereof, with a seat 7, extending substantially longitudinally (Figure 1).

[0037] The seat 7 has a substantially trapezoidal cross section, and is obtained, as disclosed better below, by suitably milling the edge portions 6.

[0038] The seat 7 comprises a bottom wall 12, a first side wall 16 and a second side wall 17.

[0039] The first side wall 16 and the second side wall 17 are obtained by milling respectively a first end portion 18 and a second end portion 19 respectively of the first layer 4 and of the second layer 5, whilst the bottom wall 12 is obtained by milling a third end portion 20 of the intermediate layer 3 (Figure 1).

[0040] In this manner, the bottom wall 12, the first side wall 16 and the second side wall 17 consist respectively of an end wall 45 of the intermediate layer 3, of a first tilted wall 46 of the first layer 4 and of a second tilted wall 47 of the second layer 5.

[0041] In an embodiment of the invention, which is not shown, the panel 1 comprises a seat having a substantially rectangular-shaped section obtained by compressing the third end portion 20 of the intermediate layer 3.

[0042] The seat 7 is arranged, in use, to receive a supporting element 8, in the shape of a list or strip made of wood or similar materials, having a cross section that is substantially the same as that of the seat 7 and arranged for reinforcing and strengthening the edge portions 6 of the panel 1 for supporting an edge element 28 having a thickness S1 (Figure 5).

[0043] The supporting element 8 comprises a side 11 facing and arranged for contacting in use the bottom wall 12, a further side 13 opposite the side 11, a first side surface 14 and a second side surface 15, that are mutually opposite, facing in use respectively the first side wall 16 and the second side wall 17 of the seat 7.

[0044] Between the first side surface 14 and the second side surface 15, and respectively the first side wall 16 and the second side wall 17, there are defined, in use, respective gaps, which are not shown, that are arranged for receiving an adhesive substance, arranged for gluing

the supporting element 8 to the seat 7.

[0045] In other words, between the supporting element 8 and the seat 7 there is a certain clearance.

[0046] The supporting element 8 further has a further thickness S2 that is larger or smaller according to whether in a first external surface 9 and/or in a second external surface 10 respectively of the first layer 4 and of the second layer 5, within a certain distance D from the edge portions 6, holes and/or millings that are not shown should or should not have to be made.

[0047] This occurs, for example, for a panel 1 intended for acting as a supporting frame of a piece of furniture or for a panel 1 having the function of a door.

[0048] In this case, in fact, in such holes pins may be engaged, which are not shown, projecting from the first external surface 9 and/or from the second external surface 10 and arranged for supporting, for example, a shelf, or fixing means, which are not shown, arranged for fixing elements such as hinges to the panel 1.

[0049] On the other hand, such millings are made to act as a guide for further panels, which are not shown, for example panels with a thin thickness that are arranged for acting as a bottom wall for a piece of furniture.

[0050] The supporting element 8 further comprises a plurality of notches 22, that are for example mutually equidistant, obtained in the side 11, for example having a parallelepipedon shape, and defining a plurality of elongated elements 26, which comprise respective ends 27 that can move towards one another or away from one another in function of a curvature radius of a profile portion 25 of the panel 1 contacted by the supporting element 8 (Figures 6, 7 and 8).

[0051] In particular, the notches 22 have a width L and a height H defining a minimum curvature radius for the supporting element 8.

[0052] Owing to the notches 22 it is possible to make the supporting element 8 more flexible, which can flex in the direction indicated by the arrows F, to adapt to the profile 25, in particular if the latter has a great further thickness S2.

[0053] It should be noted how this enables the supporting element 8 to be associated with a panel 1 having a curvilinear profile 25.

[0054] In an embodiment of the invention, which is not shown, the supporting element 8 is devoid of notches 22.

[0055] The aforesaid edge element 28, made of plastics or similar materials, comprises a first face 29 facing and arranged for contacting the further side 13 of the supporting element 8 and a second face 30 opposite the first face 29.

[0056] With reference to Figures 7 and 8, there is shown an edgebanding apparatus 31 arranged for fixing the supporting element 8 on the edge element 28 and subsequently fixing the supporting element 8 and the edge element 28 to the panel 1. The edgebanding apparatus 31 comprises a support 32 on which a first pair of rollers 33 and a second pair of rollers 34 are mounted.

[0057] The first pair of rollers 33 and the second pair of rollers 34 are arranged for unwinding from respective reels, which are not shown, respectively the edge element 28 and the supporting element 8.

[0058] In particular, the first pair of rollers 33 contacts the first face 29 and the second face 30 of the edge element 28, whilst the second pair of rollers 34 contacts the side 11 and the further side 13 of the supporting element 8.

[0059] The edgebanding apparatus 31 further comprises a first blade 35 and a second blade 36 positioned respectively upstream of the first pair of rollers 34 and of the second pair of rollers 35 with respect to an advance direction A of the edge element 28 and of the supporting element 8.

[0060] The first blade 35 and the second blade 36 are arranged for cutting to a desired length respectively the edge element 28 and the supporting element 8.

[0061] In particular, the first blade 35 and the second blade 36, suitably commanded by a control and management system, which is not shown, enable the edge element 28 and the supporting element 8 to be cut to the same or different lengths.

[0062] This makes particularly simple and fast to edgeband a corner zone 48 of the panel 1 (Figures 9 to 14), where the edge element 28 and the supporting element 8 may have different lengths.

[0063] In particular, the corner zone 48 is defined by a first group supporting element-edge element 100 and by a second group supporting element-edge element 101.

[0064] The first group supporting element-edge element 100 comprises a first end portion 49, provided with a first end wall 200, of the edge element 28 and a second end portion 50, provided with a second end wall 201 of the supporting element 8.

[0065] The second group supporting element-edge element 101 comprises a further first end portion 49', provided with a further first end wall 200' of the edge element 28 and a further second end portion 50', provided with a further second end wall 201' of the supporting element 8.

[0066] In Figures 9 to 11 there is shown the edge zone 48 in a first configuration A1.

[0067] In the first configuration A1, the end portion 49 does not protrude from the second end portion 50 and vice versa, and the further end portion 49' protrudes from the further second end portion 50'.

[0068] In particular, in the first configuration A1 the first end wall 200 is substantially aligned on the second end wall 201, whilst the further first end wall 200' is staggered in relation to the further second end wall 201' by a first length V1 substantially equal to the sum of the thickness S1 and of the further thickness S2.

[0069] In Figures 12 to 14 there is shown the edge zone 48 in a second configuration A2.

[0070] In the second configuration A2, the end portion 49 and the further end portion 49' protrude respectively from the second end portion 50 and from the further second end portion 50'.

[0071] In particular, in the second configuration A2 the further first end wall 200' is staggered in relation to the further second end wall 201' by a second length V2 substantially equal to the thickness S1 of the edge element 28, whilst the first end wall 200 is staggered in relation to the second end wall 201 by a third length V3 that is substantially equal to the further thickness S2 of the supporting element 8.

[0072] The edgebanding apparatus 31 further comprises a glue distributor 37, for example comprising a gluing roller, which is not shown, arranged for distributing a desired quantity of glue on the further side 13 of the supporting element 8.

[0073] The glue distributor 37 is positioned downstream of the first blade 35 and of the second blade 36 with respect to the advance direction A.

[0074] The edgebanding apparatus 31 further comprises a pair of pressing rollers 38 positioned downstream of the glue distributor 37 with respect to the advance direction A.

[0075] The pressing rollers 38 act respectively on the second face 30 and on the side 11 and are arranged for pressing the edge element 28 against the supporting element 8, so as to fix the edge element 28 and the supporting element 8 above one another.

[0076] The edgebanding apparatus 31 further comprises glue distributing means 39 positioned downstream of the pressing rollers 38 with respect to the advance direction A.

[0077] The glue distributing means 39, for example comprising a pair of glue injectors, is arranged for distributing a desired quantity of glue on the first side surface 14 and on the second side surface 15 of the supporting element 8, and on a first active portion 40 and on a second active portion 41 (Figure 3) of the first face 29 of the edge element 28, the first active portion 40 and the second active portion 41 exceeding in height the supporting element 8.

[0078] In particular, the first active portion 40 and the second active portion 41 are arranged for being fixed respectively to a first head surface 42 and to a second head surface 43 respectively of the first layer 4 and of the second layer 5. The edgebanding apparatus 31 further comprises a further pressing roller 44 positioned downstream of the glue distributing means 39 with respect to the advance direction A.

[0079] The further pressing roller 44 is arranged for contacting the second face 30 of the edge element 28 and for fixing edge element 28, supported by the supporting element 8, to the panel 1.

[0080] In other words, the further pressing roller 44 inserts the supporting element 8 into the seat 7 and presses the first active portion 40 and the second active portion 41 respectively against the first head surface 42 and the second head surface 43 that act as an abutment.

[0081] In an embodiment of the invention, which is not shown, instead of the glue distributor 37 there is provided an activating element, for example a hair dryer or a lamp, arranged for activating a glue located on the further side 13.

[0082] In a further embodiment of the invention, which is not shown, the glue distributor 37, or the activating element, distribute or activate a glue on the first face 29 of the edge element 28.

[0083] Below, with reference to Figures 1 to 4, there is described a method for edgebanding a panel 1 of the type disclosed above.

[0084] This method first of all comprises cutting to size a panel 1, which has been suitably assembled previously.

[0085] Subsequently, there is provided milling, by means of a suitable shaped milling tool, the edge portions 6 to obtain the seat 7, in particular milling the first layer 4, the second layer 5 and the intermediate layer 3.

[0086] This milling enables the first head surface 42 and the first tilted wall 46 to be defined in the first layer 4, the second head surface 43 and the second tilted wall 47 to be defined in the second layer 5, and the end wall 45 to be defined in the intermediate layer 3.

[0087] In an embodiment of the invention, which is not shown, there is provided pressing the third end portion 20 of the intermediate layer 3 to obtain a seat 7 having a substantially rectangular-shaped section.

[0088] Subsequently, the glue distributor 37 cooperates with the pair of pressing rollers 38 to fix the supporting element 8 to the edge element 28.

[0089] Subsequently, the glue distributing means 39 distributes a desired quantity of glue on the first side surface 14, on the second side surface 15, on the first active portion 40 and on the second active portion 41.

[0090] Still subsequently, the further pressing roller 44 inserts the supporting element 8 into the seat 7 and presses the first active portion 40 and the second active portion 41 respectively against the first head surface 42 and the second head surface 43.

[0091] This method further comprises cutting the edge element 28 and the supporting element 8 to a desired length, depending on the dimensions of the panel 1, by respectively the first blade 35 and the second blade 36.

[0092] In particular, the first blade 35 and the second blade 36 can cut the edge element 28 and the supporting element 8 before or whilst the further pressing roller 44 inserts a first portion 102 of the supporting element 8 into the seat 7 and presses the first active portion 40 and the second active portion 41 respectively against the first head surface 42 and the second head surface 43.

[0093] Still subsequently, there is provided performing the usual and known finishing operations on the edge element 28.

[0094] It should be noted how the edgebanding method disclosed above is particularly easy and fast and cheap to apply.

[0095] In fact, in this method the supporting element 8 is fixed on the edge element 28 before being inserted into the seat 7.

[0096] In this manner, the slow and laborious grinding operation is eliminated that made known methods par-

ticularly slow and laborious.

[0097] Further, in this method, before or whilst a first portion 102 of the supporting element 8 is inserted into the seat 7, there is provided cutting the edge element 28 and the supporting element 8 to desired lengths.

[0098] This makes particularly simple and fast to edgeband the corner zone 48 of the panel 1 in which the edge element 28 and the supporting element 8 may have different lengths.

[0099] Still, in order to be achieved, this method does not require a grinding apparatus and needs only one edgebanding apparatus.

[0100] On one hand, this enables the costs to be sustained for applying this method to be diminished and on the other hand enables the overall dimensions of an apparatus for performing this method to be reduced.

Claims

1. Method for edgebanding a panel (1) made of wood or similar materials comprising machining an edge portion (6) of said panel (1) to obtain seat means (7), inserting into said seat means (7) a supporting element (8) and fixing on said supporting element (8) an edge element (28), **characterised in that** before said inserting there is provided said fixing and **in that** there is provided cutting to desired lengths said supporting element (8) and said edge element (28).

2. Method according to claim 1, wherein said cutting is provided before said inserting.

3. Method according to claim 1, wherein said cutting is provided during said inserting.

4. Method according to any preceding claim, wherein said cutting to desired lengths comprises cutting said edge element (28) and said supporting element (8) so that an end wall (200, 200') of an end portion (49, 49') of said edge element (28) is substantially aligned on a further end wall (201, 201') of a further end portion (50, 50') of said supporting element (8).

5. Method according to claim 4, wherein said cutting to desired lengths still comprises cutting said edge element (28) and said supporting element (8) so that said end wall (200, 200') is staggered with respect to said further end wall (201, 201') by a first length (V1) substantially the same as the sum of a thickness (S1) of said edge element (28) and of a further thickness (S2) of said supporting element (8), said end portion (49, 49') protruding from said further end portion (50, 50') by said first length (V1).

6. Method according to any one of claims 1 to 3, wherein said cutting to desired lengths comprises cutting said edge element (28) and said supporting element (8) so that an end wall (200, 200') of an end portion (49, 49') of said edge element (28) is staggered with respect to a further end wall (201, 201') of a further end portion (50, 50') of said supporting element (8) by a second length (V2) substantially the same as a thickness (S1) of said edge element (28), said end portion (49, 49') protruding from said further end portion (50, 50') by said second length (V2).

7. Method according to claim 6, wherein said cutting to desired lengths still comprises cutting said edge element (28) and said supporting element (8) so that said end wall (200, 200') is staggered with respect to said further end wall (201, 201') by a third length (V3) substantially the same as a further thickness (S2) of said supporting element (8), said end portion (49, 49') protruding from said further end portion (50, 50') by said third length (V3).

8. Method according to any preceding claim, wherein said fixing comprises gluing said supporting element (8) on said edge element (28), said gluing comprising applying an adhesive substance on said supporting element (8) and/or on said edge element (28), or activating a further adhesive substance located on said supporting element (8) and/or on said edge element (28).

9. Method according to claim 8, wherein said gluing comprises pressing said supporting element (8) against said edge element (28).

10. Method according to any preceding claim, wherein said inserting comprises still gluing said supporting element (8) in said seat means (7).

11. Method according to any preceding claim, wherein said inserting comprises still pressing said edge element (28) against head surfaces (42, 43) of said panel (1), said still pressing comprising further gluing said edge element (28) on said head surfaces (42, 43).

12. Method according to any preceding claim, wherein said panel is a light structure composite panel (1) comprising an intermediate layer (3) interposed between a first layer (4) and a second layer (5), said intermediate layer (3) being made of a material that is lighter than a further material used for making said first layer (4) and said second layer (5).

13. Method according to any preceding claim, wherein said machining comprises milling said edge portion (6), said milling said edge portion (6) comprising milling said first layer (4), said second layer (5) and said intermediate layer (3) so that a bottom wall (12) of said seat means (7) consists of an end wall (45) of said intermediate layer (3).

14. Method according to any preceding claim, wherein said seat means (7) has a cross section with a substantially trapezoidal shape.

15. Method according to any one of claims 12 to 14, as claim 14 is appended to claim 12, wherein said seat means (7) comprises side walls (16, 17) consisting of respective tilted internal walls (46, 47) of said first layer (4) and of said second layer (5).

16. Method according to claim 12, wherein said machining comprises pressing an end portion (20) of said intermediate layer (3) so that a bottom wall (12) of said seat means (7) consists of an end wall (45) of said intermediate layer (3).

17. Method according to claim 16, wherein said seat means (7) has a substantially rectangular-shaped cross section.

18. Panel made of wood or similar materials provided with an intermediate layer (3) interposed between a first layer (4) and a second layer (5), and with an edge portion (6), in which there is obtained a seat (7) comprising a bottom wall (12), **characterised in that** said bottom wall (12) consists of an end wall (45) of said intermediate layer (3) and **in that** there is provided a supporting element (8) arranged for being received at least partially in said seat (7) and for supporting an edge element (28) of said panel (1), said edge element (28) and said supporting element (8) being provided respectively with an end portion (49, 49') and with a further end portion (50, 50') for defining a corner zone (48) of said panel (1).

19. Panel according to claim 18, wherein said end portion (49, 49') and said further end portion (50, 50') respectively comprise an end wall (200, 200') and a further end wall (201, 201').

20. Panel according to claim 19, wherein said end wall (200, 200') is substantially aligned on said further end wall (201, 201').

21. Panel according to claim 19, or 20, wherein said end wall (200, 200') is staggered with respect to said further end wall (201, 201') by a first length (V1) substantially the same as the sum of a thickness (S1) of said edge element (28) and of a further thickness (S2) of said supporting element (8).

22. Panel according to claim 21, wherein said end portion (49, 49') protrudes from said further end portion (50, 50') by said first length (V1).

23. Panel according to claim 19, wherein said end wall (200, 200') is staggered with respect to said further end wall (201, 201') by a second length (V2) substantially the same as a thickness (S1) of said edge element (28).

24. Panel according to claim 23, wherein said end portion (49, 49') protrudes from said further end portion (50, 50') by said second length (V2).

25. Panel according to claim 23, or 24, wherein said end wall (200, 200') is staggered with respect to said further end wall (201, 201') by a third length (V3) substantially the same as a further thickness (S2) of said supporting element (8).

26. Panel according to claim 25, wherein said end portion (49, 49') protrudes from said further end portion (50, 50') by said third length (V3).

27. Panel according to any one of claims 18 to 26, wherein said seat (7) comprises a first side wall (16) and a second side wall (17) consisting respectively of a first tilted internal wall (46) of said first layer (4) and of a second tilted internal wall (47) of said second layer (5).

28. Panel according to any one of claims 18 to 27, wherein said seat (7) has a substantially trapezoidal-shaped cross section.

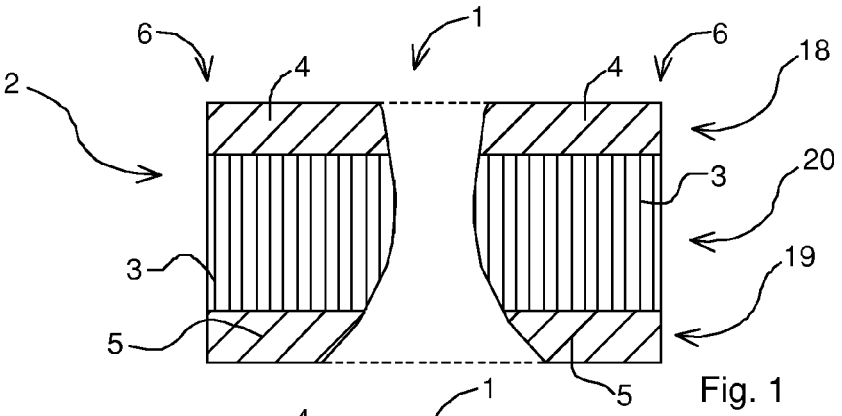


Fig. 1

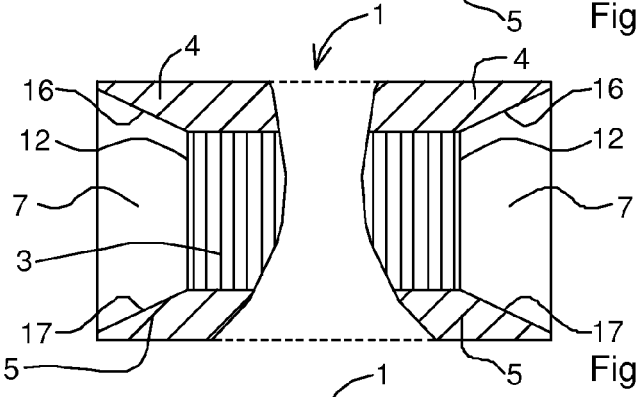


Fig. 2

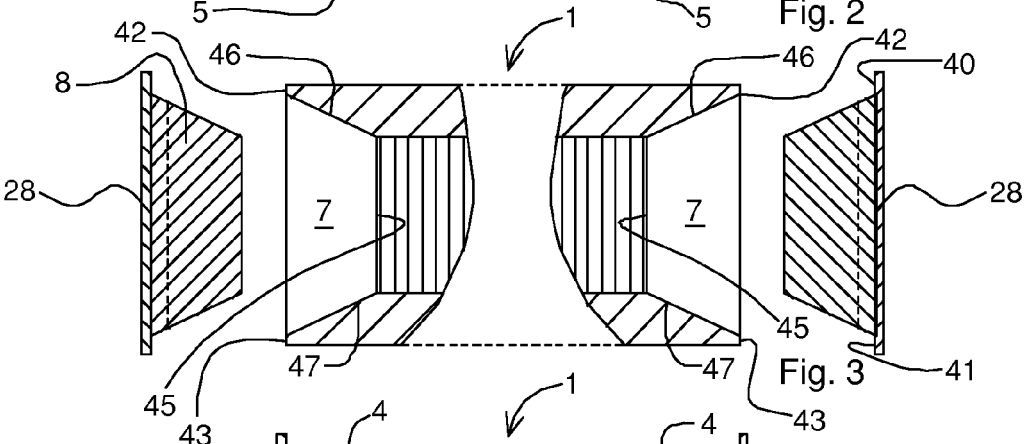
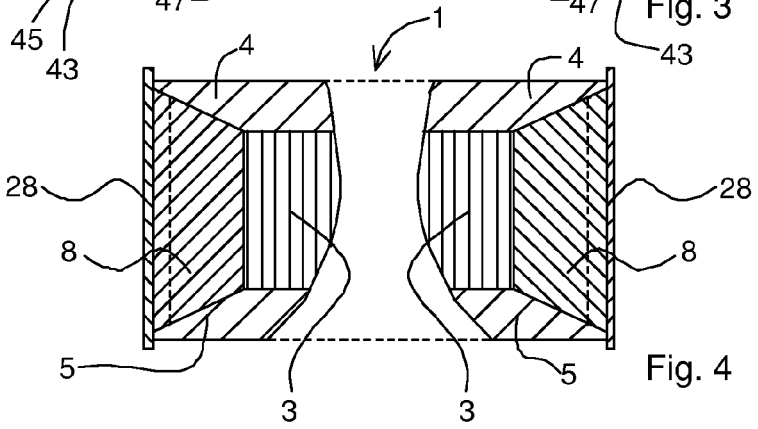


Fig. 3



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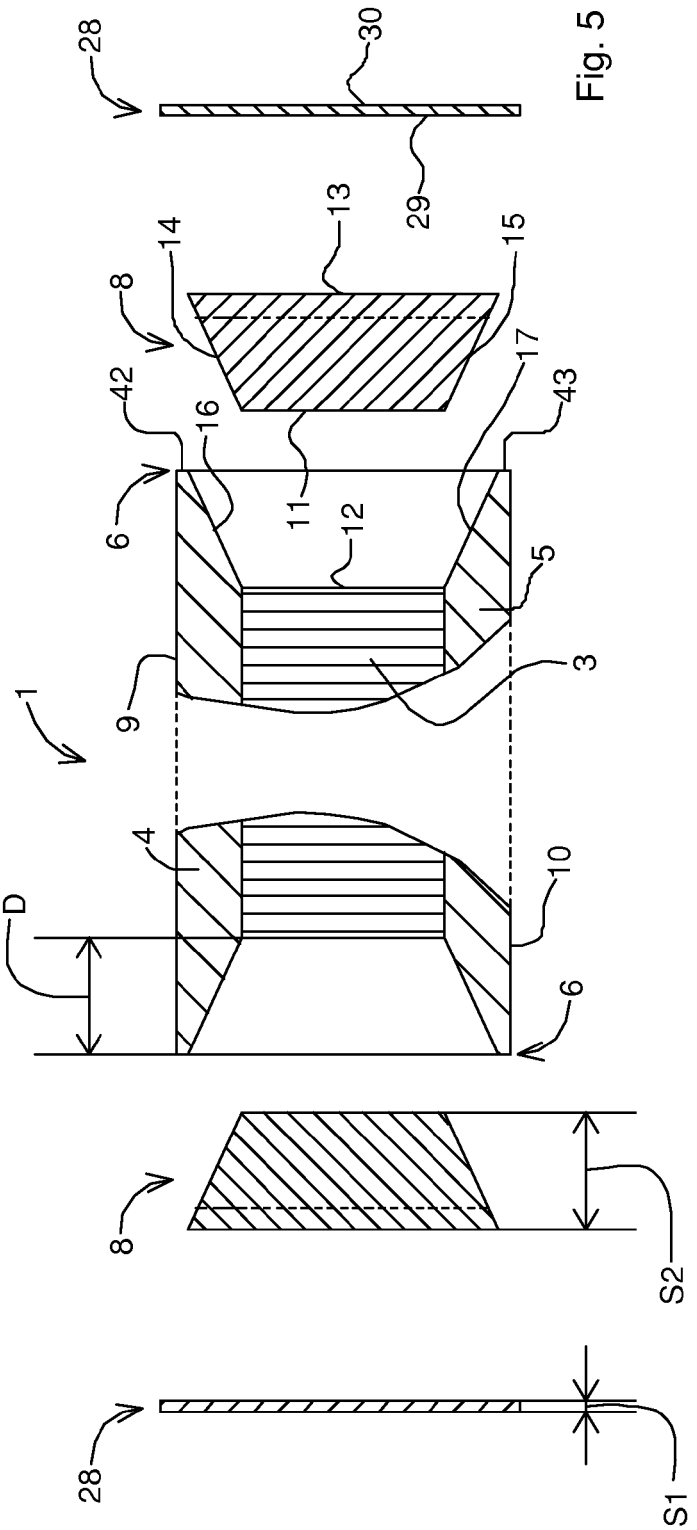
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Fig. 5

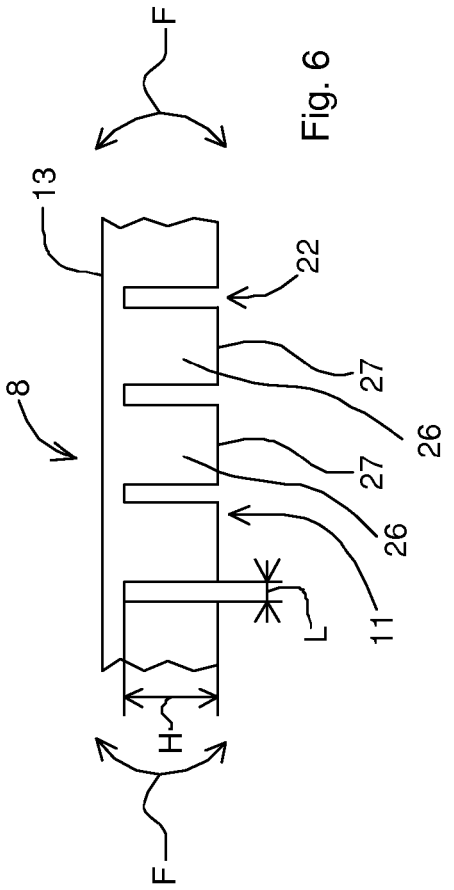
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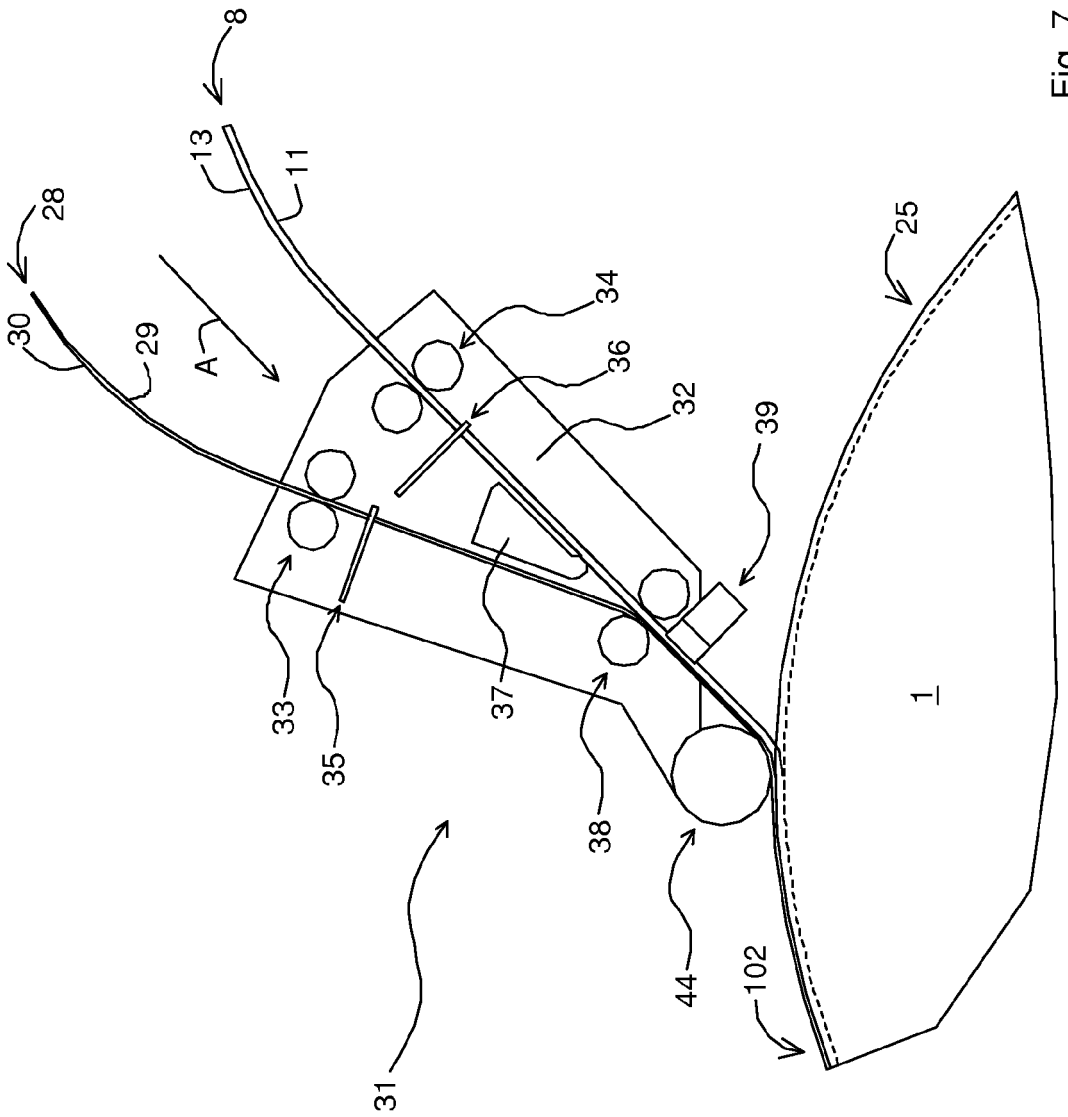
Fig. 6



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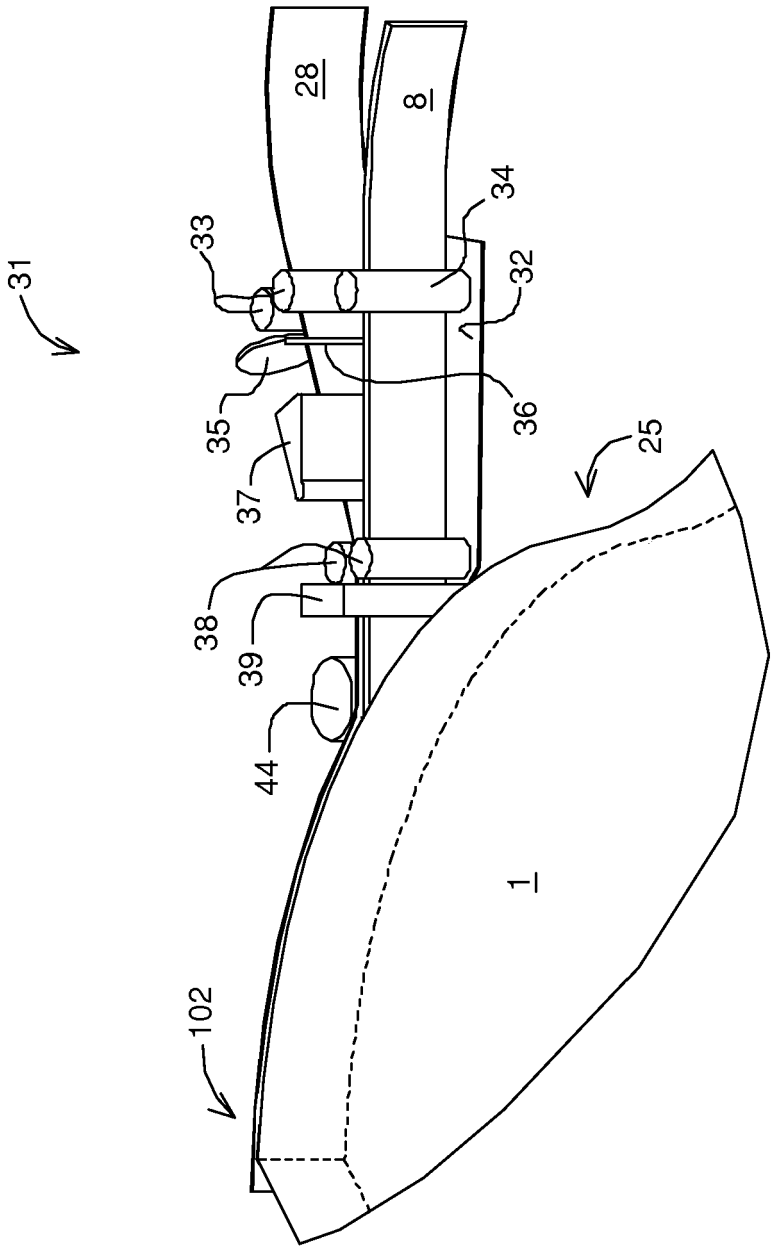

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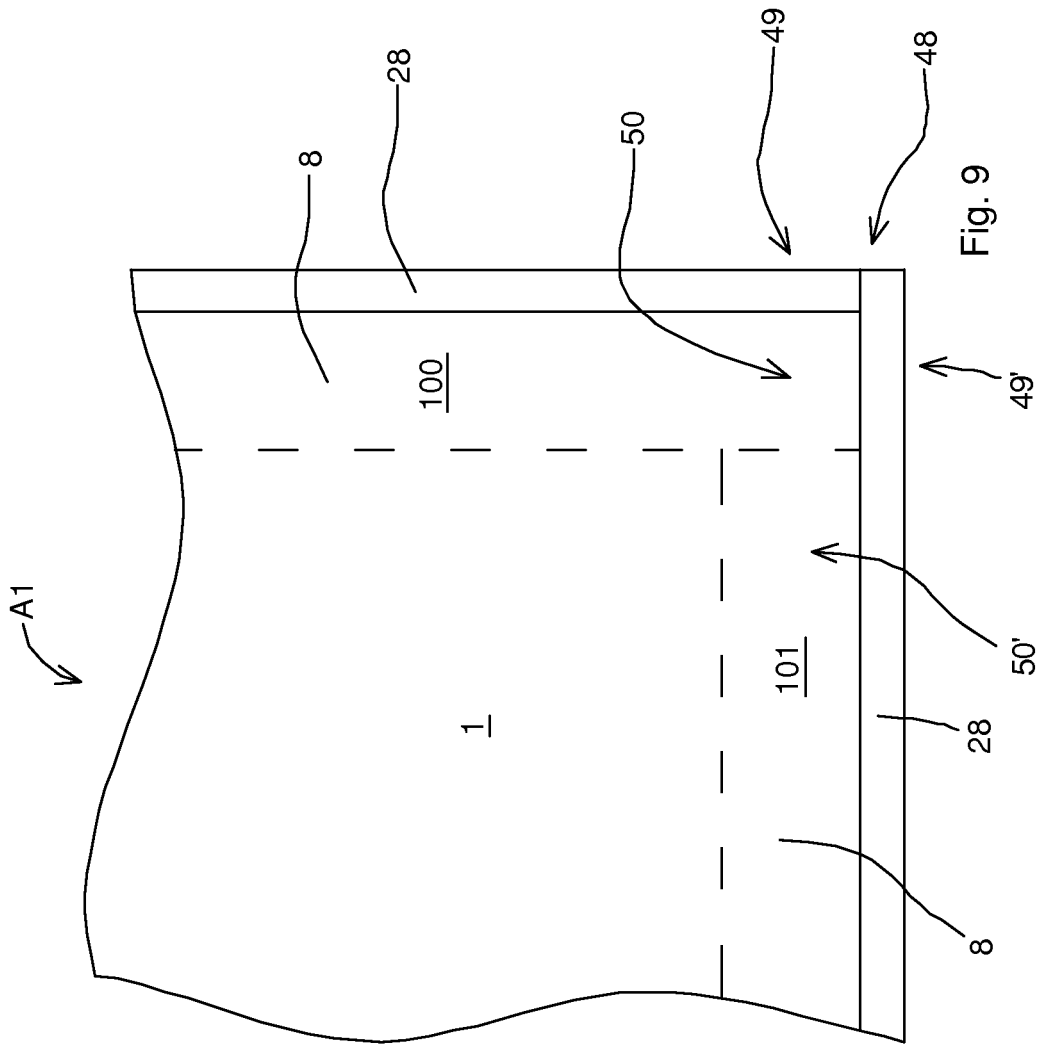

Fig. 9

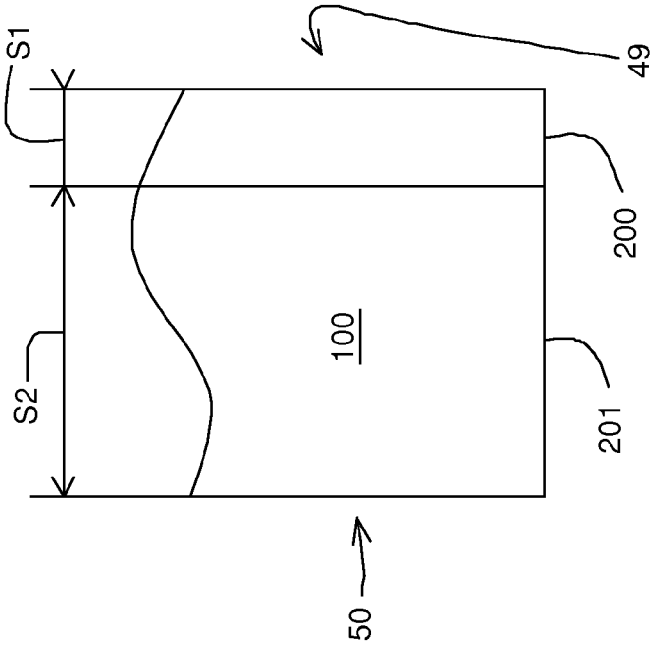

Fig. 10

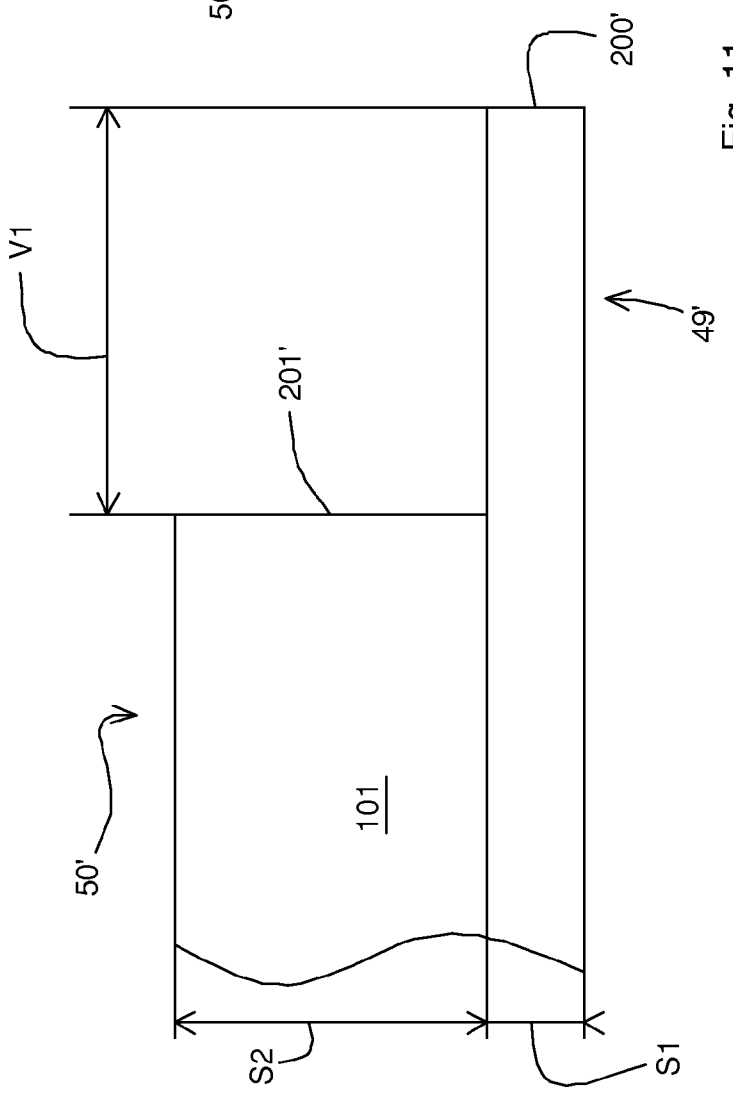

Fig. 11

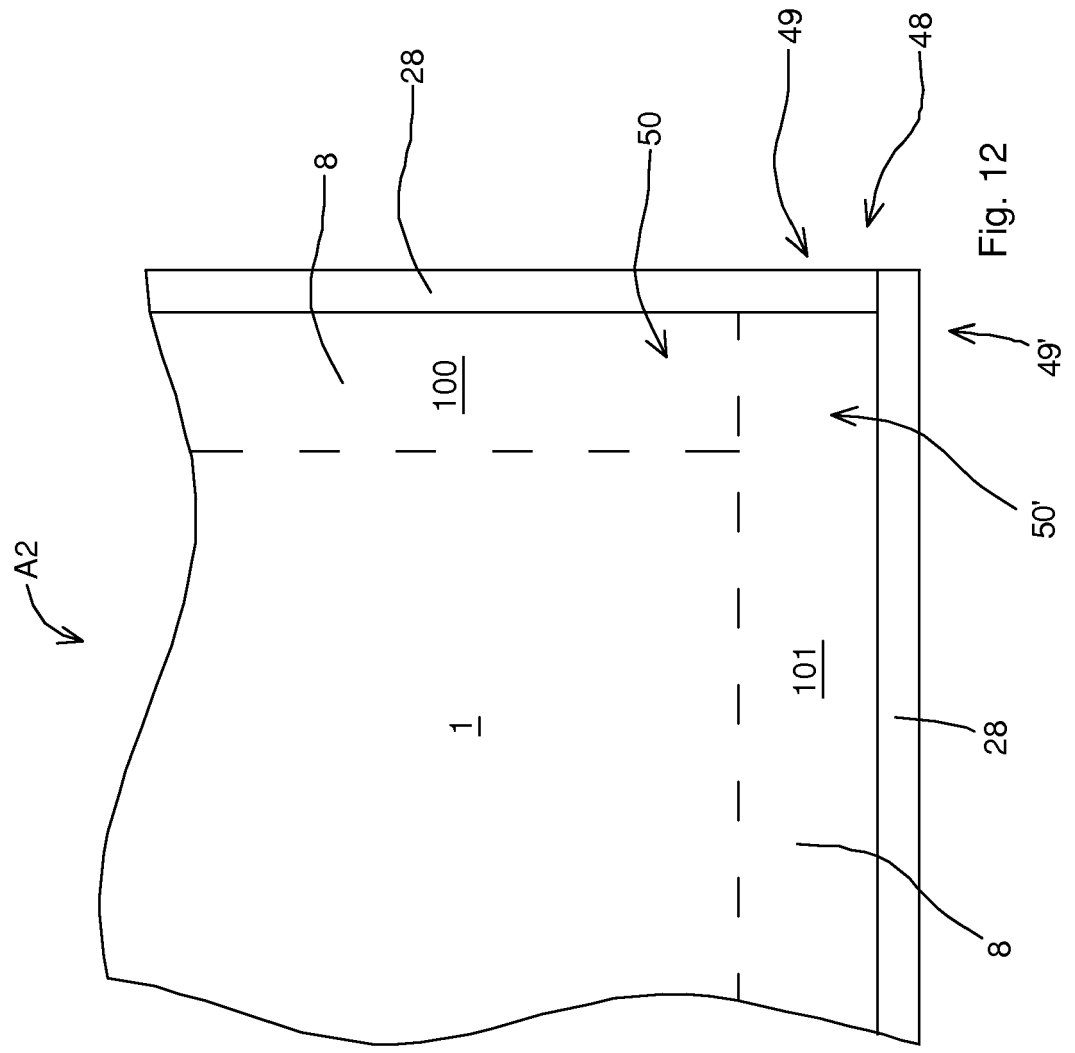

Fig. 12

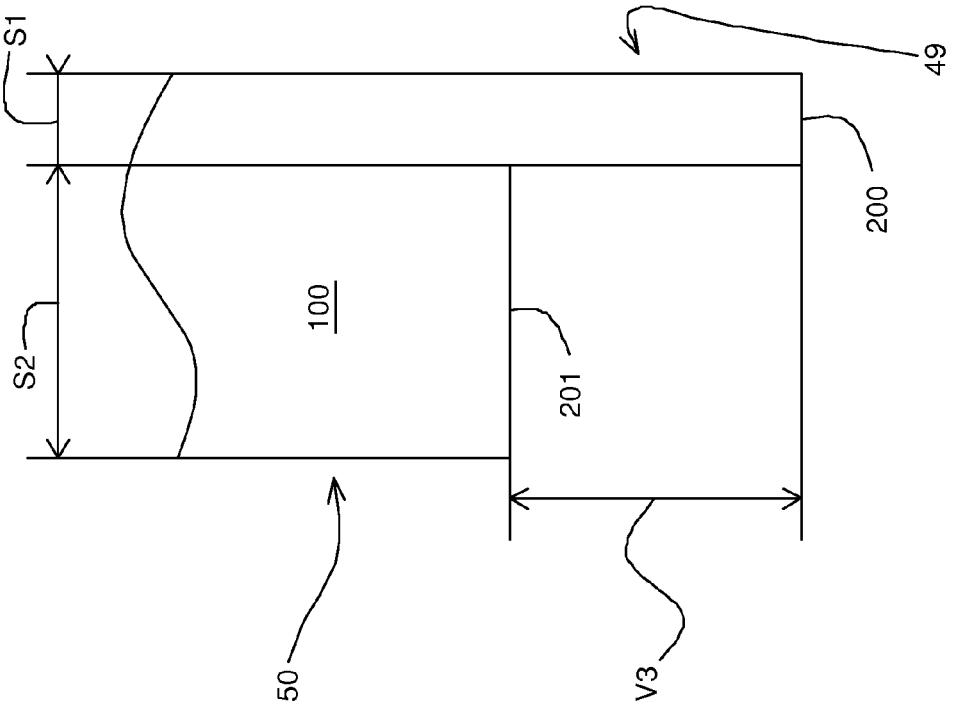

Fig. 13

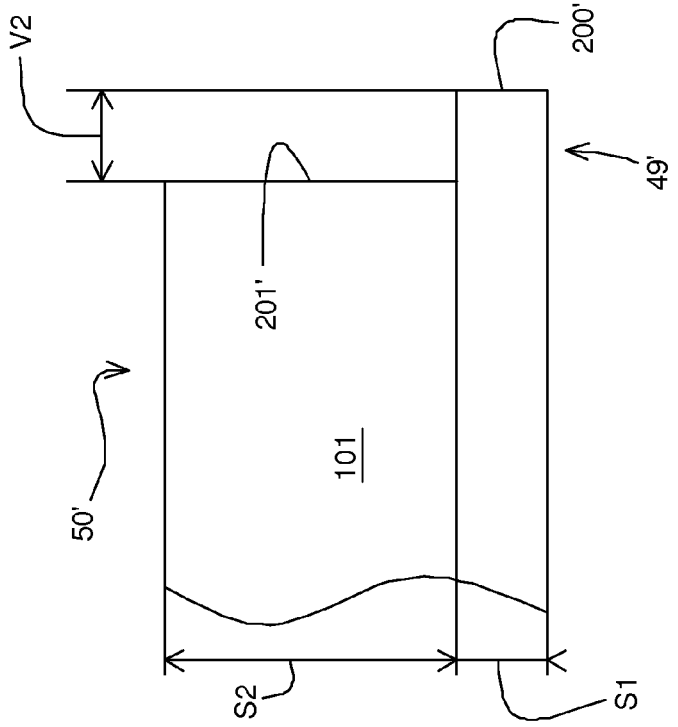

Fig. 14

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EUROPEAN SEARCH REPORT

Application Number
EP 08 16 1095

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 1 530 769 A (TECORA) 28 June 1968 (1968-06-28)	1-3,8-15	INV. B27D5/00
Y		18	B27F1/00
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Y		18	
	* abstract * * paragraph [0008] - paragraph [0010] * * paragraph [0015] - paragraph [0020] * * paragraph [0023] - paragraph [0024] * * figures * -----		

TECHNICAL FIELDS SEARCHED (IPC)
B27D B27F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 April 2009	Hamel, Pascal

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82