



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
14.12.2011 Bulletin 2011/50

(51) Int Cl.:
E04F 15/10^(2006.01)

(21) Application number: **11158595.6**

(22) Date of filing: **17.03.2011**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME

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(30) Priority: **09.06.2010 ES 201000759**

(54) **Panel for floor, wall or ceiling coverings and method for manufacturing said panel**

(57) The invention relates to a panel for floor, wall or ceiling coverings, formed by a structural assembly which consists of a lower layer (1) of recycled thermoplastic material and an upper layer (2) of virgin thermoplastic material, the assembly determining in the lower face at

least one longitudinal rib (4) for inserting at the ends parts (5) in the form of keys for longitudinally joining consecutive panels, whereas an extension (7) protrudes on one side which allow fixing the panel on the application surface with fixing elements which are concealed in the covering which is formed by means of successive panels.

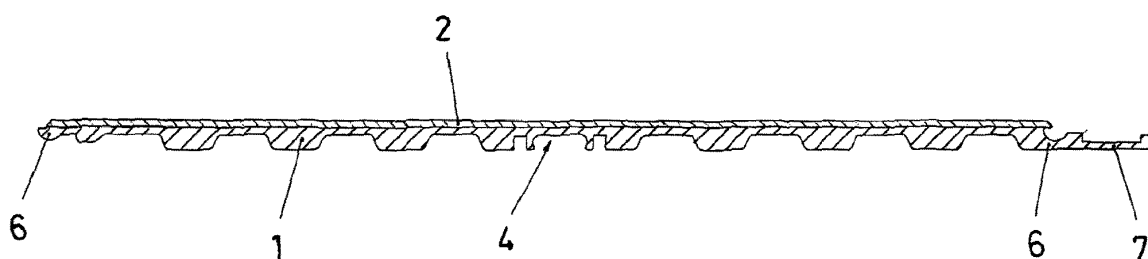


Fig.1

Description

Technical Field

[0001] The present invention relates to the decoration and/or protection of structural surfaces of dwellings by means of coverings formed with panels of PVC or equivalent materials, providing a panel with constructive and functional features which make it particularly advantageous for this function.

State of the Art

[0002] It is conventional to provide decorative and/or protective coverings on structural surfaces of dwellings which can be of different types and materials, amongst which coverings formed by a composition of panels of wood, PVC or equivalent materials are known.

[0003] In this sense, according to patent US 4 426 820, a solution which uses panels provided with reciprocal formations in the opposite side edges to establish joint coupling between consecutive panels is known, said formations being formed by flanges which correspond to half the thickness of the panel, that of an edge in the upper half and that of the other edge in the lower half, said flanges presenting reciprocal fitting shapes such that in the lateral coupling of two consecutive panels the corresponding flanges thereof establish a retention both in the direction of the plane of the coupled panels and in the direction perpendicular to said plane.

[0004] Patent EP 0843763 discloses an alternative solution which determines a slot-shaped formation in a side edge of the panels and a reciprocal flange-shaped formation with respect to the aforementioned slot in the opposite side edge, said formations determining fitting shapes which establish retention in the direction of the plane of the panels which are coupled to one another by means of said formations, the fitting shapes favouring a tightness between the edges of the coupled panels to prevent spaces between them.

[0005] The known solutions are sometimes made with panels the base body of which is formed from an economic material such as pressed wood or recycled PVC, a termination covering being arranged on the surface that will be in view by means of an aesthetic sheet which is fixed on the base body.

[0006] In the case of being made of recycled PVC, it has a dark grey colour and is not available in colours corresponding with the aesthetic appearance that is determined with the termination covering of the visible surface of the panels, as this makes obtaining the base body much more expensive; so when the lateral coupling of the panels is done with bevelled edges, a line the colour of the base body material remains in said joint which affects the aesthetics.

[0007] On the other hand, the configuration of the structural form of the panels in the known solutions allows an assembly of lateral coupling and longitudinal coupling

between the panels, but in the longitudinal coupling a secure retention is not established between the consecutive panels in the direction perpendicular to the plane thereof, so slight discontinuities may exist between the ends of the panels which affect the finish of the application assemblies.

[0008] In another sense, the structural form of conventional panels does not allow establishing a direct fixing thereof in a concealed manner with means of nailing or screwing onto the surface to cover, unfixed coverings being mainly applicable for floors, while for walls or ceilings the use of complex anchors or establishing a fixing of the panels with means passing through them is required, having to resort to complex covering solutions so that that the head of the fixing means is not seen on the surface of the covering.

Object of the Invention

[0009] According to the invention a panel to form decorative and protective coverings on surfaces is provided with constructive features which make it advantageous for its application function, being equally useable for floor, wall, or ceiling coverings.

[0010] This panel object of the invention consists of a structural assembly formed by two co-extruded layers of thermoplastic material, comprising a lower layer of recycled material and a thin upper layer of virgin material, the upper layer determining a surface on which a decorative covering can be applied either by means of a glued accessory sheet or by means of directly painting by silk screen printing or any other conventional technique.

[0011] A relatively economic formation of the panels is achieved with this structural assembly as the majority material thereof is the recycled material of the lower layer, with the peculiarity that the upper layer of virgin material can be obtained in any colour in correspondence with the decorative covering which is applied on the surface, such that in the coupling of bevelled panels, the bevels only affect said upper layer of the panels whereby the couplings between panels can be obtained without lines of an anti-aesthetic colour being present in the joints, a more aesthetic surface of the coverings which are formed with the panels thus being achieved.

[0012] Extensions are formed at the ends of the panels corresponding with the upper half of the thickness at one end and with the lower half of the thickness at the other end, which extensions are determined with a reciprocal fitting configuration with respect to one another, such that in the longitudinal coupling of consecutive panels the corresponding extensions thereof establish a retention in the longitudinal direction.

[0013] In the lower face of the panels at least one longitudinal rib is further determined, in which parts in the form of keys are inserted at the ends whereby a joint is in turn established between the consecutive panels which are longitudinally coupled, such that said parts in the form of keys determine that the corresponding ends

of the coupled panels remain perfectly flush, thereby preventing discontinuity defects on the surface of the coverings which are formed with the panels.

[0014] The side edges of the panels are formed with reciprocally shaped formations whereby the side joint between consecutive panels with retention in the direction of the plane of the coupled panels and in the direction perpendicular to said plane is possible, the formation of one of the edges being defined with a side extension, such that through said side extension the panels can be fixed on the application surface of the coverings which are formed with the panels by means of nails, wood screws or similar means, thereby allowing the formation of coverings both on floors and on walls or ceilings, the fixing means for fixing the panels on the application surface being concealed.

[0015] The manufacture of panels with the aforementioned features is provided by means of a continuous process of coextrusion of the formation materials of the component layers of the panels, forming in said process the two component layers of the panels and the flanges of the side edges, as well as the rib or ribs along the lower face to later cut the continuous part which is obtained into sectors corresponding to the length of the panels; the extensions for the longitudinal coupling of the panels being formed by means of machining the ends of said sectors.

[0016] Therefore the proposed panel has very advantageous constructive and functional features, acquiring its own identity and preferential character with respect to conventional panels of the same application.

Description of the Drawings

[0017]

Figure 1 shows a cross-section view of a panel made according to the object of the invention, with the ends of the upper layer bevelled.

Figure 2 is a cross-section view of two panels such as the one in the previous figure laterally coupled and with the longitudinal joining keys incorporated in the ribs of the lower face.

Figure 3 is a view of the lower face of an assembly of two panels longitudinally coupled according to the invention.

Figure 4 is an enlarged detail of the joining area between the panels of the assembly of Figure 2.

Figure 5 is an example in perspective of the shape of a longitudinal joining key between the panels according to the invention.

Figure 6 is an enlarged detail of the joining area between the panels of the assembly of Figure 3.

Figure 7 is an enlarged detail of section VII-VII indicated in the previous figure.

Figures 8 and 9 are views equivalent to Figures 1 and 2 respectively, with an embodiment of the panels without bevels at the ends of the upper layer.

Detailed Description of the Invention

[0018] The object of the invention relates to the structuring and manufacture of a panel to form coverings for applying on floors, walls, or ceilings, with features that allow obtaining the coverings without anti-aesthetic effects.

[0019] The proposed panel consists of two layers (1 and 2) which are integral with one another, the lower layer (1) being of recycled thermoplastic material while the upper layer (2) is of virgin thermoplastic material. These materials can be PVC, this merely being understood however as a possible non-limiting practical embodiment.

[0020] In that structural assembly, the lower layer (1) of recycled material is thicker than the upper layer (2) of virgin material such that the majority proportion is of recycled material, which makes the assembly relatively economical, while the layer (2) of virgin material determines a surface on which a decorative covering can be applied both by means of fixing an accessory sheet and by means of directly painting by silk screen printing or any other conventional technique.

[0021] On the other hand, in the embodiments of panels with bevelled edges, as shown in Figure 1, to form coverings with a recessed line between the rows of panels, as can be seen in Figure 2, the bevels of the edges of the panels only affect the upper layer (2) of virgin material which can be made of any colour and therefore of a colour coinciding with the decorative covering which is going to be applied on the surface of the panels, whereby the recessed line of the joint between the panels is a colour uniform with the surface of the covering formed with the panels, preventing the appearance of an anti-aesthetic line of another colour in said recessed line of the joints between the panels as occurs if the bevels leave the recycled material of the layer (1) in view, as said material is generally of a colour that does not coincide with the aesthetic covering of the panels. Notwithstanding, the panel can also be made without bevels on the edges for lateral coupling between panels without a recessed line in the joint according to the embodiment of Figures 8 and 9.

[0022] The ends of the panels are determined with extensions (3) formed with reciprocally fitting recesses with respect to one another, one in the upper half of the thickness of the panel and the other in the lower half, such that by means of said extensions (3) a longitudinal joint coupling can be established between consecutive panels by means of assembly of the corresponding extensions (3) thereof which establish a retention in the longitudinal direction between the joined panels as is seen in Figures 2 and 4.

[0023] Along the lower face of the structural assembly of the panels at least one rib (4) is furthermore determined, in which parts (5) in the form of keys fit at the ends whereby a joint is in turn established between the consecutive panels which are longitudinally coupled togeth-

er, as seen in Figures 3 and 6, such that said parts (5) in the form of keys determine a retention between the joined panels in the direction perpendicular to the plane thereof which assures that the panels in the joint are perfectly flush, preventing anti-aesthetic discontinuities between them, as seen in Figure 7.

[0024] Depending on the width of the panels, the panels can be provided with one or more ribs (4) for the incorporation of parts (5) in the form of keys, said ribs (4) being provided with a C-shaped section (Figure 1) and the parts (5) in the form of keys with a corresponding rectangular-shaped section with rounded side edges (Figure 5), such that said parts (5) in the form of keys can be fitted in the ribs (4) of the panels by means of insertion at the end or by means of the lateral introduction under pressure with a single tap; resulting in any case in a retention adjustment of the aforementioned parts (5) in the form of keys inside the rib (4) in which they are inserted.

[0025] In the commercial application of the panels, the parts (5) in the form of keys can be incorporated at one end thereof, such that for joining the panels together they only have to be assembled together as they come equipped; but to facilitate packaging, the panels and the parts (5) in the form of keys can be dispensed separately to incorporate the parts (5) in the form of keys in the panels when they are installed in the application assemblies.

[0026] On the other hand, the side edges of the panels are determined with conventional type coupling formations (6), these formations defining (6) reciprocal fittings which allow establishing a side joint between consecutive panels with retention in the direction of the plane of the joined panels and in the perpendicular direction.

[0027] According to the invention, the formation (6) of one of the side edges of the panels is further determined with an extension (7) in relation to the plane of the lower face of the corresponding panel, such that in the assembly of the coverings which are formed with the panels, the latter can be fixed on the surface to cover by means of the insertion of nails, wood screws or other conventional means through said extension (7), whereby these panels can be used to form coverings both on floors and on walls or ceilings, the heads of the fixing elements of the panels being concealed in the coverings which are formed.

[0028] The manufacture of said panels object of the invention is provided by means of a continuous process of coextrusion of the formation materials of the component layers (1 and 2) of the panels, obtaining a continuous part made up of layers (1 and 2) integrally joined to one another, with the formations (6) of the side edges and the extension (7) and with the rib or ribs (4) of the lower face; said continuous part then being cut into pieces corresponding to the length of the panels, which pieces are then machined to form at their ends the extensions (3) for the longitudinal joint coupling between the panels.

[0029] The parts (5) in the form of keys can be of any

rigid material such as wood, plastic, aluminium, etc., being manufactured independently from the panels, preferably forming a continuous bar by means of machining, extrusion or any other conventional technique suitable for the formation material, the parts (5) in the form of keys being cut with the desired length from the bar.

Claims

1. A panel for floor, wall or ceiling coverings, being provided with side and end formations for joint coupling between consecutive panels, **characterised in that** it consists of a structural assembly formed by two layers (1 and 2) integral with one another, the lower layer (1) being of recycled thermoplastic material, while the upper layer (2) is of virgin thermoplastic material, the assembly determining on the lower face at least one longitudinal rib (4) in which parts (5) in the form of keys are inserted at the ends to establish a joint with perpendicular retention between consecutive panels, whereas an extension (7) protrudes on one side through which the panel can be fixed on the application surface with fixing elements which are concealed in the covering which is formed by means of successive panels.
2. The panel for floor, wall or ceiling coverings according to claim 1, **characterised in that** the lower layer (1) of recycled thermoplastic material is thicker than the upper layer (2) of virgin thermoplastic material, said lower layer including (1) a majority proportion of recycled material in the panel; and **in that** according to a preferred embodiment, the thermoplastic material of the layers (1 and 2) is PVC.
3. The panel for floor, wall or ceiling coverings according to claim 1, **characterised in that** the rib or ribs (4) of the lower face have a C-shaped section, the parts (5) in the form of keys which are inserted in said ribs (4) having a corresponding rectangular-shaped section with rounded side edges.
4. The panel for floor, wall or ceiling coverings according to claim 1, **characterised in that** the side extension (7) corresponds with the plane of the lower face of the panel.
5. The panel for floor, wall or ceiling coverings according to claims 1 and 2, **characterised in that** bevels affecting only the upper layer (2) of virgin material are formed in the side edges of the structural assembly.
6. A method for manufacturing the panel of claim 1, **characterised in that** a continuous coextrusion of a recycled thermoplastic material and a virgin thermoplastic material is performed, forming a continu-

ous part made up of a lower layer (1) of recycled material and an upper layer (2) of virgin material integrally joined together, with side formations (6) for joining consecutive panels, the continuous part being cut into sectors equivalent to the length of the panels to be obtained, which sectors are machined to form coupling extensions (3) at their ends for longitudinally joining successive panels.

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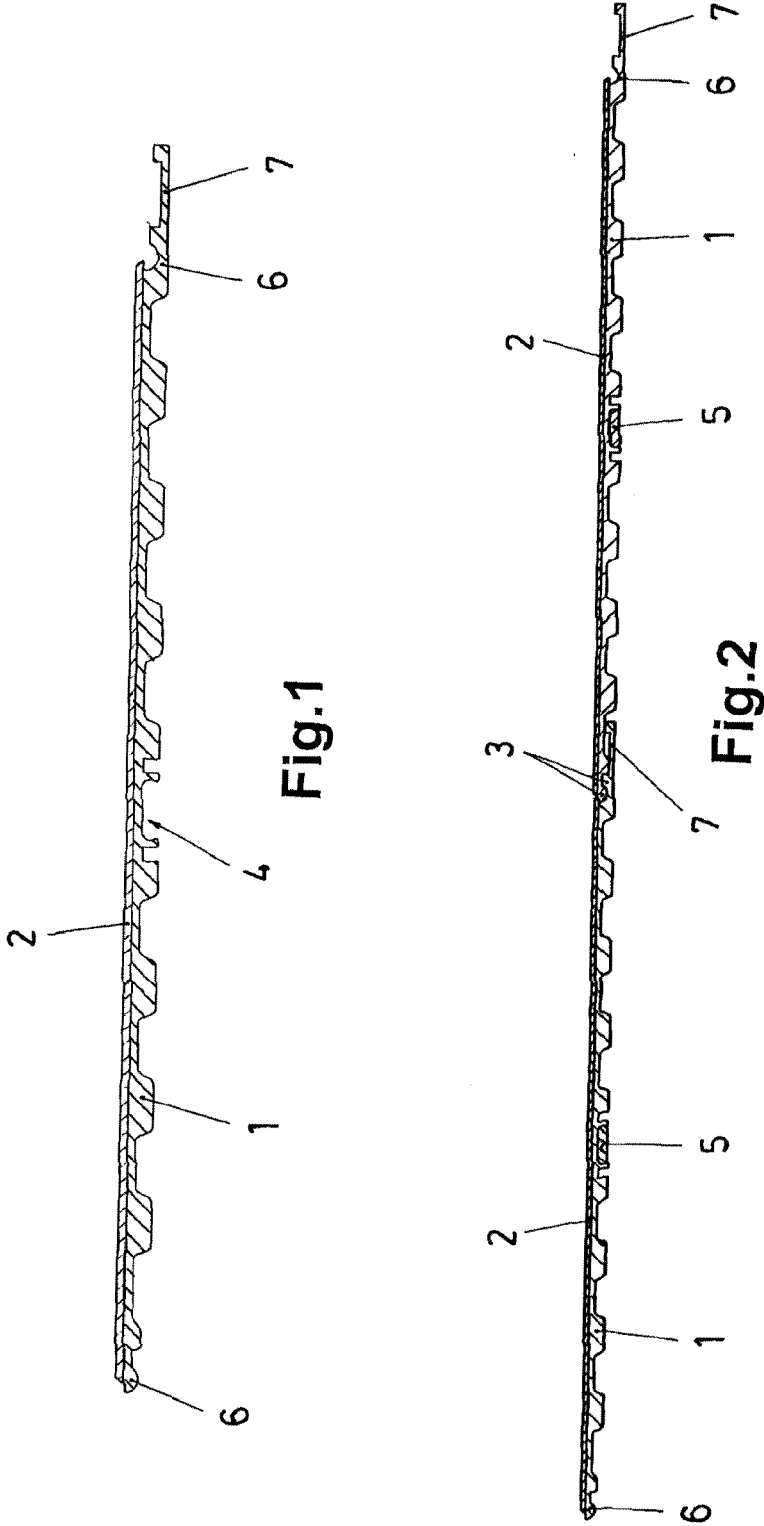
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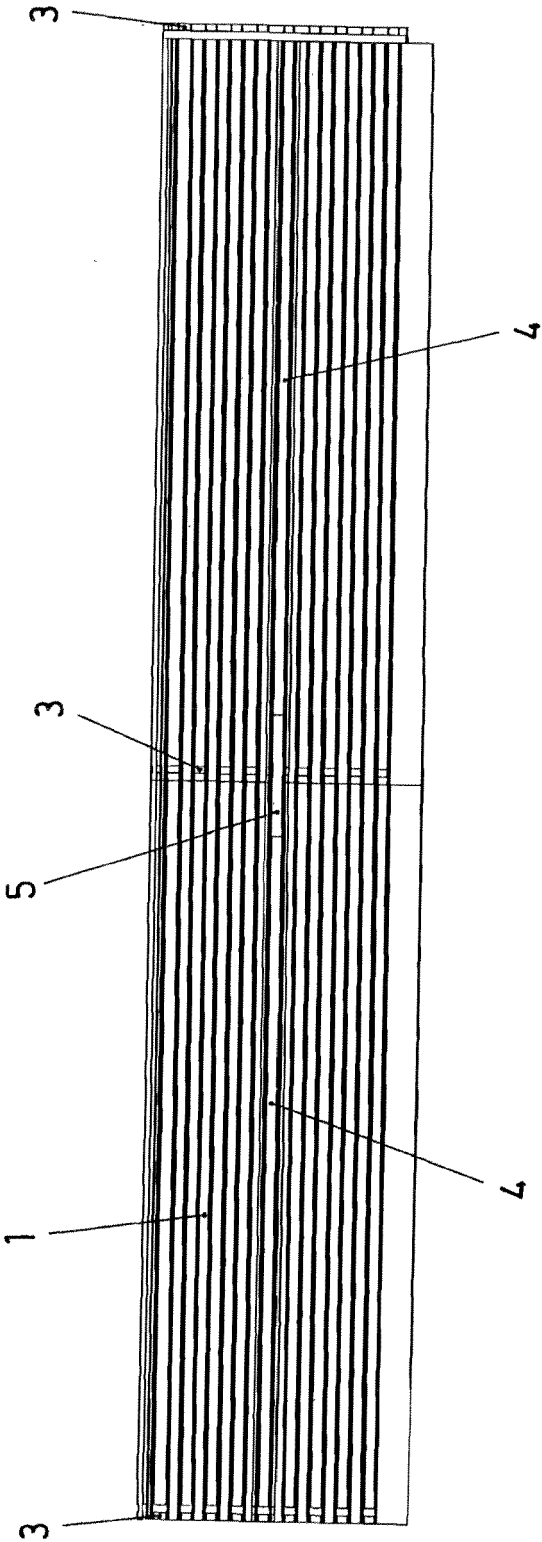


Fig.3

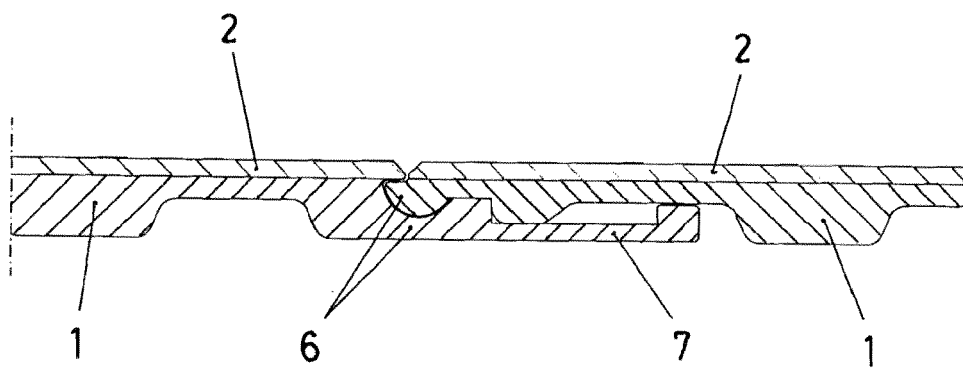


Fig.4

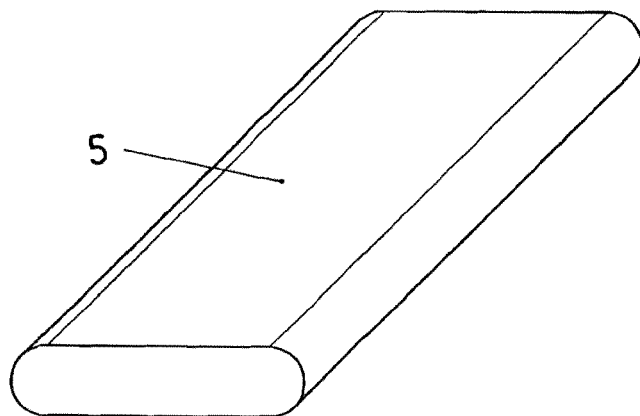


Fig.5

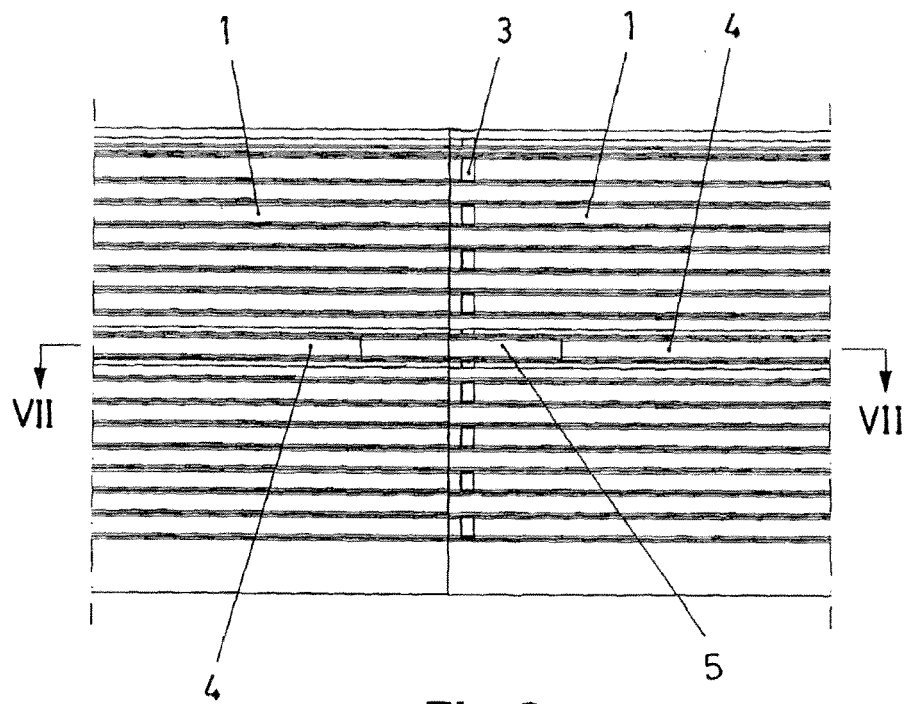


Fig.6

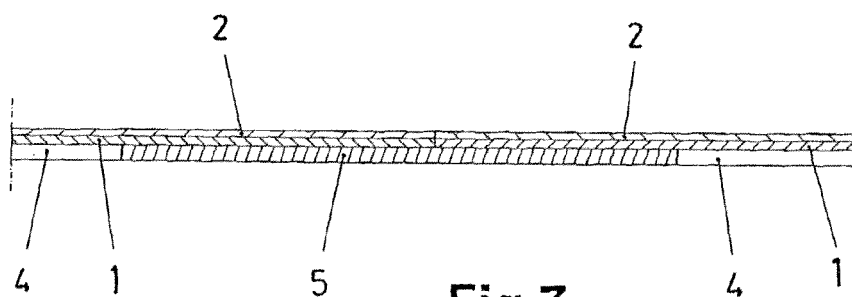


Fig.7

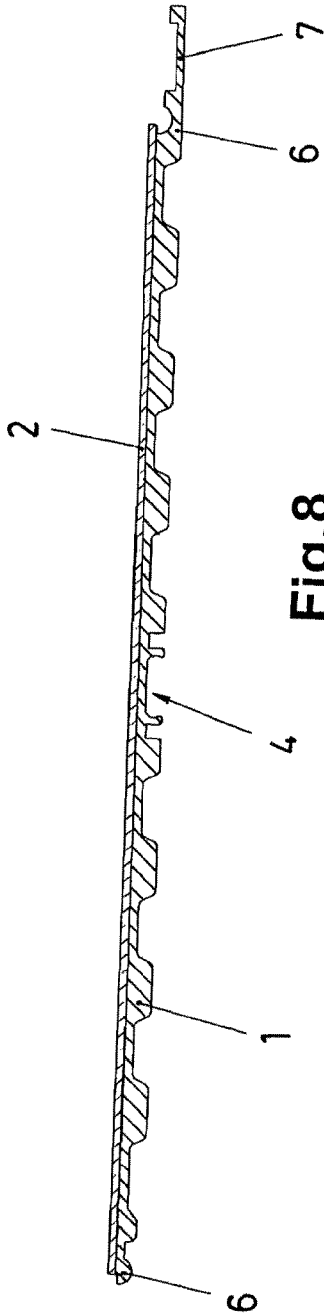


Fig. 8

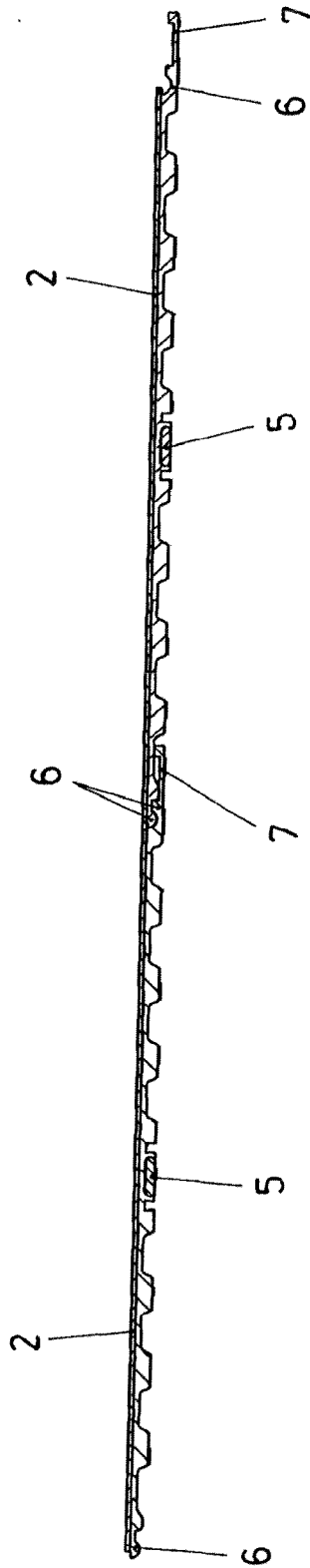


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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