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(54) **A panel and a flooring**

Paneel und Fußbodenbelag

Panneau et plancher

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**WO-A1-97/31776** **WO-A1-02/090129**  
**WO-A2-2009/087440**

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## Description

**[0001]** The present invention relates to a panel comprising on at least a side a decoration pattern, wherein the side is provided with an upper surface including a surface structure pattern.

**[0002]** Such a panel is known from WO 02/090129. The known panel often imitates a real material, for example wood or stone. The decoration pattern of a panel may comprise a pattern of parallel and adjacent wood strips and each wood strip may comprise a pattern of wood nerves and knots or the like. Much more patterns are known such as tiles, etc. Sometimes the natural appearance of known panels is further improved by a surface structure pattern which also imitates a texture of genuine materials such as wood. In the field of laminated floor panels, LVT (Laminate Vinyl Tile), vinyl panels and the like, the term embossing-in-register is well known. In such panels the surface structure pattern is in register with the decoration pattern. The decoration pattern can be printed on a resin impregnated paper sheet, which is located between a core and an overlay of a resin impregnated paper sheet in a press at elevated temperature. The decoration pattern can be printed, on the paper sheet before or after impregnation, or by means of contact-printing or non contact-printing. The press plate or press roller is provided with tiny projections to create a texture on the overlay during pressing, Embossing-in-register requires a very careful manufacturing process in which the surface structure pattern needs to match accurately with the decoration pattern. This means that the mutual positions of the press plate or roller and the decoration pattern must be adjusted carefully.

**[0003]** It is an object of the present invention to provide a panel which can be manufactured in a simple manner.

**[0004]** To obtain this object, the panel according to the invention includes a surface structure pattern which comprises at least a region including a transition at a border of the region, wherein the surface structure of the transition is different from the surface structure beyond the border as seen from said region for making the border visible, and wherein the decoration pattern lacks a visible complementary transition at said border.

**[0005]** It is noted that panels that are not embossed-in-register are known in the prior art, but such panels have a decoration pattern including visible borders, for example strips of wood within a panel, whereas the surface structure pattern arbitrarily varies with respect to the decoration pattern. In such non embossed-in-register panels the nerves of the decoration pattern are imitated by the surface structure pattern, for example, but the borders of individual strips are not imitated since this would not be attractive in case of non embossed-in-register panels. According to the present invention, the surface structure creates a visible border, whereas the decoration pattern does not at that location.

**[0006]** Due to these features a visible side of the panel can be provided with a pattern including visible borders

without the necessity of accurately matching thereof with complementary borders of an underlying decoration pattern. This makes the manufacturing process much simpler.

5 **[0007]** The border may surround the region such that the region forms a separately visible unit on the panel. The border may have an ornamental shape, for example a star, circle, rectangle, flower, or the like.

10 **[0008]** The transition and the remainder of the region may comprise substantially the same surface structure pattern. For example, the region has a uniform gloss level which is different from the remainder of the surface structure of the panel or at least different with respect to at least an adjacent surface structure area of the panel, such as an adjacent imitated wood strip. The observer will perceive the region as if the decoration pattern also has a visible border pattern at the border of the region.

15 **[0009]** In a practical embodiment the transition comprises a line shape, preferably a grout line. This may be advantageous for simulating a tile pattern. This means that the tile pattern is created by the surface structure and not by the decoration pattern.

20 **[0010]** The decoration pattern may be equally coloured or comprise a wood nerve pattern, but alternative patterns are conceivable. Particularly, in case of floor panels which imitate real wood planks the wood nerve pattern will be attractive. The surface structure pattern may imitate separate wood strips in a panel whereas the decoration pattern comprises a uniform wood nerve pattern without clear borders between the strips. Due to the strip pattern of the surface structure the observer gets the impression that the decoration pattern also varies with the strips.

25 **[0011]** In a preferred embodiment the surface structure of the region disposed further away from a panel edge has a finer surface structure than the region disposed closer to the panel edge. In other words, the gloss level may be higher in a middle region of the panel with respect to its edges since the wear level at the edges is relatively high in practical use as a floor panel. This would result in earlier deterioration of the gloss level at the edges.

30 **[0012]** When the panel is a laminate including a core and an overlay, the decoration pattern may be provided on the core and the overlay may be provided with the surface structure pattern. More specifically, the decoration pattern may be provided on a decoration layer which is laminated between the core and the overlay.

35 **[0013]** The invention is also related to a flooring which comprises at least two panels as described hereinbefore, wherein the surface structure pattern is adapted such that a portion of said region continues in a corresponding region of the adjacent panel. As a result the observer gets the impression that the panels do not have an edge at that location. As a result the observer gets the impression that the panels do not have an edge at that location. It is possible that portions adjacent to opposite short edges of rectangular panels have identical surface structure patterns. For example, the panel starts and ends with the

same gloss level at those portions as seen in longitudinal direction of the panels, such that in case of a flooring the adjacent panels always have complementary surface structure patterns at their short edges.

**[0014]** The invention will hereafter be further explained with reference to the drawings showing embodiments of the panel according to the invention by way of example.

Fig. 1 is a very schematic exploded top view of an embodiment of a panel according to the invention.

Fig. 2 is a similar view as the lower picture of Fig. 1 of an alternative embodiment.

Fig. 3 is an enlarged portion of an alternative panel of the panel according to the lower picture of Fig. 1, indicated by III.

Fig. 4 is a very schematic top view of a portion of an embodiment of an alternative panel.

Figs. 5-8 are top views of adjacent panels in a flooring.

**[0015]** The lower picture of Fig. 1 illustrates an embodiment of a panel 1 according to the invention. The panel 1 is a rectangular laminate which includes a core and an overlay 2. The panel 1 may be called a sheet, lamella, strip, plate, board or the like. The core may be made of MDF, HDF, WPC, engineered polymer, vinyl sheet, LVT or the like, and is provided with a decoration pattern 3 which can be directly printed onto the core or printed on a decorative sheet and laminated or glued onto the core. In this case the overlay 2 is a transparent layer such that the decoration pattern 3 remains visible. The overlay 2 is provided with a surface structure pattern 4 by means of a press, a press roller, by means of a release paper or any conceivable embossing means in general. For clarity reasons the upper picture of Fig. 1 shows the panel 1 including the decoration pattern 3 without the overlay 2, and the middle picture of Fig. 1 shows the overlay 2 separately.

**[0016]** In the embodiment as shown in Fig. 1 the decoration pattern 3 comprises diagonal lines and the surface structure pattern 4 comprises a rectangular strip 5 having a different gloss level with respect to at least the adjacent area outside the rectangular strip 5. In this case the gloss level of the strip 5 is uniform, but this is not necessary. The deviating gloss level is indicated by horizontal dashed lines as shown in the middle picture of Fig. 1. The surface structure pattern 4 can be obtained by embossing during laminating the panel 1.

**[0017]** The deviating gloss level of the strip 5 influences the appearance of the decoration pattern 3. This is illustrated by thicker lines of the decoration pattern 3 within the rectangular strip 5 in the lower picture of Fig. 1. When looking at the upper side of the panel 1 an observer will get the impression that the decoration pattern 3 in the strip 5 is also different, but in reality it is only the surface structure that deviates with respect to adjacent surface structure areas.

**[0018]** Fig. 2 shows an alternative embodiment of the

panel 1, of which the surface structure pattern 4 comprises a second rectangular strip 5a which has a different gloss level with respect to the rectangular strip 5. If the decoration pattern 3 imitates a pattern of wood nerves, the strips 5 and 5a look like different wood planks since the observer sees a pattern of wood nerves which has a discontinuous shape at a border between the strips 5 and 5a. The discontinuous character is a consequence of the deviating surface structure pattern 4 between the strip 5 and the second strip 5a, but not a consequence of a deviating decoration pattern 3 between the strip 5 and the second strip 5a.

**[0019]** It is noted that the rectangular borders of the strips 5 and 5a are only indicated as solid lines for explanatory reasons but this is not necessarily part of the surface structure pattern 4, see the middle picture of Fig. 1. This is an essential difference compared to embossing-in-register since in that case the borders of the strips are typically contained in the decoration pattern 3.

**[0020]** Fig. 3 shows a portion of the panel 1 as shown in the lower picture of Fig. 1 on a larger scale and with a frame along the border of the strip 5. The frame may represent a grout line, for example.

**[0021]** Fig. 3 shows a rectangular region 6 of the surface structure pattern 4. The region 6 includes an edge portion which is called a transition 7 at a border 8 of the region 6. In this case the surface structure 4 of the transition 7 is different from the surface structure 4 beyond the border 8 as seen from the region 6, in the drawing of Fig. 3 the surface structure area above the border 8. This makes the border 8 visible. As explained hereinbefore the transition 7 and the remainder of the region 6 may comprise substantially the same surface structure pattern 4, which still make the border 8 visible, for example the whole region 6 may have the same gloss level. According to the invention, the decoration pattern 3 lacks a visible complementary transition at said border 8.

**[0022]** In an alternative embodiment the border 8 may surround the region 6. This is for example the case in the embodiment of Fig. 1, in which, the transition 7 and the remainder of the region 6 comprise the same surface structure pattern 4 or gloss level. In Fig. 1 the region 6 or strip 5 has a rectangular shape, but may also have alternative shapes, for example a circle, oval, star or the like.

**[0023]** Fig. 4 shows a part of panel 1 which imitates a tile pattern. In this case the panel 1 contains a pattern of rows of three tiles next to each other, for example 20 times three tiles per panel 1. As described hereinbefore, the tile pattern is not created by the decoration pattern 3, but only by the square tiles surrounded by grout lines in the surface structure pattern. As can be observed in Fig. 4 the widths of the grout lines at the opposite side edges of the panel 1 are half of the widths of the grout lines in the remainder of the panel 1; in Fig. 4 the opposite side edges of the panel 1 extend at the upper and lower side of the drawing. This means that when two similar panels 1 are laid adjacent to each other the tile pattern

will continue over the panel edge and the width of the resulting grout line between tiles at adjacent edges of the panels 1 is substantially the same as in the rest of the panels 1. Fig. 4 shows two identical regions 6 of the surface structure pattern 4. Each of the regions 6 include a transition 7 at a border 8 of the region 6. Also in this case the surface structure 4 of the transition 7 is different from the surface structure 4 beyond the border 8 as seen from the region 6. This makes the border 8 visible. In this case the transition 7 and the remainder of the region 6 comprise different surface structure patterns 4 in order to create a difference between tile and grout line. If the decoration pattern 3 is a single colour, for example, and the surface structure pattern is such that the surface structure 4 or gloss level of the tiles is identical the observer will see identical tiles. It is, however, also conceivable that the surface structure 4 or gloss level at both sides of a grout line is different in order to provide an imitation of varying tiles.

**[0024]** It may be advantageous that the gloss level of the tile in the middle of three adjacent tiles in Fig. 4, as seen in vertical direction of Fig. 4, is higher than that of the tiles adjacent to the opposite edges of the panel 1, since the edges are more sensitive to wear. More in general, the surface structure 4 of the region 6 disposed further away from a panel edge has a finer surface structure than the region 6 disposed closer to the panel edge.

**[0025]** Fig. 5 shows two panels 1 of a flooring, which are coupled to each other by coupling members, for example by means of a tongue-and-groove connection, or which are attached to the ground next to each other, for example by means of glue. Both panels 1 are provided with identical decoration patterns 3, but different surface structure patterns 4. The left panel 1 has a region 6 including a border 8 which is visible since the surface structure 4 or gloss level within the region 6 is different from at least an adjacent area of the surface structure 4. The right panel 1 includes a corresponding region 6 at the left side edge thereof. Since the surface structure within the regions 6 of both panels are similar the observer will perceive the regions 6 of both panels 1 together as a single strip such that the edge between the adjacent panels 1 seems to be hidden at the regions 6.

**[0026]** Fig. 6 shows a part of an alternative flooring, in which the regions 6 of the panels 1 are provided with transitions 7 that deviate from at least adjacent areas or from the remainder of the regions 6.

**[0027]** Fig. 7 illustrates portions of adjacent panels 1 having a surface structure pattern 4 that imitates parallel wood strips. The gloss level of outer strips at opposite short side edges of the panels 1 continue from the one to the other panel 1. In such a flooring the short edges of the panels 1 are less evident, whereas the panels can be made rather simple since no embossment-in-register is required.

**[0028]** Fig. 8 shows three adjacent panels 1 having surface structure patterns 4 that each imitate two parallel wood strips. The five strips of each panel 1 are different

in gloss level, as indicated by A-E. The leftmost and rightmost panels 1 are identical. The underlying decoration pattern 3 may be a uniform wood nerve pattern and may be similar for each of the three panels 1. Following the peripheral edge of the panel 1 each gloss level A-E is present only once. In this case the panels 1 are manufactured such that at opposite short edges the lower strips continue over the panel edges. The lower strip of the leftmost panel ends with gloss level C at its right side and the lower strip of the middle panel starts with gloss level C at its left side. When the panels are attached to each other the observer will get the impression that the lower strips do not have edges at the panel edges.

**[0029]** From the forgoing it will be clear that the invention provides a panel which imitates real materials quite well, whereas manufacturing is relatively simple.

**[0030]** The invention is not restricted to the above-described embodiments, which can be varied in a number of ways within the scope of the claims. For instance, the overlay may be a coating instead of a sheet-shaped layer. Furthermore, the panel may be a composite instead of a laminate, for example LVT (Laminate Vinyl Tile).

## 25 Claims

1. A panel (1) comprising on at least a side a decoration pattern (3), said side being provided with an upper surface including a surface structure pattern (4), wherein the surface structure pattern (4) comprises at least a region (5, 6) including a transition (7) at a border (8) of the region (5, 6), wherein the surface structure (4) of the transition (7) is different from the surface structure (4) beyond the border (8) as seen from said region (5, 6) for making the border (8) visible, and **characterized in that** the decoration pattern (3) lacks a visible complementary transition at said border (8).
2. A panel (1) according to claim 1, wherein the border (8) surrounds said region (6).
3. A panel (1) according to claim 1 or 2, wherein the transition (7) and the remainder of the region (5, 6) comprise substantially the same surface structure pattern (4).
4. A panel (1) according to one of the preceding claims, wherein the transition (7) comprises a line shape, preferably a grout line.
5. A panel (1) according to claim 4, wherein the surface structures (4) at both sides of the line are different.
6. A panel (1) according to one of the preceding claims, wherein the decoration pattern (3) is equally coloured or comprises a wood nerve pattern.

7. A panel (1) according to one of the preceding claims, wherein the surface structure pattern (4) comprises two or more rectangular strips (5) having together similar adjacent regions (6).
8. A panel (1) according to claim 7, wherein the surface structure (4) of the region (6) disposed further away from a panel edge has a finer surface structure than the region (6) disposed closer to the panel edge.
9. A panel (1) according to one of the preceding claims, wherein the panel (1) is a laminate including a core and an overlay, wherein said decoration pattern (3) is provided on the core and wherein the overlay is provided with the surface structure pattern (4).
10. A panel (1) according to claim 9, wherein the decoration pattern (3) is provided on a decoration layer which is laminated between the core and the overlay.
11. A flooring comprising at least two panels (1) according to one of the preceding claims, wherein the surface structure pattern (4) is adapted such that a portion of said region (6) continues in a corresponding region (6) of the adjacent panel (1).

#### Patentansprüche

1. Paneel (1), das auf mindestens einer Seite ein Dekorationsmuster (3) aufweist, wobei diese Seite mit einer oberen Oberfläche versehen ist, die ein Oberflächenstrukturmuster (4) aufweist, wobei das Oberflächenstrukturmuster (4) mindestens einen Bereich (5,6) mit einem Übergang (7) an einem Rand (8) des Bereichs (5,6) aufweist, wobei sich die Oberflächenstruktur (4) des Übergangs (7) von der Oberflächenstruktur jenseits - gesehen von dem Bereich (5,6) aus - des Rands (8) unterscheidet, um den Rand (8) sichtbar zu machen, **dadurch gekennzeichnet, dass** das Dekorationsmuster (3) an dem Rand (8) keinen sichtbaren komplementären Übergang hat.
2. Paneel (1) nach Anspruch 1, wobei der Rand (8) den Bereich (6) umgibt.
3. Paneel (1) nach Anspruch 1 oder 2, wobei der Übergang (7) und der Rest des Bereichs (5,6) im Wesentlichen das gleiche Oberflächenstrukturmuster (4) aufweisen.
4. Paneel (1) nach einem der vorstehenden Ansprüche, wobei der Übergang (7) eine Linienform, vorzugsweise eine Fugenlinie, aufweist.
5. Paneel (1) nach Anspruch 4, wobei die Oberflächenstrukturen (4) an beiden Seiten der Linie unterschiedlich sind.

6. Paneel (1) nach einem der vorstehenden Ansprüche, wobei das Dekorationsmuster (3) gleichfarbig ist oder ein Holzmaserungsmuster aufweist.
7. Paneel (1) nach einem der vorstehenden Ansprüche, wobei das Oberflächenstrukturmuster (4) zwei oder mehr rechteckförmige Streifen (4) aufweist, die zusammen ähnliche benachbarte Bereiche (6) haben.
8. Paneel (1) nach Anspruch 7, wobei der von einer Paneelkante weiter weg gelegene Bereich (6) eine feinere Oberflächenstruktur hat als der näher an der Paneelkante gelegene Bereich.
9. Paneel (1) nach einem der vorstehenden Ansprüche, wobei das Paneel (1) ein Laminat mit einem Kern und einem Overlay ist, wobei das Dekorationsmuster (3) an dem Kern bereitgestellt ist und wobei das Overlay mit dem Oberflächenstrukturmuster (4) versehen ist.
10. Paneel (1) nach Anspruch 9, wobei das Dekorationsmuster (3) an einer Dekorationsschicht bereitgestellt ist, die zwischen dem Kern und dem Overlay laminiert ist.
11. Fußbodenbelag mit mindestens zwei Paneelen (1) nach einem der vorstehenden Ansprüche, wobei das Oberflächenstrukturmuster (4) so angepasst ist, dass ein Teil des Bereichs (6) sich in einem entsprechenden Bereich (6) des benachbarten Paneels (1) fortsetzt.

#### Revendications

1. Panneau (1) comprenant sur au moins un côté un motif décoratif (3), ledit côté étant doté d'une surface supérieure incluant un motif de structure de surface (4), dans lequel le motif de structure de surface (4) comprend au moins une région (5, 6) incluant une transition (7) sur une bordure (8) de la région (5, 6), dans lequel la structure de surface (4) de la transition (7) est différente de la structure de surface (4) au-delà de la bordure (8) vu depuis ladite région (5, 6) dans le but de rendre la bordure (8) visible, et **caractérisé en ce que** le motif décoratif (3) ne comporte pas de transition complémentaire visible sur ladite bordure (8).
2. Panneau (1) selon la revendication 1, dans lequel la bordure (8) entoure ladite région (6).
3. Panneau (1) selon la revendication 1 ou 2, dans lequel la transition (7) et le reste de la région (5, 6) comprennent sensiblement le même motif de structure de surface (4).

4. Panneau (1) selon l'une quelconque des revendications précédentes, dans lequel la transition (7) présente une forme de ligne, de préférence une ligne de joint. 5
5. Panneau (1) selon la revendication 4, dans lequel les structures de surface (4) des deux côtés de la ligne sont différentes.
6. Panneau (1) selon l'une quelconque des revendications précédentes, dans lequel le motif décoratif (3) est coloré de manière égale ou comprend des nervures de bois. 10
7. Panneau (1) selon l'une quelconque des revendications précédentes, dans lequel le motif de structure de surface (4) comprend deux ou plusieurs bandes rectangulaires (5) présentant ensemble des régions adjacentes similaires (6). 15  
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8. Panneau (1) selon la revendication 7, dans lequel la structure de surface (4) de la région (6) plus éloignée d'une arête de panneau présente une structure de surface plus fine que la région (6) disposée plus près de l'arête de panneau. 25
9. Panneau (1) selon l'une quelconque des revendications précédentes, dans lequel le panneau (1) est un stratifié incluant un coeur et un recouvrement, dans lequel ledit motif décoratif (3) est prévu sur le coeur et dans lequel le recouvrement est doté du motif de structure de surface (4). 30
10. Panneau (1) selon la revendication 9, dans lequel le motif décoratif (3) est prévu sur une couche décorative qui est stratifiée entre le coeur et le recouvrement. 35
11. Plancher comprenant au moins deux panneaux (1) selon l'une quelconque des revendications précédentes, dans lequel le motif de structure de surface (4) est adapté de sorte qu'une partie de ladite région (6) continue dans une région correspondante (6) du panneau adjacent (1). 40  
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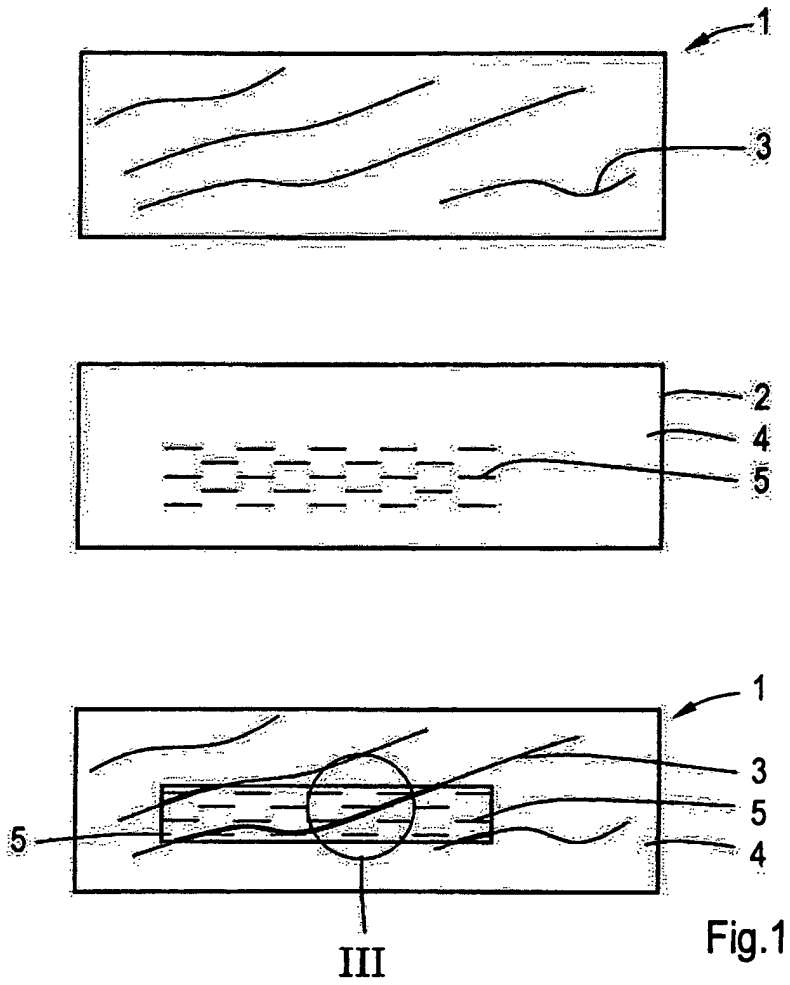


Fig.1

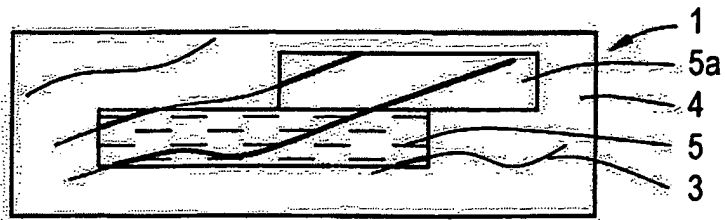


Fig.2

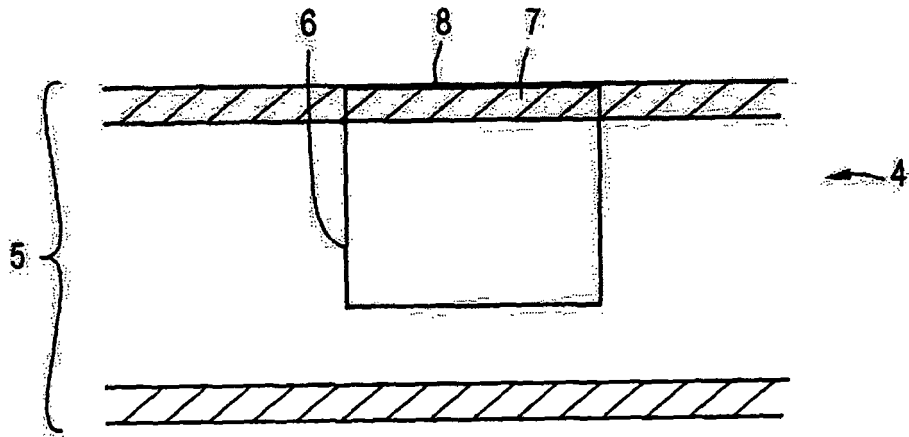


Fig.3

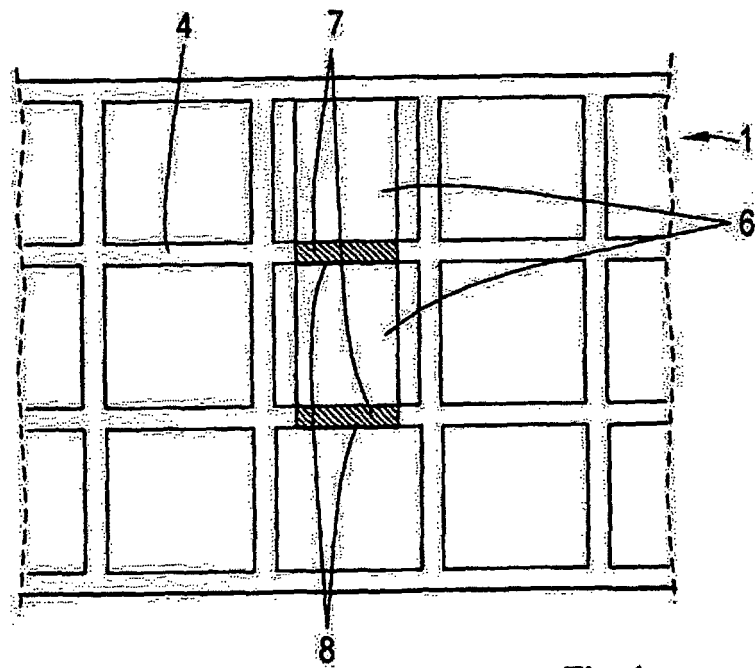


Fig.4

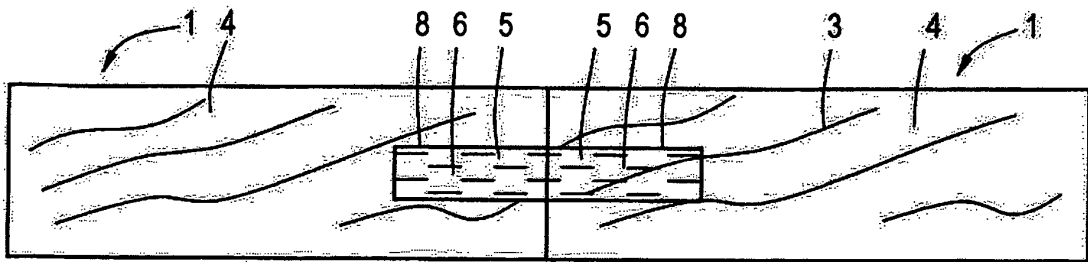


Fig.5

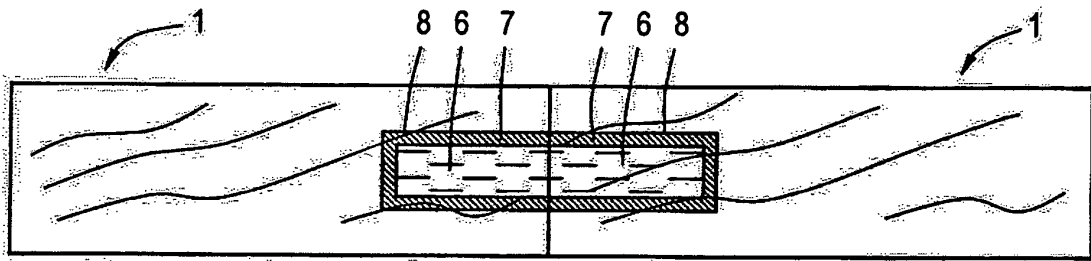


Fig.6

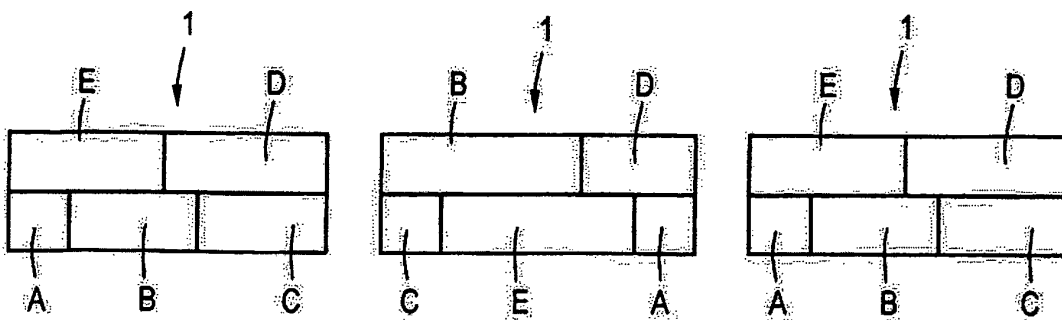


Fig.8

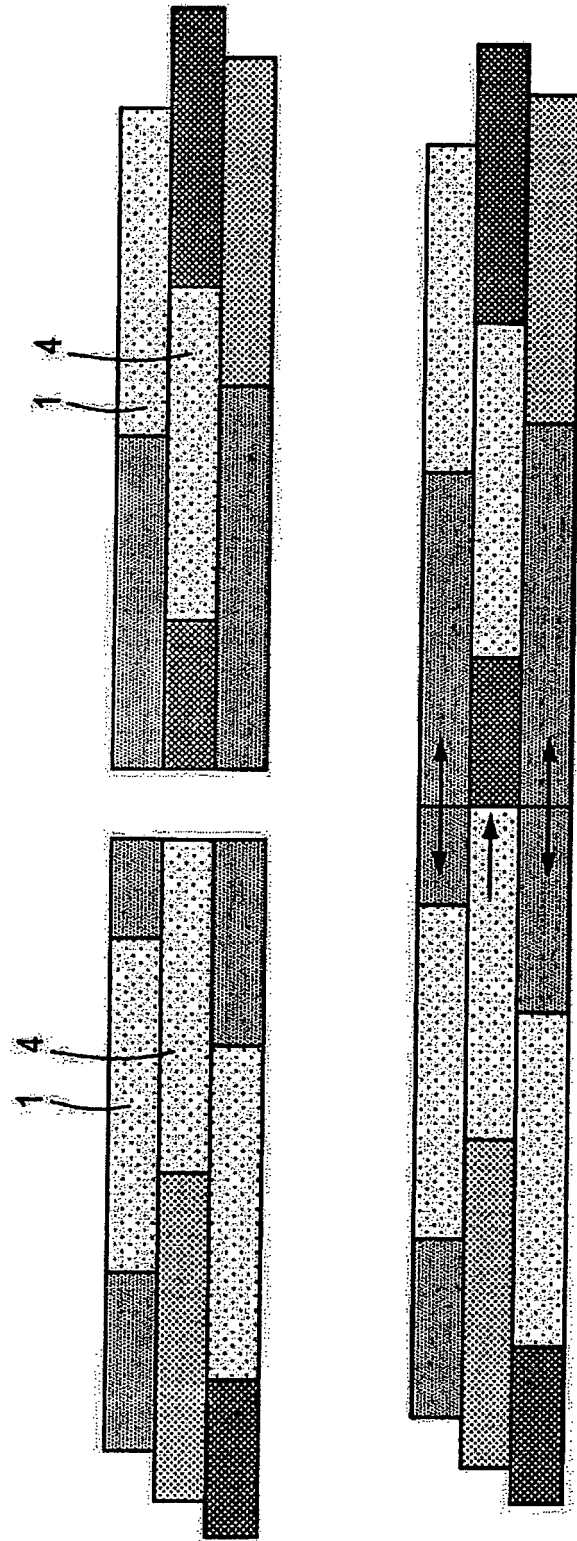


Fig.7

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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