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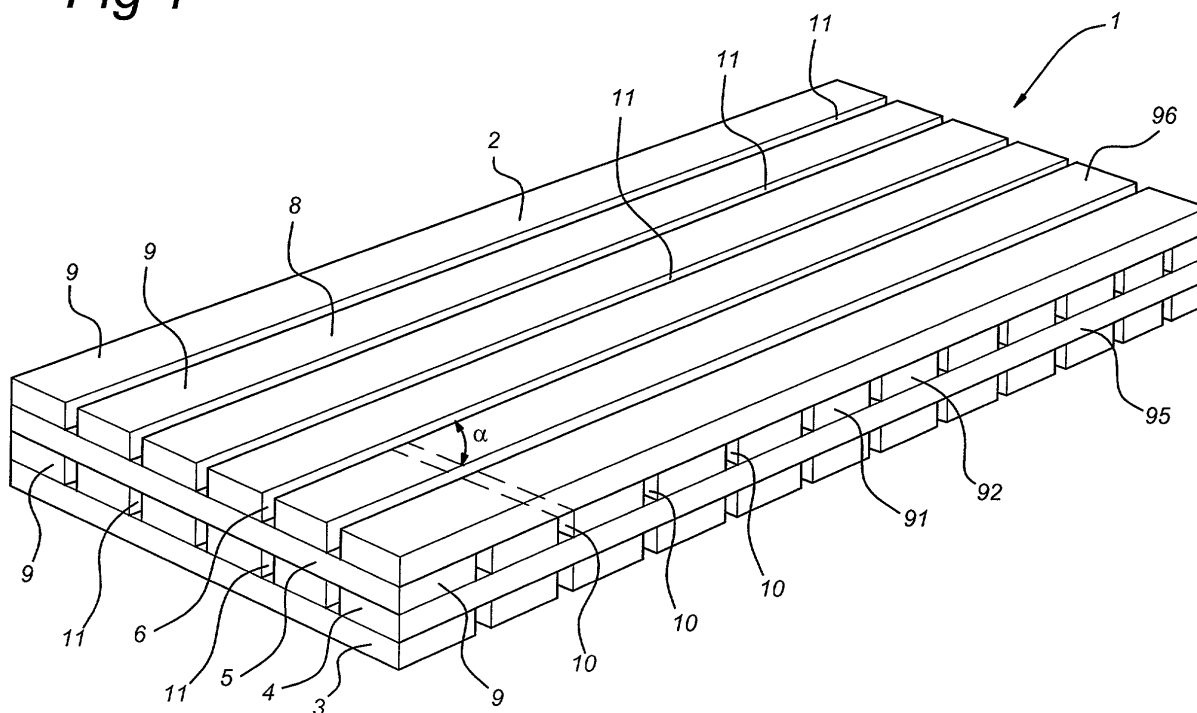
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(54) **Mattress**

(57) A device for supporting the human body, such as a mattress, comprises an elongated body that is made from a resilient plastic material. The body is provided with multiple first channels essentially parallel to one another as well as multiple second channels essen-

tially parallel to one another. The first channels and the second channels extend at an angle with respect to one another. The body can be made up of several layers, which comprise elongated strips. The relative density of these strips can vary.

Fig 1



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Description

[0001] The invention relates to a device for supporting the human body, such as a mattress, comprising a body that comprises a resilient plastic material, said body being provided with a plurality of first channels essentially parallel to one another, as well as a plurality of second channels essentially parallel to one another, the first channels and the second channels extending at an angle with respect to one another, and the body comprising a plurality of layers, each of which is provided with channels. This device is, for example, a mattress or a seat cushion for sofas or other elements supporting the body.

[0002] A device of this type is disclosed in GB 2 274 054. Because this mattress is made of a resilient plastic material, such as foam, it is inexpensive compared with, for example, a mattress that is provided with interior springs. However, the ventilation characteristics of foam are poor. Usually, moisture that is secreted by the human body and passes into a foam mattress cannot be expelled readily by the foam. The moisture then remains behind in the upward-facing surface of the mattress. Consequently, a foam mattress generally feels clammy, which is uncomfortable and unhealthy for a user. The first and second channels disclosed in GB 2 274 054 are able to expel moisture from the upward-facing surface of the mattress. Because the first channels and the second channels extend at an angle with respect to one another, the moisture from the human body is distributed in the mattress, as a result of which moisture regulation by the resilient plastic material is improved. In addition, the known device is relatively of lighter weight as a result of the use of the channels. This saving in weight is advantageous, for example, if a user has to move the mattress or has to lift it to some extent when making a bed.

[0003] The disadvantage of this known mattress is, however, that the production thereof is difficult. The production process is consequently relatively expensive.

[0004] An object of the invention is to provide an improved device for supporting the human body.

[0005] This object is achieved according to the invention in that at least one layer comprises individual, optionally joined, elongated strips which are arranged some distance apart to form the channels between them.

[0006] The construction of individual, optionally joined strips is simple and flexible. Moreover, the device according to the invention is more comfortable. The channels are located between the strips. These channels can be formed by positioning individual strips some distance apart, leaving the channels open between them. The strips are, for example, joined to an upper and/or lower layer by gluing. The channels can also be formed by milling or with the aid of heated wires which cut out the channels in the plastic material.

[0007] One embodiment of the device according to the invention is characterised in that a first strip in a layer has a relative density that differs from the relative density of a second strip in the same layer. By varying the relative density of different strips in a layer it is possible to produce firmer and softer regions of the mattress. As a result it is possible to tailor the mattress to each specific person with a specific weight and build, so that the mattress fits the contours of the body of this user exceptionally well. The mattress can thus be tailor-made.

[0008] One embodiment of the device according to the invention is characterised in that a strip in a first layer has a relative density that differs from the relative density of a strip in a second layer. It is possible not only for the relative density of strips in a given layer to differ, but also for the relative density of strips in different layers to differ. This embodiment makes a further variation in the firmness of the mattress possible. The support by and the comfort of the mattress are even better.

[0009] It is also possible to match the resilience of the device to the contour of the body of a specific person in that the width of a first strip differs from the width of a second strip. Optionally in combination with variation in density of the strips, this leads to a tailor-made mattress. In addition, other means are possible for local variation in the firmness of the mattress in order to produce a tailor-made mattress, such as variation of the thickness of strips.

[0010] A final layer of the body can contain channels that are constructed as open slots. Preferably, the slots in the final layer extend in the longitudinal direction of the body. However, the slots can also extend in the width direction of the body. If the slots are no wider than two or three cm, a user will barely notice the presence of the slots. The expelling of moisture is, however, excellent, as a result of which the mattress is felt to be cool.

[0011] According to one embodiment according to the invention the strips in one layer are glued to strips in an adjacent layer, the adhesive preferably being water-based. Water-based adhesive is environmentally friendly.

[0012] The resilient plastic material is preferably polyether. The relative density of the polyether is, for example, between 35 and 70 kg/m³, but preferably between 35 and 40 kg/m³.

[0013] The invention also relates to an assembly of a device as described above and a mattress, the device as described above being placed as a covering on the mattress. This mattress can be, for example, an interior-sprung mattress, the abovementioned advantages also being achieved by the use of the device as described above as top layer.

[0014] The invention will be explained in more detail below with reference to the drawing. In the drawing:

Fig. 1 shows a perspective view of a device according to the invention;

Fig. 2 shows an assembly of a device according to the invention and a mattress;

Fig. 3 shows a sectional view of a second embodiment of a device according to the invention;

Fig. 4 shows a sectional view of a third embodiment of a device according to the invention.

[0015] The device shown in Fig. 1 for supporting the human body is indicated in its entirety by 1. This device comprises an elongated body 2 that forms a mattress. The dimensions of the device 1 are, however, not of importance for the invention. The device 1 could, for example, also be a seat cushion for a sofa.

[0016] The elongated body 2 is made of a resilient plastic material, such as foam. The illustrative embodiment of the device 1 according to the invention shown in Fig. 1 is constituted of 4 layers, 3, 4, 5, 6 respectively. Each of these layers 3, 4, 5, 6 has elongated strips 9, which are arranged some distance apart. In this way first channels 10 and second channels 11 are formed between the strips 9. The first channels 10 extend essentially in the width direction of the body 2, whilst the second channels 11 run essentially in the longitudinal direction of the body 2.

[0017] The mutually parallel first channels 10 are positioned at an angle (α) of 90° with respect to the mutually parallel second channels 11. The channel structure formed in this way in the body 2 provides for good moisture regulation. Moisture that is secreted by a user who has laid down on the device 1 is effectively expelled through the channel structure. The user consequently finds the device 1 to be cool.

[0018] According to the invention it is possible to vary the relative density of strips 9 in a single layer. The strips 91, 92 in the layer 5 have, for example, a higher relative density than the other strips in this layer 5. As a result the device 1 will be firmer in the region of the strips 91, 92.

[0019] If this region is, for example, intended to support the buttocks, the mattress adapts better to the contours of the human body of the user.

[0020] Further tailoring to the user is possible by choosing the relative density of a strip in one layer to be different to the relative density of a strip in another layer. The relative density of the strip 95 in layer 4 can, for example, be less than the relative density of the strip 96 in the layer 6. It would be possible, for example, to counteract sagging of the mattress by this means. Of course, it is also possible that the relative density of the strip 95 in the layer 4 also differs from the relative density of the strips 91, 92 in the layer 5. By means of a modular construction of the mattress of this type, with strips of different relative density, it is possible to make up a mattress for each user that is personally matched to his or her body.

[0021] According to the invention it is preferable that the channels in the final layer 8 on the top of the mattress run in the longitudinal direction. Of course, it is also possible that the top layer or another layer is essentially continuous or closed (not shown).

[0022] The device 1 shown in Fig. 1 has six strips 9 in the width direction, as a result of which 5 channels

are formed in the width direction. The device according to the invention can, however, also comprise a different number of strips and slots.

[0023] Although the dimensions of the device 1 are not important for the invention, the channels are, for example, 2-3 cm thick and the strips 10-11 cm wide, depending on the width of the mattress and the width of the channels.

[0024] The strips 9 of the device 1 according to the invention are glued to one another. The adhesive used is preferably water-based, because water-based adhesive causes less environmental pollution.

[0025] The material of the device 1 according to the invention is, for example, polyether, polyethylene, or polyurethane. The relative density of the polyether is, for example, between 35 and 70 kg/m³, such as 35, 40, 60 and 70 kg/m³.

[0026] In addition to the abovementioned advantages, the device 1 according to the invention is less heavy because of the incorporation of the channels 10, 11.

[0027] This saving in weight is attractive when using the mattress, for example if a user has to lift the mattress to some extent when making a bed. The saving in weight is approximately between 10 and 15 %.

[0028] The assembly shown in Fig. 2 comprises a device according to the invention 20 and a mattress, for example a mattress that is provided with interior springs. The slots in the device 20 according to the invention have, for example, been made with the aid of heated wires. In this case the individual elongated strips are joined to one another by a cross-piece at the bottom, but the join could equally well be achieved in another way or at a different location. The device 20 can, moreover, also have been made up of strips that are glued to one another. The abovementioned advantages also apply to the assembly 19 according to the invention.

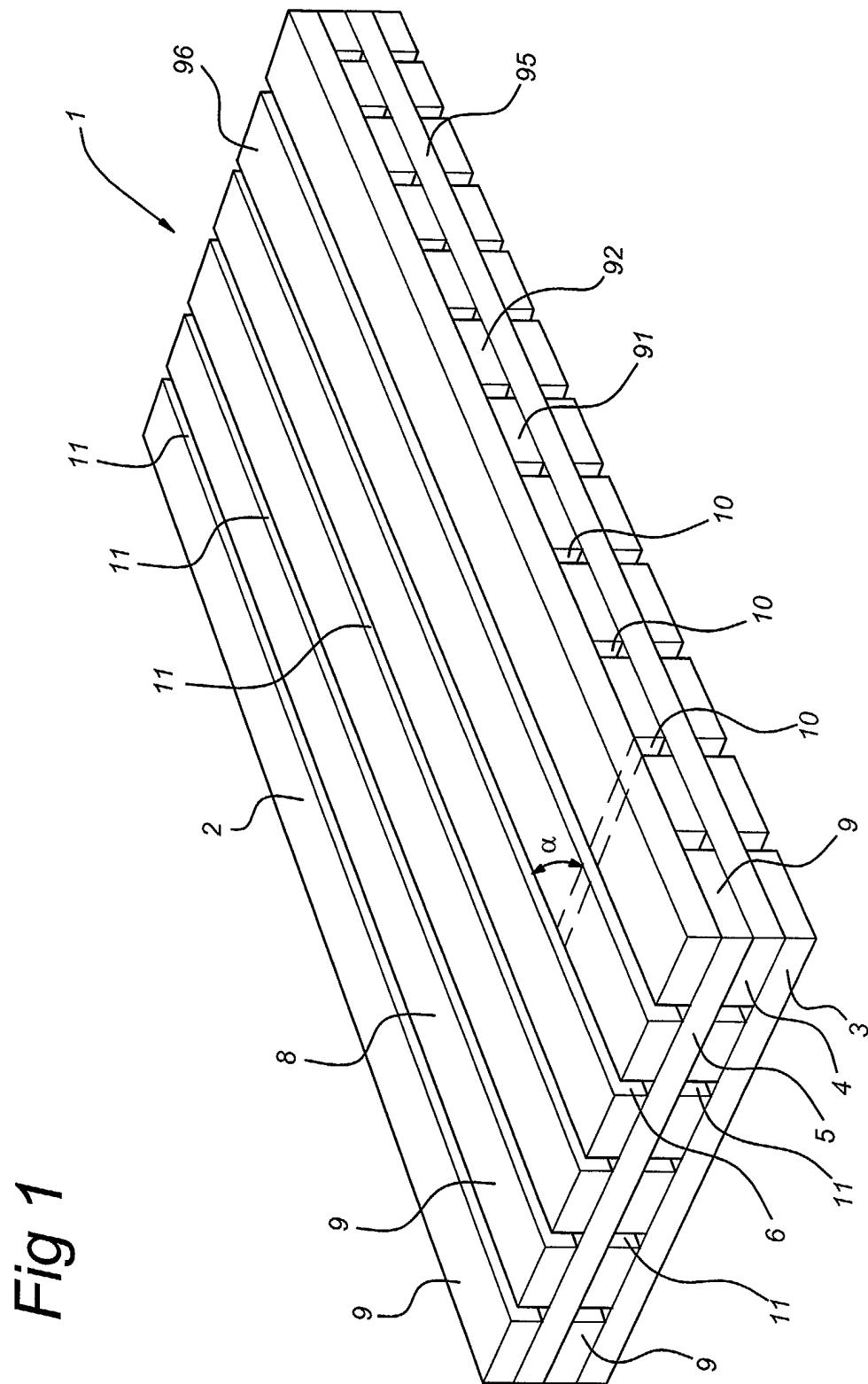
[0029] In Fig. 3 it is shown that the layers 3, 4, 5, 6, 7 can also vary in thickness. Variation in the thickness of the layers is an alternative means of forming firmer and softer regions in the mattress for optimum support of the human body of the user.

[0030] In Fig. 4 it is furthermore indicated that the strips 9 can also vary in width. As a result the channels 10 between the strips 9 are unequal distances apart. In this way it is also possible to achieve an embodiment with variation in flexibility of the mattress, so that a tailor-made mattress can be produced.

Claims

1. Device for supporting the human body, such as a mattress, comprising a body (2) that comprises a resilient plastic material, said body (2) being provided with a plurality of first channels (10) essentially parallel to one another as well as a plurality of second channels (11) essentially parallel to one another, the first channels (10) and the second channels

- (11) extending at an angle (α) with respect to one another and the body (2) comprising a plurality of layers, each of which is provided with channels, **characterised in that** at least one layer (3, 4, 5, 6, 7) comprises individual, optionally joined, elongated strips (9, 91, 92, 95, 96) which are arranged some distance apart to form the channels (10, 11) between them.
2. Device according to Claim 1, wherein a first strip (9, 91, 92) in a layer has a relative density that differs from the relative density of a second strip (9, 91, 92) in the same layer. 10
 3. Device according to one of the preceding claims, wherein a strip (9, 91, 92, 95, 96) in a first layer (3, 4, 5, 6, 7) has a relative density that differs from the relative density of a strip (9, 91, 92, 95, 96) in a second layer (3, 4, 5, 6, 7). 15
 4. Device according to one of the preceding claims, wherein the width of a first strip (9, 91, 92, 95, 96) differs from the width of a second strip (9, 91, 92, 95, 96). 20
 5. Device according to one of the preceding claims, wherein the thickness of the strips (9, 91, 92, 95, 96) in a first layer (3, 4, 5, 6, 7) differs from the thickness of the strips (9, 91, 92, 95, 96) in a second layer (3, 4, 5, 6, 7). 25
 6. Device according to one of the preceding claims, wherein the body (2) comprises one or more essentially continuous or closed layers. 30
 7. Device according to one of the preceding claims, wherein the angle (α) is approximately 90°. 35
 8. Device according to one of the preceding claims, wherein the first channels (10) extend essentially in the width direction of the body and the second channels (11) extend essentially in the longitudinal direction of the body. 40
 9. Device according to one of the preceding claims, wherein a final layer (8) located on a main surface of the body contains channels (10, 11) that are constructed as slots. 45
 10. Device according to Claim 9, wherein the slots in the final layer (8) extend in the longitudinal direction of the body (2). 50
 11. Device according to one of the preceding claims, wherein the channels (10, 11) are 2 to 3 cm deep. 55
 12. Device according to one of the preceding claims, wherein six or seven channels (10, 11) are provided in the width direction.
 13. Device according to one of the preceding claims, wherein the strips (9, 91, 92, 95, 96) in one layer (3, 4, 5, 6, 7) are glued to strips (9, 91, 92, 95, 96) in an adjoining layer (3, 4, 5, 6, 7).
 14. Device according to one of the preceding claims, wherein the adhesive is water-based.
 15. Device according to one of the preceding claims, wherein the body (2) comprises polyether.
 16. Device according to Claim 15, wherein the relative density of the polyether is between 35 and 70 kg/m³, preferably between 35 and 40 kg/m³.
 17. Device according to one of the preceding claims, wherein the body (2) comprises polyurethane and/or latex.
 18. Assembly of a device according to one of the preceding claims and a mattress, the device being placed on the mattress as covering.



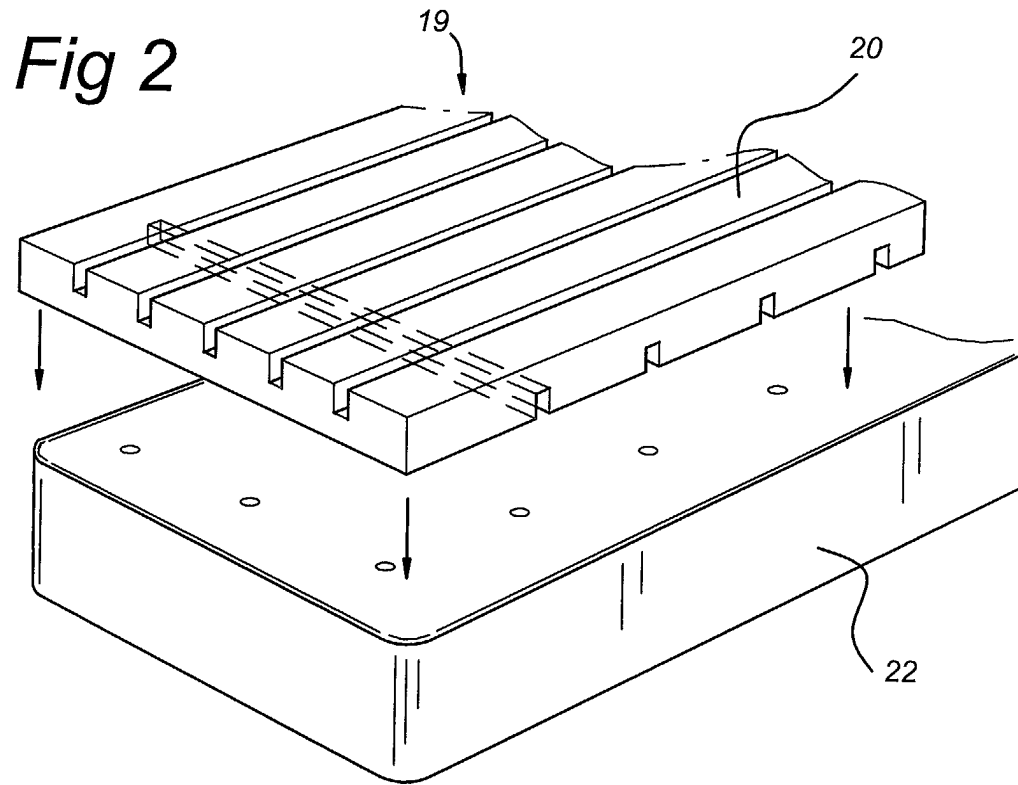


Fig 3

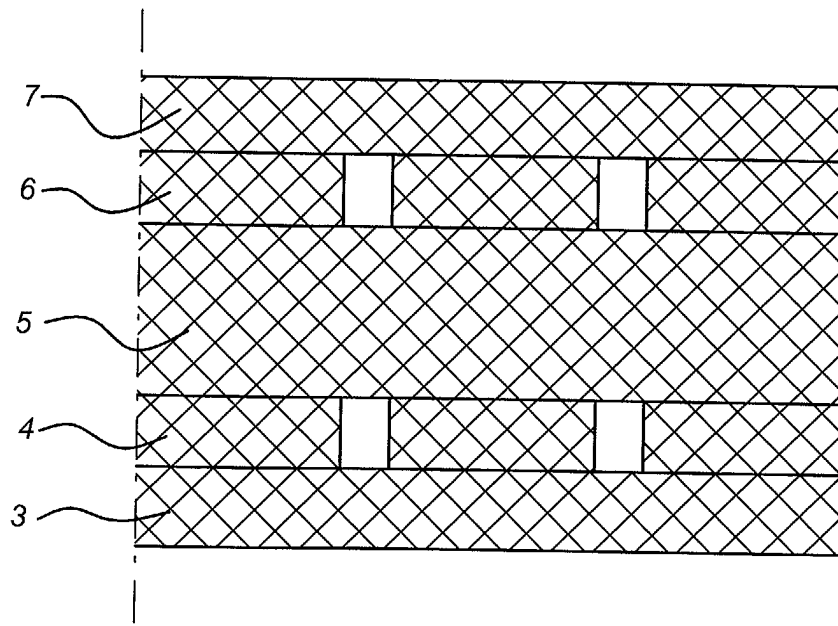
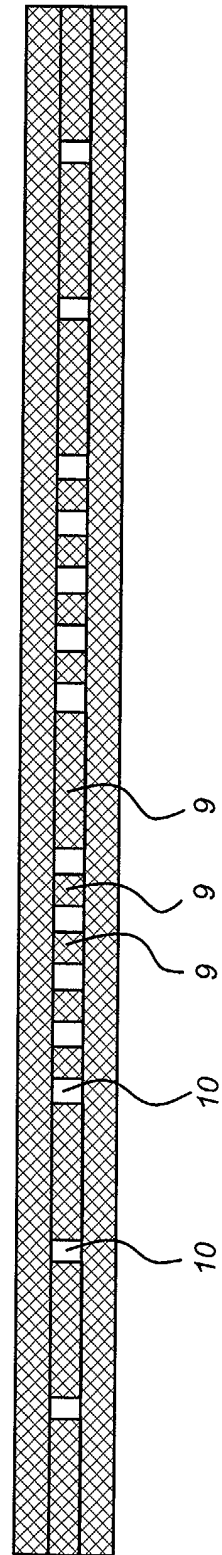


Fig 4





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EUROPEAN SEARCH REPORT

Application Number
EP 02 07 9660

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