



(11)

EP 1 726 533 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.11.2006 Bulletin 2006/48

(51) Int Cl.:
B65D 57/00 (2006.01) B65D 25/06 (2006.01)

(21) Application number: **05076227.7**

(22) Date of filing: **26.05.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR LV MK YU

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(54) **Device forming an intermediate support for manufactured goods in a packaging unit**

(57) A device forming an intermediate support, in particular for supporting manufactured goods in a packaging unit, the device being characterized in that it is constituted

by at least a tray (3) and by at least one spacer (5) of variable height secured to the tray (3) and adapted to bear another intermediate support.

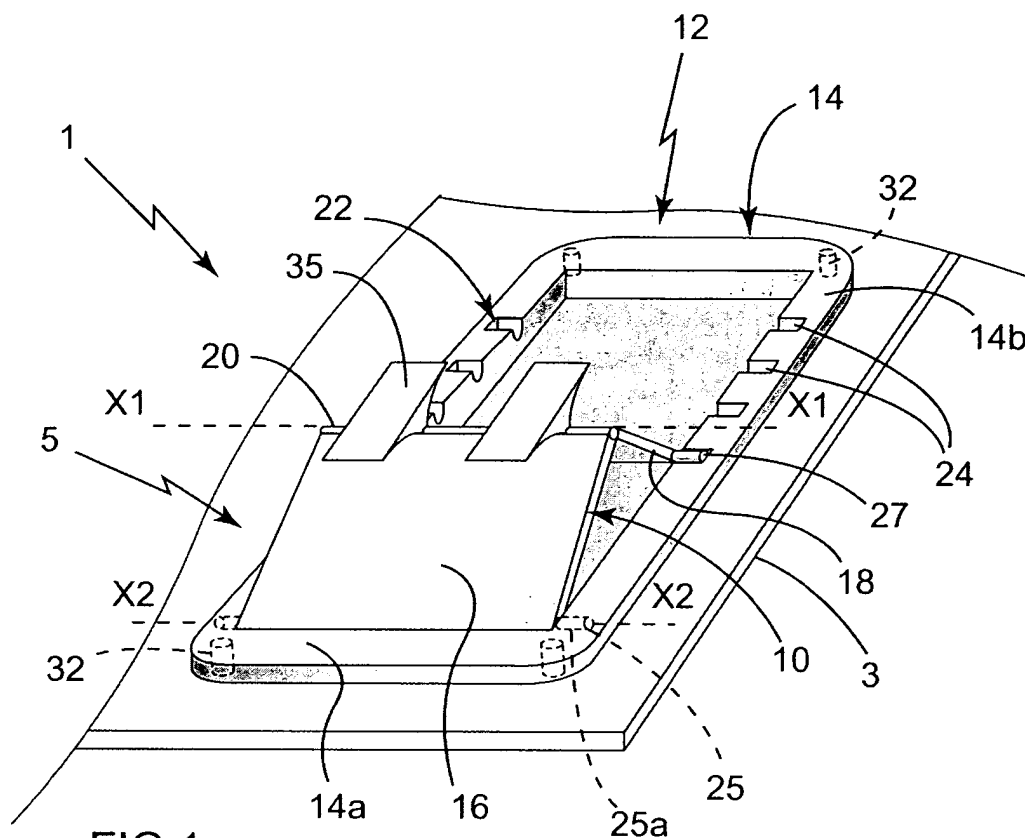


FIG. 1

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Description

[0001] The invention relates to a device forming an intermediate support, in particular for supporting manufactured goods in a packaging unit, and it also relates to a packaging unit fitted with such devices.

[0002] In general, manufactured goods are taken from their place of manufacture to their place of distribution in packaging units which are adapted to the size of the goods and to their fragility to ensure that the goods do not suffer any damage during operations of handling the packaging units and while they are being transported.

[0003] In the automobile industry, components manufacturers make, in particular: sealing weatherstrips for doors, opening or non-opening windows, hoods, and/or trunks of motor vehicles, which strips are then delivered to automobile manufacturers for assembly on vehicles. Naturally, such strips must be delivered without suffering any damage that might prevent them from being put into place, or that might lead to defects such as scratches, marks, or indentations, for example, spoiling the appearance of those surfaces of such strips that are situated, after assembly, in visible regions of motor vehicles. This problem of possible damage to manufactured goods, in particular to sealing strips, exists when the goods are packaged in bulk, even when in the presence of intermediate separating supports. This is because such intermediate supports come into contact with the packaged goods, since maximum use must be made of the volume available for storing packaging units, if possible.

[0004] Furthermore, in the automobile industry, components manufacturers or subcontractors are being required more and more to use packaging units that are reusable instead of being discardable, for reasons of reducing logistics costs and protecting the environment.

[0005] In the prior art, packaging units are known that are made of cardboard and that present the advantages of being inexpensive and of being suitable for being cut to size as a function of the articles to be transported, however such cardboard is generally discarded since reuse thereof can raise problems given its lack of strength. Furthermore, it is known to use spacers of different diameters and heights that are placed or fixed on intermediate support sheets in order to subdivide the packaging volume into a plurality of levels. However, when the intermediate support sheets are made of polypropylene, for example, they are small in thickness, such that the weight of the manufactured goods can cause the sheets to sag so that they come into contact with other goods, which can lead to the appearance of scratches, for example. To mitigate that drawback, it is possible to increase the thickness of the sheets and/or the number of spacers, but that leads to extra expense. In addition, a packaging unit with such spacers presents a rigid structure that is suitable for manufactured goods having dimensions that are predefined in advance, but that implies fabricating other spacers for packaging new goods, thus involving additional fabrication costs.

[0006] Finally, packaging units are also known that are made of plastics materials or of metal that present the advantage of being reusable, but that suffer from the drawbacks of clearly lacking in flexibility in terms of their dimensions and of high fabrication costs, specifically because of the tooling needed to fabricate them.

[0007] An object of the invention is to mitigate the drawbacks of the prior art as mentioned above and to devise a novel type of intermediate support for a packaging unit, in particular of reusable type.

[0008] To this end, the invention proposes a device forming an intermediate support, in particular for supporting manufactured goods in a packaging unit, the device being characterized in that it is constituted by at least a tray and by at least one spacer of variable height secured to the tray and adapted to bear another intermediate support.

[0009] In general, the spacer comprises hinged means of geometry that is variable in order to adjust its height.

[0010] In an embodiment, the variable geometry means comprise at least one V-shape of dihedral angle that is variable in order to adjust the height of the spacer, the V-shape of the spacer possibly being constituted by an edge common to two half-planes or faces, which faces are mounted to pivot about a first pivot axis passing along the edge of the V-shape, and the two edges of the V-shape that are remote from the common edge are secured directly or indirectly to the tray.

[0011] In an embodiment, the spacer comprises a base fixed on the tray and the two edges of the V-shape that are remote from the common edge are secured to the base, and the edge of one face of the V-shape remote from the common edge is mounted to pivot on the base about a stationary second pivot axis, while the edge of the other face of the V-shape remote from the common edge is received in one housing out of a plurality of housings formed in the base of the spacer.

[0012] The base of the spacer can be constituted by at least a frame and the housings are constituted by two series of notches facing each other in pairs and formed in two opposite sides of the frame.

[0013] Advantageously, the base of the spacer can be constituted by two halfside frames, disposed on each side of the tray, and secured together by clip means, screw fastener means, or any other applicable means, through openings of the tray, or mounted on each side of a tray cut-out and secured together by clip means, screw fastener means, or any other applicable means.

[0014] The invention also provides a packaging unit for manufactured goods, which unit is characterized in that it includes at least one intermediate support-forming device as defined above housed inside the packaging unit.

[0015] In general, a plurality of intermediate support-forming devices are received inside the packaging unit in order to define a plurality of packaging levels having the same height or different heights, it being understood that each tray generally supports at least four spacers,

but that this number could be greater for heavier manufactured goods so as to avoid increasing the thicknesses of the trays and/or avoid any sagging of the trays, or when using packaging units of large dimensions.

[0016] Advantageously, each intermediate support-forming device is reusable, and it is possible to stack them one on another after returning them to a minimum height, such that the overall height of the stack is no more than the sum of the thicknesses of the trays, thereby minimizing the volume occupied when they are transported empty, and each packaging unit can optionally be reusable.

[0017] Other advantages, characteristics, and details of the invention appear from the additional description below made with reference to the accompanying drawings, that are given purely by way of example, and in which:

- Figure 1 is a perspective view of an embodiment of an intermediate support of the invention;
- Figure 2 is an exploded side view of the Figure 1 intermediate support;
- Figure 3 is a perspective view of another embodiment of an intermediate support of the invention;
- Figure 4 is a section view of a packaging unit receiving intermediate supports for manufactured goods of the kind shown in Figure 1; and
- Figure 5 is a view showing a stack of a plurality of intermediate supports prior to being mounted in a packaging unit.

[0018] A device 1 forming an intermediate support of the invention and as shown in Figures 1 and 2 comprises at least one substantially plane tray 3, and a spacer 5 secured to the tray 3 and of height that is variable due to hinged means 7 of variable geometry. Each device 1 is preferably made of a material other than cardboard, for example a plastics material.

[0019] In an embodiment given by way of example, the hinged means 7 of each spacer 5 comprise, for example, at least one V-shape 10 of variable dihedral angle α , and they are connected to a base 12 of the spacer 5, e.g. constituted by a rectangular frame 14 having two side members 14a and two end members 14b. More precisely, the V-shape 10 comprises two half-planes or faces 16 and 18 with a common edge 20 constituting a first pivot axis X_1-X_1 for the two faces 16 and 18 in order to vary the dihedral angle α . The edge of the face 16 remote from the edge 20 is hinged about a stationary second pivot axis X_2-X_2 parallel to the axis X_1-X_1 and supported in the vicinity of an end member 14a of the frame 14. In contrast, the edge of the face 18 that is remote from the edge 20 can be received in one out of a plurality of housings 22 in order to vary the height of each spacer 5 (Figure 2). By way of example, these housings 22 are constituted by pairs of facing notches in a plurality of notches 24 formed along the two longitudinally-extending side members 14b of the frame 14.

[0020] The pivot axis X_1-X_1 of the common edge 20 of the V-shape 10 can be embodied in any manner, for example by complementary shape means engaged in one another and provided on the facing edges of the two faces 16 and 18 of the V-shape. The pivot axis X_2-X_2 of the face 16 of the V-shape 10 can be embodied by two facing pegs 25 received in two cavities or orifices 25a formed in the side members 14b of the frame 14. Finally, the remote edge of the face 18 of the V-shape 10 is received in a pair of opposite notches 24 in the frame 14 by means of two opposite pegs 27 so that the V-shape 10 forms a flat dihedral angle of 180° for the spacer 5, thereby presenting a height close to zero.

[0021] In general, the base 12 of each spacer 5 is secured to the tray 3 in separable manner. To this end, the fastener means may be of the clip type, e.g. comprising pegs 30 projecting from the bottom surface of the base 12 and received under pressure in blind holes 30a formed in one face of the tray 3 (Figure 2). In a first variant, these fastener means may be of the screw-fastener type mounted in orifices 32 shown in dashed lines in Figure 1, but such means present the drawback of being fittings instead of being integral in each device 1. In a second variant illustrated in dashed lines in figure 2, the base 12 of each spacer 5 includes two opened halfside frames 14a and 14b disposed on each side of the tray 3, said frames 14a and 14b being secured together screw-fastener means mounted in orifices 32a of the tray 3. In a third variant illustrated in figure 3, the base 12 of each spacer 5 includes also two opened halfside frames 14a (upper frame) and 14b (lower frame) disposed on each side of the tray 3, partially engaged through a tray cut-out 3a, and secured together by clip means 14c for example, screw fastener means, or any other applicable means. The hinged means 7 of each spacer 5 are mounted on the upper frame 14a, but can be eventually mounted on the lower frame 14b.

[0022] Each device 1 forming an intermediate support also presents a support surface 35 remote from its base 12. This bearing surface 25 is constituted, for example, by two shoes fixed close to the common edge 20 of the V-shape 10.

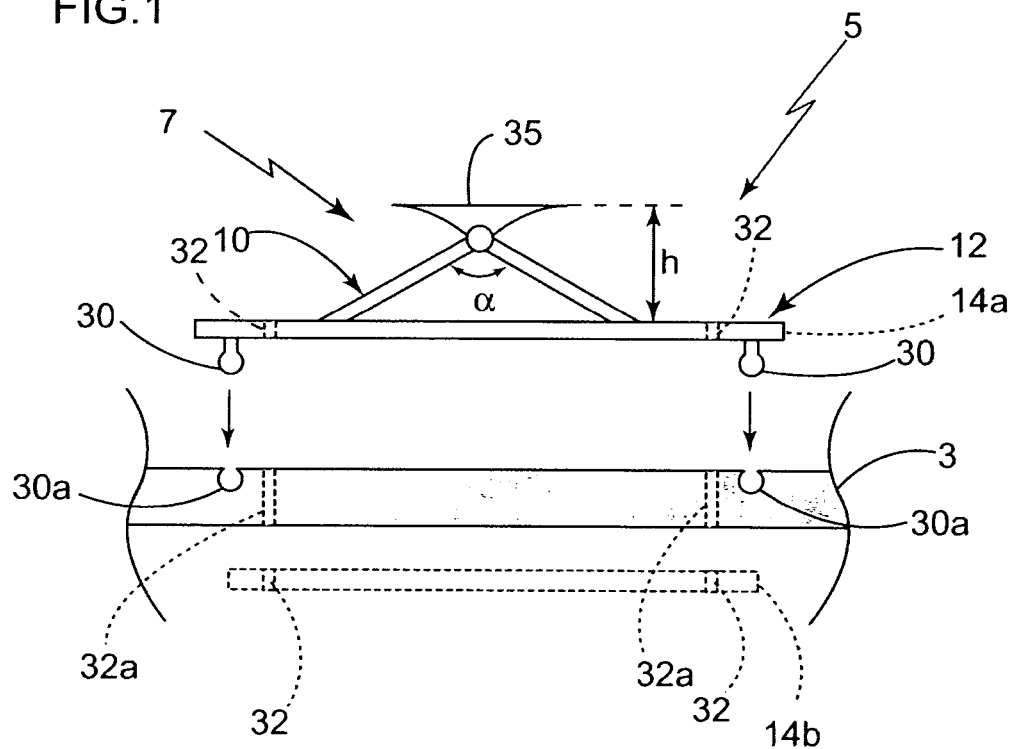
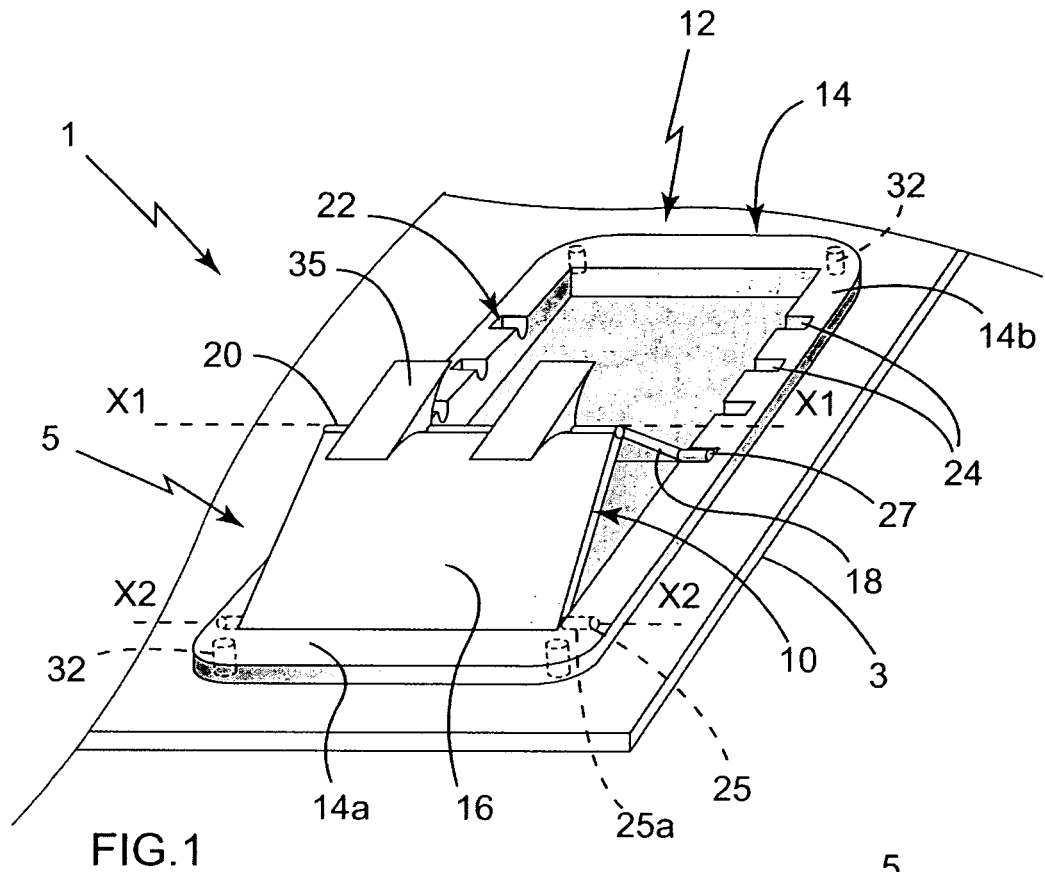
[0023] The use of a device 1 forming an intermediate support relates in particular to the industry of packaging manufactured goods and transporting them between the place where they are fabricated and the place where they are distributed, for example. Figure 3 shows a packaging unit 40 which may be made of cardboard or of any other material and having a plurality of intermediate supports 1 housed in the packaging unit 40 to define a plurality of packaging levels, which may be of different heights h depending on the nature of the manufactured goods to be transported. The packaged goods may be constituted, for example, by sealing weatherstrips P for the automobile industry. The first device 1 rests on the bottom of the packaging unit 40, and the height of each of the spacers 5 fixed on the tray 3 is set to a value h . Strips P are placed on this first device 1, thereby constituting a first packaging

level, and a second intermediate device 1 is inserted into the packaging unit 40, to rest on the support surfaces 35 of the first intermediate device, new strips P are put into place on this second packaging level, and so on until the packaging unit 40 has been filled completely. After the packaging unit 40 has been transported to its place of use, the strips P are unloaded, and the intermediate supports 1 can be stacked one on another as shown in Figure 1 after returning the height of their spacers 5 to a value that is close to zero so that the stack presents a minimum height, making it easier to return the intermediate supports 1.

[0024] Naturally, the structure of an intermediate support 1 as described above is given purely by way of example, and the invention also protects other structures, in particular concerning the variable-geometry means 7, providing they share in common the feature of presenting a spacer of variable height.

Claims

1. A device forming an intermediate support, in particular for supporting manufactured goods in a packaging unit, the device being **characterized in that** it is constituted by at least a tray (3) and by at least one spacer (5) of variable height secured to the tray (3) and adapted to bear another intermediate support.
2. A device according to claim 1, in which the spacer (5) comprises hinged means (7) of geometry that is variable in order to adjust its height.
3. A device according to claim 2, in which the spacer (5) includes a base (12) fixedly or separably secured to the tray (3).
4. A device according to claim 3, in which the base (12) of the spacer (5) includes two halfside frames (14a, 14b) disposed on each side of the tray (3).
5. A device according to claim 4, in which the halfside frames (14a, 14b) are partially engaged in a tray cut-out (3a), and secured together by clip means (14c) for example.
6. A device according to claim 5, in which the hinged means (7) are secured to the upper or the lower frame (14a, 14b).
7. A device according to claim 4, in which the halfside frames (14a, 14b) are secured together by screw fastener means engaged in holes (32a) of the tray (3).
8. A device according to any preceding claim, in which the tray (3) and the spacer (5) are made of a plastics material or of a metal.
9. A device according to any one of claims 2 to 8, in which the variable geometry means (7) comprise at least one V-shape (10) of dihedral angle (α) that is variable in order to adjust the height of the spacer (5).
10. A device according to claim 9, in which the V-shape (10) of the spacer (5) is constituted by an edge (20) common to two half-planes or faces (16, 18), and in which the faces (16, 18) of the V-shape are mounted to pivot about a first pivot axis (X_1 - X_1) passing via the common edge (20) of the V-shape.
11. A device according to claim 10, in which the two faces (16, 18) of the V-shape are secured directly or indirectly to the tray (3) at their edges remote from the common edge (20).
12. A device according to claim 11, in which the spacer (5) comprises a base (12) secured to the tray (3), and in which the two faces (16, 18) of the V-shape are fastened to the base (12) at their edges remote from the common edge (20).
13. A device according to claim 12, in which the edge of one of the faces (16) of the V-shape that is remote from the common edge (20) is mounted on the base (12) to pivot about a stationary second pivot axis (X_2 - X_2) parallel to the first pivot axis (X_1 - X_1), and in which the edge of the other face (18) of the V-shape that is remote from the common edge is received in one housing (22) from amongst a plurality of housings formed in the base (12) of the spacer.
14. A device according to claim 13, in which the base (12) of the spacer (5) is constituted by a frame (14), and in which the housings (22) are constituted by two series of mutually facing notches (24) formed in two opposite sides (14b) of the frame (14).
15. A packaging unit for manufactured goods, **characterized in that** it includes at least one intermediate support-forming device (1) as defined by any preceding claim housing inside the packaging unit (40).
16. A packaging unit according to claim 14, in which a plurality of intermediate support-forming devices (1) are housed inside the packaging unit (40) to define a plurality of packaging levels having the same height or different heights.
17. A packaging unit according to claim 15 or claim 16, in which each intermediate support-forming device (1) is reusable.



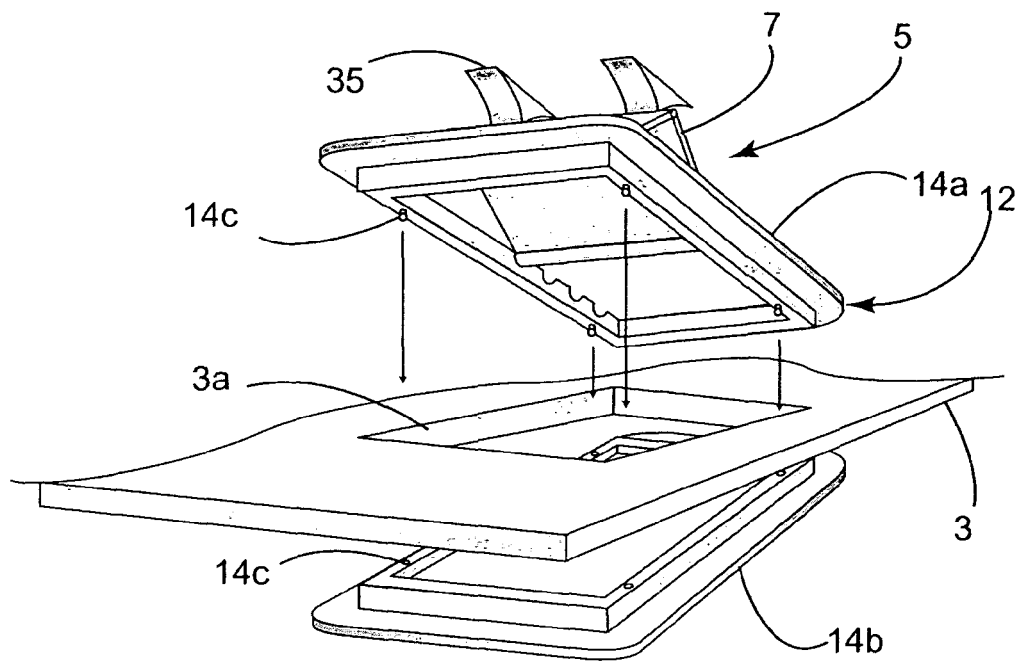


FIG. 3

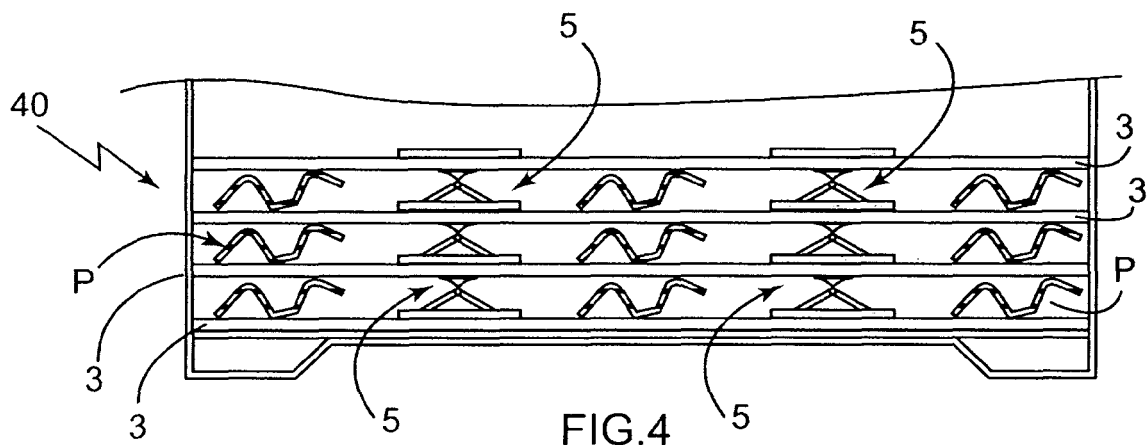


FIG. 4



FIG. 5



DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 October 2005	Examiner Pernice, C
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 05 07 6227

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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