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(54) **Device for fixing fabric handles to mattress sides**

(57) The present invention refers to a device used to fix fabric handles to mattress sides, composed of an external plate (1) and an internal plate (2) that are tightened

one against the other by means of fixing means (3,4), consisting of claws on the external plate that engage into corresponding slots (30,40) on the internal plate.

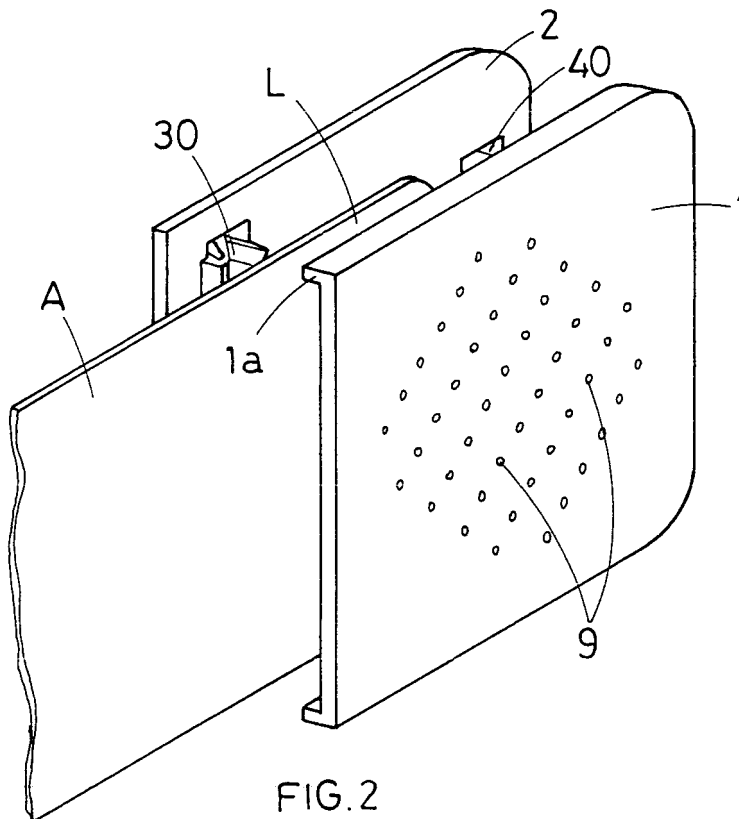


FIG. 2

Description

[0001] The present patent application for industrial invention refers to a device used to fix fabric handles to mattress sides.

[0002] All mattresses available on the market are provided with handles for easier handling during transportation or handling.

[0003] Handles are generally situated along the two longitudinal sides of the mattress, with one pair of handles being located on each side at the same distance from the centre.

[0004] Most handles are composed of a fabric strap, whose ends are folded inwards and then sewn on the fabric strap used for the mattress side, which is also provided with holes finished with support eyelets for perforated buttons used as air vent when the mattress is pressed down because of the user's weight.

[0005] The inconveniences arising from the use of the said fabric handles are basically related with the excessive time and cost required to fold and sew the ends of the fabric strap, which must be folded very carefully, paying attention that the folding line is perfectly orthogonal to the longitudinal axis of the strap, to avoid that parts of the folded ends remain partially visible on the back of the handle, in case of imperfect folding.

[0006] The purpose of the present invention is to devise a new device for fixing fabric handles to mattress sides to reduce processing time and costs with respect to the current technique, entrusting this operation to ordinary users, since the device of the invention automatically ensures perfect finish, irrespective of the operator's manual skill and experience.

[0007] Another purpose of the present invention is to devise a new device for fixing fabric handles to mattress sides that incorporates the air vents used to eject the air contained in the mattress, in order to avoid purchasing and application costs of the perforated buttons and support eyelets that are needed today for the realisation of air vents in locations other than the points where fabric handles are sewn.

[0008] The aforementioned purposes are achieved with the device of the invention, which is composed of two mutually coupled tightening plates that grab and tighten the end of the fabric strap, which no longer needs exact folding and sewing.

[0009] In other words, the long fabric strap used for the mattress side does no longer need to be placed under the sewing machine, it being simply placed on the working surface with the internal side downwards and on the internal plate that remains hidden inside the edge, in such a way that the external plate can be applied on the external side of the strap, after positioning the end of the fabric handle between the two plates.

[0010] The external plate is provided with claws used to tighten it to the internal plate, which is provided with corresponding slots to tighten the two plates together.

[0011] The claws are shaped in such a way to perforate

and penetrate through the straps, enlarging the weave without tearing the fabric.

[0012] As regards the capability of the device of the invention to eject the air contained in the mattress when the mattress is pressed down, it must be noted that the internal plate is provided with a large central hole, while the external plate is provided with a dense series of small holes situated in front of the large hole, used to eject air if the long fabric strap used for the mattress side has been previously perforated in the large hole on the internal plate of the fixing device of the invention.

[0013] Finally, the external side of the external plate is provided with free spaces consisting in smooth surfaces that can be used to reproduce symbols, codes, texts or brands with any suitable technique, such as printing, silk-screening, engraving, thermoforming, labelling, etc.

[0014] For major clarity the description of the invention continues with reference to the enclosed drawings, which are intended for purposes of illustration only and not in a limiting sense, whereby:

- Fig. 1 is a diagrammatic axonometric view of a mattress with fabric handles on the sides fixed with the device of the invention;
- Fig. 2 is an exploded drawing of the two tightening plates with the end of a fabric handle positioned between the plates;
- Fig. 3 is an axonometric view of the internal side of the external plate;
- Fig. 4 is an axonometric view of the internal side of the internal plate;
- Fig. 5 is an axonometric view of a portion of the internal plate, showing the profiles of the slots seen from the side towards the external plate;
- Fig. 6 is an axonometric view of a portion of the internal plate, showing the profiles of the slots seen from the side towards the internal of the mattress;
- Fig. 7 is a view showing a portion of the two plates being tightened and cross-sectioned with a plane passing through the tightening claws;
- Fig. 8 is a view showing a different embodiment of the two tightening plates of the invention;
- Fig. 9 is a view of a constructive variant of the embodiment shown in Fig. 8;
- Fig. 10 is a view of a constructive variant of the two tightening plates.

[0015] With reference to the aforementioned figures, the preferred embodiment of the device of the invention shown in Figs. 1 to 7 is composed of an external plate (1) and an internal plate (2), with preferably rectangular shape, which are tightened one against the other by means of snap-in fastening.

[0016] The internal side of the external plate (1), that is to say the plate that remains visible on the edge (S) of the mattress (M), is provided with two rows of claws (3 and 4) aligned in vertical position, the first row being in the proximity of one of the two vertical sides of the plate

(1) and the second in the proximity of the opposite side.

[0017] The first row of claws (3) has a larger number of claws and is used to fasten the internal plate (2), perforate and fix the end (L) of the fabric handle (A); the second row of claws (4) is only used to fasten the internal plate (2).

[0018] The internal plate (2), that is to say the plate that remains hidden inside the edge (S) of the mattress (M), is provided with two rows of slots (30 and 40) aligned in vertical position, the first row being in the proximity of one of the two vertical sides of the plate (2) and the second in the proximity of the opposite side.

[0019] The slots (30 and 40) of the internal plate (2) exactly match the number and position of the claws (3 and 4) of the plate (1).

[0020] Each slot (30 and 40) has a rectangular shape with one of the long sides being provided with a V-shaped central notch (5) opposed to an elastic tooth (6), as shown in Figs. 5 and 6.

[0021] Each claw (3 and 4) has a thin body with triangular cross-section and ends with a pyramidal point (7) with triangular base.

[0022] The transversal dimensions of each claw (3 and 4) are such that the triangular section is exactly housed in the space of each slot (30 and 40), bordered by the two converging sides of the V-shaped notch (5) and by the third side that coincides with the elastic tooth (6).

[0023] The snap-in fastening between claws and slots is possible thanks to the fact that each claw has a niche (8) on the side facing the tooth (6), in which the tooth (6) is engaged.

[0024] The profile of the tooth (6) has an overturned-U cross-section that favours elastic contraction under the pressure of the claws during penetration; the extraction of the claw from the slot causes elastic diverging of the U-section, thus preventing disengagement between tooth (6) and niche (8).

[0025] In order to ensure the stable engagement of the tooth (6) in the niche (8), the body of the claws (3 and 4) have a triangular cross-section and the body is inserted into the V-shaped notch (5) that prevents accidental lateral sliding of the claws when the mattress is grabbed from the handles, which could jeopardize the coupling between tooth (6) and niche (8).

[0026] As shown in Figs. 2 and 3, the external plate (1) has a raised perimeter border (1a) facing the internal plate (2) that is interrupted on the side near the first row of claws (3), that is to say on the side facing the fabric handle (A).

[0027] The border (1a) is used to cover and hide the sides of the end (L) of the handle (M), grabbed by the row of claws (3) and tightened between the plates (1 and 2).

[0028] The external plate (1) has a central perforated area (9), while the internal plate (2) has a large central hole (10) used to eject the air contained in the mattress (M), passing through the holes of the perforated area (9) if a long fabric strap used to build the perimeter border

(S) of the mattress has been previously and suitably perforated in the fixing points of the fabric handle (A).

[0029] Finally, in the preferred embodiment of the invention shown in Figs. 1 to 7, the internal side of the internal plate (2) has a series of domes (11) near the slots (30 and 40), which receive the point (7) of the claws (3 and 4) in order to prevent the point (7) from damaging the materials contained inside the mattress.

[0030] Fig. 8 shows another constructive version of the two tightening plates, in which the internal side of the external plate (50) has a series of plastically foldable claws (60a and 60b), while the internal plate (20) has a series of slots (21a and 21b) that exactly match the number and position of the claws (60a and 60b) designed to be inserted through the slots (21a and 21b) and folded behind the plate (20).

[0031] In case of a plastic moulded external plate (50), as shown in the embodiment of Fig. 9, the claws (60a and 60b) are manufactured from the same piece with a metal plate (70) applied and fixed on the internal side of the external plate (50), and not together with the plate (50).

[0032] Fig. 10 shows a last constructive version of the two tightening plates, in which the external plate (100) and the internal plate (200) are respectively provided with a series of corresponding holes (80) designed to receive fixing nails (90), with the point riveted inside the internal plate (200) and the head fastened in visible position outside the external plate (100).

Claims

1. Device for fixing fabric handles to mattress sides, **characterised in that** it is composed of an external plate (1, 50, 100) and an internal plate (2, 20, 200), with preferably rectangular shape, which are tightened one against the other by means of fastening means (3, 4, 60a, 60b, 90) that engage into corresponding slots or holes (30, 40, 21a, 21b, 80) on the internal plate (2, 20, 200).
2. Device for fixing fabric handles to mattress sides, as defined in claim 1, **characterised in that** the internal side of the external plate (50) has a series of plastically foldable claws (60a and 60b), while the internal plate (20) has a series of slots (21a and 21b) that exactly match the number and position of the claws (60a and 60b) designed to be inserted through the slots (21a and 21b) and folded behind the plate (20).
3. Device for fixing fabric handles to mattress sides, as defined in claim 2, **characterised in that** the claws (60a and 60b) are manufactured from a single piece with a metal plate (70) applied and fixed on the internal side of the external plate (50).
4. Device for fixing fabric handles to mattress sides, as

defined in claim 1, **characterised in that** the external plate (100) and the internal plate (200) are respectively provided with a series of corresponding holes (80) designed to receive fixing nails (90), with the point riveted inside the internal plate (200) and the head fastened in visible position outside the external plate (100).

of domes (11) near the slots (30 and 40), which receive the point (7) of the claws (3 and 4).

5. Device for fixing fabric handles to mattress sides, as defined in claims 1 to 3, **characterised in that** the internal side of the external plate (1, 50) is provided with two vertically aligned rows of claws, the first row (3, 60a) in the proximity of one of the two vertical sides of the plate (1, 50), the second row (4, 60b) in the proximity of the opposite side; it being provided that the first row of claws (3, 60a) has a larger number of claws and is used to fasten the internal plate (2, 20), perforate and fix the end (L) of the fabric handle (A), while the second row of claws (4, 60b) is only used to fasten the internal plate (2, 20).
6. Device for fixing fabric handles to mattress sides, as defined in claims 1 and 5, **characterised in that:**
 - each slot (30 and 40) has a rectangular shape and one of the long sides is provided with a central V-shaped notch (5) opposed to an elastic tooth (6);
 - each claw (3 and 4) has a thin body with triangular cross-section and ends with a pyramidal point (7) with triangular base and has a niche (8) on the side facing the tooth (6) in which the tooth (6) is engaged.

it being provided that the transversal dimensions of each claw (3 and 4) are such that the triangular section is exactly housed in the space of each slot (30 and 40) bordered by the two converging sides of the V-shaped notch (5) and by the third side that coincides with the elastic tooth (6).
7. Device for fixing fabric handles to mattress sides, as defined in one or more of the preceding claims, **characterised in that** the external plate (1, 50, 100) has a raised perimeter border (1a) facing the internal plate (2) that is interrupted on the side near the first row of claws (3, 60a, 90a), that is to say on the side facing the fabric handle (A).
8. Device for fixing fabric handles to mattress sides, as defined in one or more of the preceding claims, **characterised in that** the external plate (1, 50, 100) has a central perforated area (9), while the internal plate (2, 20, 200) has a large central hole (10).
9. Device for fixing fabric handles to mattress sides, as defined in claims 1, 5, 6, 7, 8, **characterised in that** the internal side of the internal plate (2) has a series

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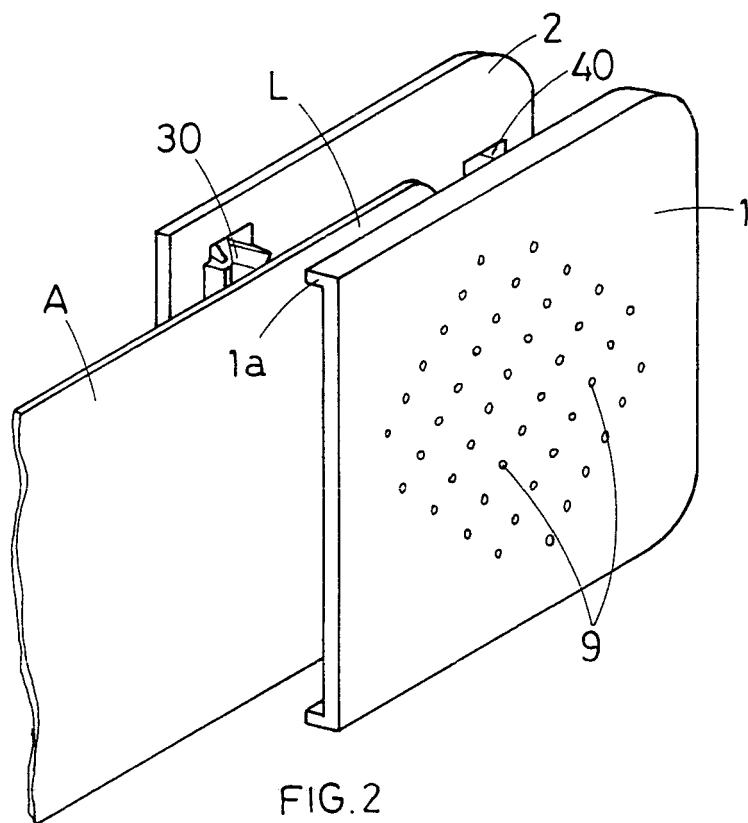
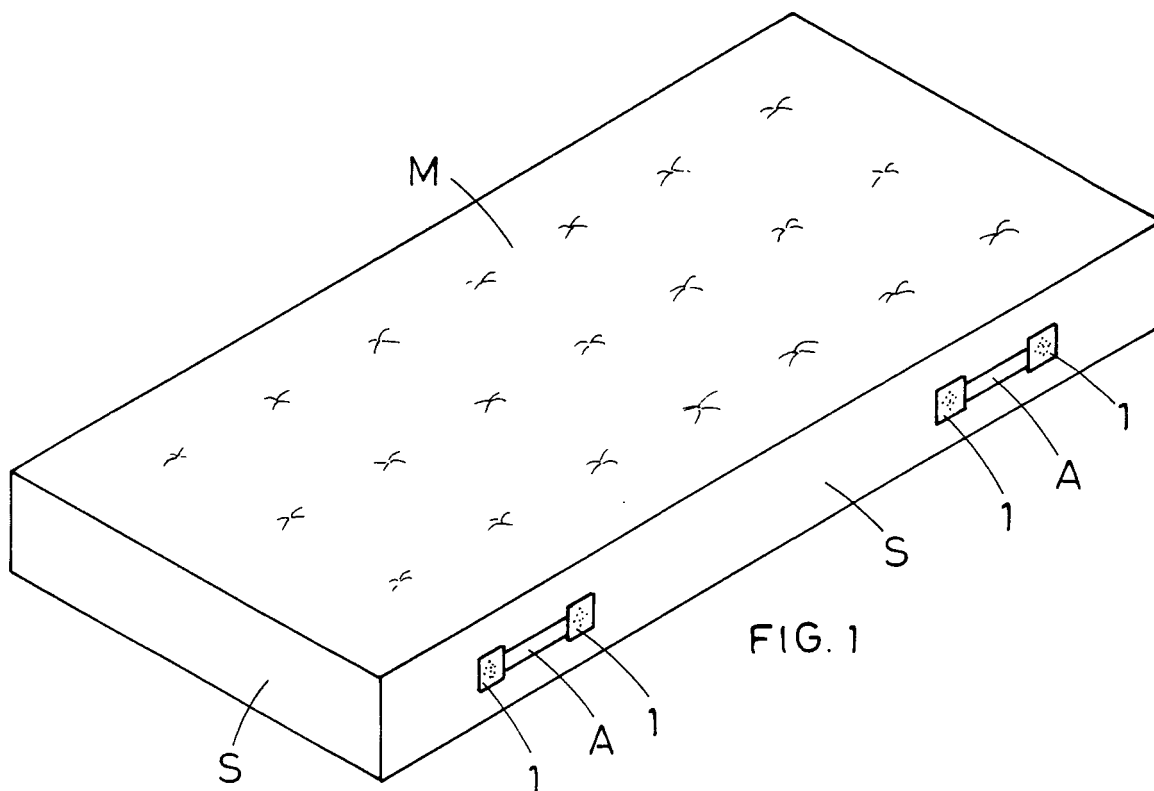
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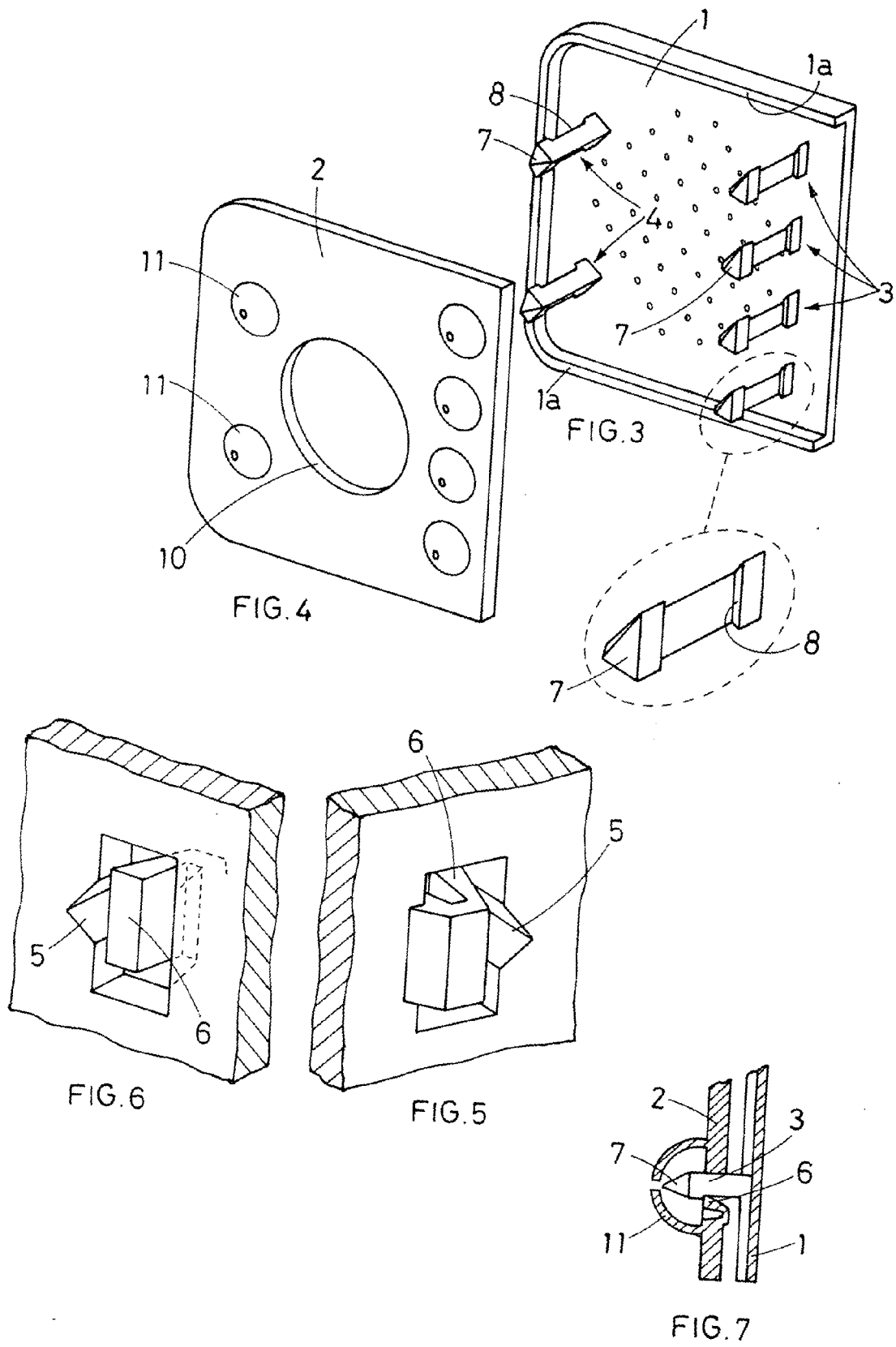
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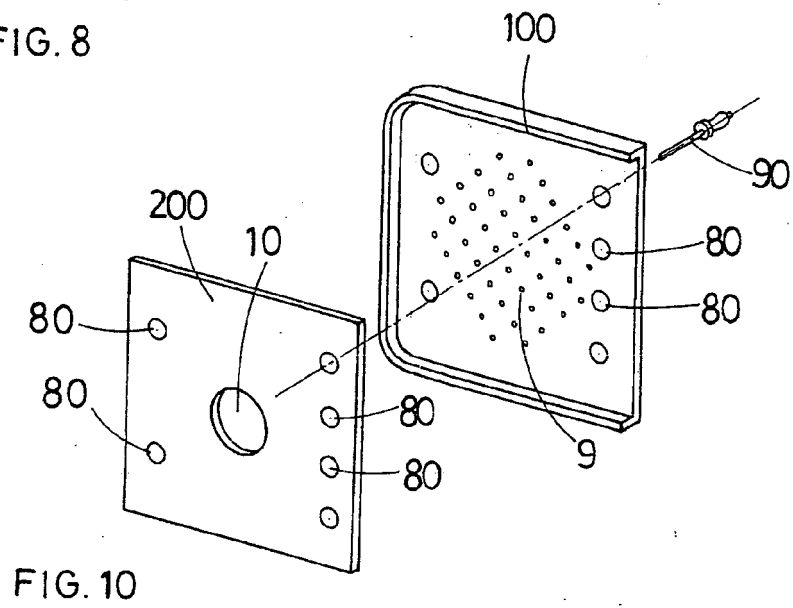
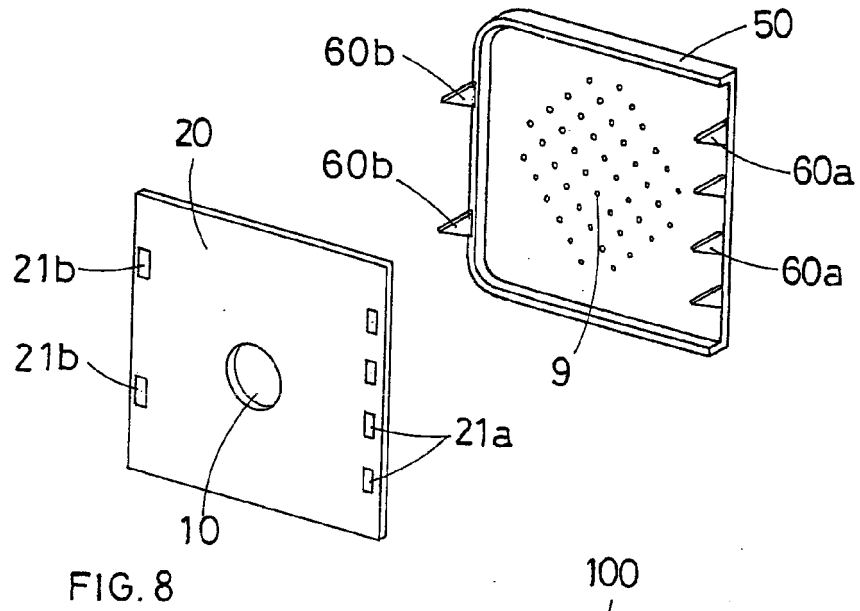
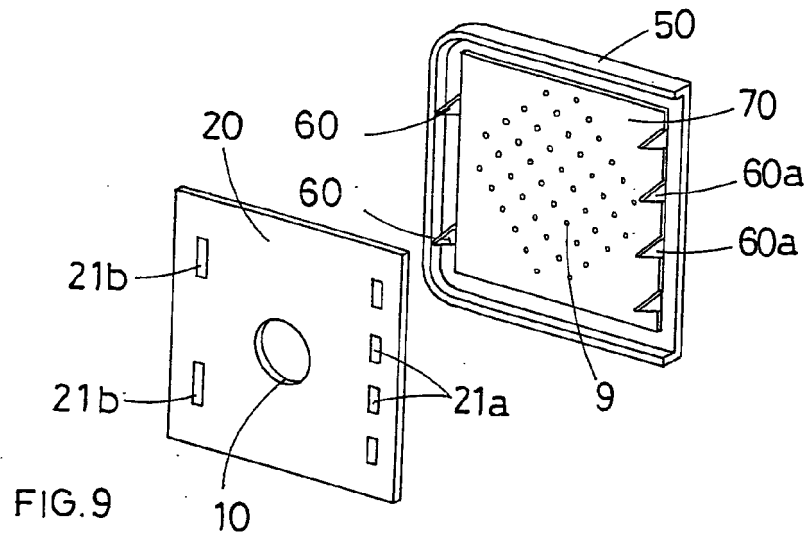
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European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5486

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Place of search Munich		Date of completion of the search 15 November 2005	Examiner MacCormick, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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