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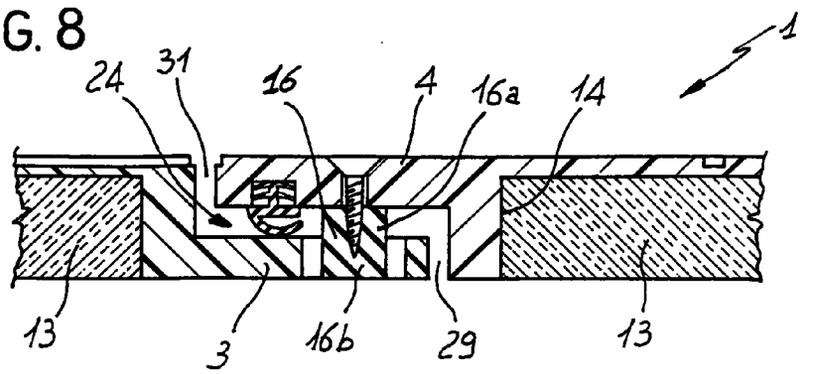
(54) Covering element for walls

(57) A covering element (1) for walls has been made which comprises a plate-like body (2) provided with an edge (3) and a lip (4) disposed peripherally. Under relative-engagement conditions between the different covering elements and the adjacent ones, coupling means (6) connects an edge (3) of a panel to a corresponding lip (4) of a panel adjacent thereto, thereby enabling relative displacements between contiguous elements in order to discharge possible mechanical or thermal stresses.

FIG. 8



EP 0 908 575 A1

Description

[0001] The present invention relates to a covering element for walls.

[0002] It is known that wall coverings or insulations for outdoor environments or buildings can be obtained by the use of discrete covering elements or panels that, suitably fastened to the building support and in engagement with each other, offer a complete covering for a wall.

[0003] In more detail, a panel of known type comprises a plate-like body of rectangular conformation having an upper edge provided with holes for engagement with a wall by mechanical connection.

[0004] Below said holes for wall engagement, the upper edge of the plate-like body has a conveniently shaped fitting portion for matching with a corresponding lower flap of another covering panel. Generally, for mounting operations a first panel is provided to be positioned on the building support or spoiled wall and fastened thereto by screws or nails connecting the upper edge thereof to the wall itself. Afterwards, the successive covering element is engaged, at a lower edge thereof, with the upper portion of the preceding panel, then the successive covering element is wall fastened by a fastening operation quite similar to the preceding one.

[0005] Mating between contiguous covering elements enables partial overlapping of the edges, so that the mechanical wall connection of a panel is no longer in sight, once the subsequent panel has been put in place.

[0006] In more detail, for relative engagement between two panels it is provided that, once the first panel has been secured, a lower edge of the second panel should be inserted into the fitting portion, in an appropriate matching seating present at the upper edge of the first panel.

[0007] In this way, the second panel is directly connected to the preceding one and indirectly to the wall. When the second panel too is wall fastened at its upper edge, a relative disengagement between the two panels is no longer possible as they are fixedly connected to each other and to the wall.

[0008] Then the successive panels are positioned in the same manner as above stated, each of them being first engaged with the preceding panel and then fastened to the wall.

[0009] Such a covering system has serious drawbacks.

[0010] It is first of all apparent that, when one panel is to be removed, it is first necessary to disengage the panel mounted at the upper part of said one panel, as the mechanical fastening of same to the wall can be only reached in this manner. If, for instance, one of the covering elements were damaged to such an extent as to require replacement thereof, necessarily dismantling of all panels mounted successively to the damaged one would have to be carried out, which is time-consuming and causes an increase in costs. On the other hand, a similar operation would be also necessary in the case that access to a limited area of the covered wall were necessary for possible interventions on the building support. In this case, due to the fact that the building support must stay uncovered until completion of the work, said wall is made accessible for a given period of time and could be damaged by atmospheric factors such as moisture, rain or dust, while at the same time losing heat- and sound-insulation resulting from the covering.

[0011] It is also to point out that tolerances in the fitting system between the plate-like bodies, as well as in wall-fastening must necessarily be very high. This requirement is connected with the fact that possible relative displacements between panels may impair the structural hold up of fitting connections between the edges of the covering elements, thereby causing the support wall to collapse.

[0012] In addition, it should be noted that, even if these displacements were not so serious as to create structural inconveniences, problems related to air-tightness or tightness to other external agents that would damage both the wall and covering, could in any case arise.

[0013] In an attempt to minimize the above described drawbacks as much as possible, in making coverings of known type materials have been used the features of which were perfectly known in terms of both mechanical and thermal deformations, said materials also being required to ensure a certain degree of behavioural inalterability under the different use conditions.

[0014] It is apparent that without the use of materials having homogeneous and exactly known features, accomplishment of coverings of the above described type is made impossible.

[0015] Under this situation, one of the main objects of the present invention is to enable use of panels made of waste materials the thermal and mechanical features of which are not exactly known, and consequently behaviours of which against temperature and stresses cannot be exactly foreseen.

[0016] It is a further object to ensure the possibility of replacing a spoiled or damaged panel without even requiring removal of the adjacent panels, thereby also enabling a direct access to a limited region of the covered wall.

[0017] It is finally a further object of the invention to provide covering elements of reduced cost and easy laying and dismantling.

[0018] The foregoing and further objects that will become more apparent in the progress of the present description are substantially achieved by a covering element according to the features recited in the appended claims.

[0019] Further features and advantages will be best understood from the detailed description of a preferred but non-exclusive embodiment of a covering element for

walls in accordance with the present invention. This description will be taken hereinafter with reference to the accompanying drawings, given by way of non-limiting example, in which:

- Fig. 1 is a plan view of a covering element in accordance with the present invention,
- Fig. 2 is a section taken along axis II-II in Fig. 1;
- Fig. 3 is a section taken along axis III-III in Fig. 1;
- Fig. 4 is a detail to an enlarged scale relative to Fig. 1 showing a connecting system for two adjacent panels in accordance with the present invention;
- Fig. 5 shows a further detail to an enlarged scale relative to Fig. 1 concerning a connecting system between a panel and a support wall;
- Fig. 6 is a plan view of a connecting element according to the present invention;
- Fig. 7 is a section taken along axis VII-VII in Fig. 6;
- Fig. 8 is a transverse section similar to Fig. 4 in which an alternative solution of the coupling means between two consecutive panels is shown;
- Fig. 9 is a top view of an end portion of a covering element provided with connecting means according to the alternative solution shown in Fig. 8;
- Fig. 10 is a fragmentary sectional view taken along line X-X in Fig. 9.

[0020] With reference to the drawings, a covering element for walls in accordance with the invention has been generally identified by reference numeral 1.

[0021] The covering element in accordance with the invention comprises a plate-like body 2 provided with an edge 3 and a lip 4 disposed peripherally.

[0022] Preferably the plate-like body 2 has a substantially rectangular geometric configuration, although more generally it may have the form of a triangle or a polygon, provided that said element can be associated with the adjacent elements to define a thorough covering for a wall 7 to be panelled.

[0023] Each plate-like body 2 is comprised of engagement means 5 active on edge 3 to fasten the covering element 1 to wall 7 and coupling means 6 to connect the covering element 1 to at least one adjacent covering element.

[0024] The plate-like body 2 can be obtained by moulding and may have graphic motifs for ornamental purposes at an outer surface 2a thereof, such as for example tile patterns as in the embodiment shown in Fig. 1.

[0025] In more detail, it is to point out that under fastening conditions to the vertical support wall 7, edge 3 defines a lower portion of the plate-like body 2 and shows at least one groove 8 the extension axis 9 of which is substantially vertical.

[0026] As shown in Fig. 1, these grooves 8 on which the engagement means 5 acts are three in number, laterally spaced apart the same distance from each other and all have an end 8a open at the lower part thereof.

[0027] The engagement means 5 is defined by at least one stop element 10 acting at groove 8.

[0028] This stop element 10 can be fastened in a plurality of different relative-engagement positions along the vertical axis 9 of the groove.

[0029] Practically, the stop element 10 consists of a screw system of the type shown in Fig. 5, where the relative position between the edge 3 of the covering element and the stop element 10, once the screw has been tightened, is maintained and can be only modified by loosening said screw and moving the plate-like body 2 away.

[0030] Still in Fig. 5 it is possible to see that the engagement means 5 can optionally comprise a spacer element 11 fastened at one side thereof to wall 7 and at the other side to the stop element 10 to create a gap 12 of the desired volume between the wall and panel. This gap 12 can be advantageously used for introduction thereinto of an insulating body 13, a heat and/or sound insulator depending on requirements.

[0031] Since gap 12 can be suitably sized due to selection of the spacer element 11, passage of an air flow between the covering panels and the support wall 7 is also enabled in order to promote removal of moisture and ensure an optimal condition of the walls in terms of humidity and heat.

[0032] Alternatively, the plate-like body 2 can be provided with an undercut 14 defining a space 15 underneath the outer surface 2a of the panel; in this case the insulating body may be advantageously housed in this space 15 between the support wall 7 and the outer surface 2a of the panel itself.

[0033] Obviously, since it is possible to set the distance between the plate-like body 2 and support wall 7, the above mentioned different solutions can be combined with each other.

[0034] Connection between two adjacent covering elements is carried out by coupling means 6 which comprises at least one connecting element 16 (Fig. 4) active both at said edge 3 of the plate-like body 2 and at a lip 4 of an adjacent covering element.

[0035] Under fastening conditions to the support wall 7, the connecting element 16 is adapted to enable relative displacements between adjacent covering elements.

[0036] Such a connecting element 16 is capable of enabling any deformations generated in the plate-like body 2 as a result of mechanical stresses or temperature changes for example, to be discharged by relative displacements of the panels. Actually, these displacements aim at preventing dangerous inner stresses from arising.

[0037] Preferably, the coupling means 6, under relative-engagement conditions between two adjacent panels, connects a covering element to the adjacent one in such a manner that lip 4 of the second covering element is partly overlapped with edge 3 of the first covering element.

[0038] Due to only partial overlapping of the perimetric regions, a first discharge opening 29 is created between the edge 3 of an element 1 and a side wall thereof 30 defining the undercut 14 of the adjacent covering element as well as a second discharge opening 31 between the side wall 30 of element 1 and the lip 4 of the adjacent covering element. Discharge openings 29, 31 enable relative displacements in the panel plane without any interference between a covering element and the adjacent ones taking place.

[0039] Advantageously, in case of use of rectangular plate-like bodies the discharge openings are provided to be extended between adjacent panels along the whole length of the rectangle sides.

[0040] Going back to the structure of the connecting element 16, it is to note that said element preferably is an elastic element capable of deformation under the action of forces transmitted by the panels with which it is associated.

[0041] It may consist of a spring system for example or, preferably, of a rubber or other elastomer material plug (Fig. 4) susceptible of deformation even when small forces are applied.

[0042] Such an element has a first connecting portion 16a, to be engaged with the lip 4 of the adjacent covering element; at this first portion 16a there is a hollow seating of elongated conformation 17 (Fig. 6) having a major axis 18 extending substantially in a horizontal plane when the covering element 1 is in engagement with the support wall 7.

[0043] The elongated seating 17 is screw threaded for screw engagement 17a with lip 4 of the adjacent covering element.

[0044] Both the depth of the elongated seating 17 and the screw length 17a engaging thereinto can be different, depending on the desired deformation capability degree of the connecting element and the connection forces between the lip and connecting element.

[0045] The element also has a second connecting portion 16b to be engaged with the edge 3 of the plate-like body 2. The relative engagement of these two parts is made by snap insertion of the connecting element 16 into a seating 19 present on edge 3 and the shape of which matches that of the second connecting portion 16b. Practically, the plug is inserted by pressure into the matching seating 19 until a projection 20 of the second connecting portion 16b abuts against a corresponding recess of the matching seating 19, preventing the same from sliding off (Fig. 4).

[0046] According to a preferential structural solution, in a section along a plane orthogonal to the major axis 18 of the elongated seating 17 (fig. 7) the plug has a central portion of tubular conformation 21 extending along the whole longitudinal extension of the plug and a perimetric portion 22 placed externally of the central portion 21 and defining the outer wall of the plug itself.

[0047] Resilient support means 23 is also provided intermediate these two portions, which means is capable of enabling displacements of said central portion 21 relative to the perimetric portion 22 at least along a direction orthogonal to the major axis 18 of the elongated seating 17.

[0048] The resilient support means 23 comprises support arms for example, as shown in Fig. 7.

[0049] In a different manner, provision may be made for deformable inserts provided with the desired elasticity or, alternatively, the two solutions may be combined together.

[0050] Which is important in this case is to enable the relative movement between the screw 17a and the connecting element 16 along the major axis 18 of the threaded seating and ensure the possibility of elastic deformations along the minor axis of this seating (i.e. in an orthogonal direction).

[0051] In accordance with a second embodiment, the coupling means 6 still consists of a connecting element 16 having a first portion 16a fastened to the lip 4 of an adjacent covering element, by threaded coupling for example. In this case it is contemplated that the first portion 16a should be provided with a threaded opening in which a corresponding grub screw or screw is received, so that engagement of said first portion with lip 4 is accomplished, as shown in Figs. 8 and 9. In this embodiment, the second portion 16b of the connecting element 16 is slidably fitted in a matching seating 19 defined in edge 3 and is preferably movable in this seating along a direction parallel to the vertical axis 9, that is along a substantially vertical direction with reference to the engagement condition of the wall-covering element.

[0052] Obviously, as a further alternative solution, not shown, the first portion 16a too may be slidably coupled with the corresponding lip in the same manner as described with reference to the second portion 16b.

[0053] It is of the greatest importance that, due to the particular engagement of the connecting element 16 interposed between the lip 4 and edge 3 itself, a certain freedom in the mutual displacement between the edge 3 and the lip 4 of the adjacent covering element may be achieved, which relative displacement can be obtained either by sliding of the connecting element 16 in appropriate seatings, or by elastic deformation of the connecting element, or even by combination of the two actions.

[0054] The covering element 1 is also comprised of an elastic seal 24 associated with lip 4 of the adjacent covering element and used to ensure hermetic tightness to atmospheric factors between lip 4 and the edge 3 of the covering element.

[0055] As shown in Fig. 4, an anchoring portion 25 of seal 24 engages in a lip cavity 26 of the adjacent covering element by tabs 27 extending transversely and in opposite direction relative to a fitting direction of said seal. Practically, once the seal 24 has been introduced into seating 26, tabs 27 that are slightly deformed exert an elastic force resisting slipping off of the seal itself. Seal 24 also comprises a sealing portion 28 defined by an arm of a decreasing thickness away from the anchor-

ing portion.

[0056] In the case of covering elements of rectangular form, in order to ensure tightness of coupling between the different panels and the adjacent ones, use of these seals is provided over the whole extension of at least two adjacent sides (see Fig. 1).

[0057] Covering of a wall by covering elements in accordance with the present invention takes place by positioning a first one of these elements on the surface to be covered and fastening this element to the support wall by engagement means. In more detail, once the elastic elements have been secured to the covering element edge and the interior of the matching seatings, the panel is locked to the wall by tightening the stop elements 10 to the selected engagement position along the vertical axis 9 and connecting the stop elements either directly to wall 7 or to the spacer elements 11.

[0058] Then a second panel is positioned in such a manner that its lip 4 is overlapped with the edge 3 of the preceding element; said panel is fastened to wall 7 in the same manner as before and the relative connection between the two panels is carried out by screwing down screws 17a into the corresponding threaded elongated seatings 17.

[0059] For positioning of the other panels the same operations as above are carried out until covering of the whole support wall has been completed.

[0060] Should disengagement of a single panel from the covering wall be necessary, untightening of the screws present on the plate-like body lip is required so as to disconnect the panel from the one previously positioned; then unscrewing of the screws present on the lip of the panel positioned successively will be required as well, so that the panel in question may be disengaged from all the adjacent ones.

[0061] At this point, by lifting the lip of the panel positioned successively, the wall-fastening screws are made accessible. Once said screws have been loosened, the desired panel can be pulled out by merely slipping these screws off, thereby enabling the stop elements to slide in the groove until the relative disassembling is reached.

[0062] In this way no other covering element in addition to the desired one is disengaged from the support wall.

[0063] In a particular embodiment, a vertical covering wall, formed of a plurality of panels may consist of a first series of covering elements, each engaged with the contiguous covering elements and each comprising an insulating body operatively interposed between the plate-like body and the support wall, and a second series of covering elements devoid of an insulating body, also in engagement with the contiguous elements. In this covering the first series defines a lower band of the vertical wall, whereas the second series defines the remaining upper band.

[0064] The invention achieves important advantages.

[0065] First of all the covering elements in accordance with the present invention can be made of materials the thermal and mechanical features of which are not perfectly known, for example waste materials such as recycle plastic, which will bring about an important saving in costs in terms of raw materials employed.

[0066] Actually, use of coupling means capable of enabling relative displacements between adjacent panels ensures stresses of any kind and origin to be discharged, thereby eliminating problems of structural collapsing, which problems usually affect walls made of coverings of known type.

[0067] In addition, use of this coupling means enables lower tolerances to be obtained in the different mechanical connections, thereby ensuring greater simplicity both in making the individual panels and in assembling them.

[0068] On the whole therefore, the construction and assembling simplicity bringing about great savings in the setting-up time, and the possible use of non-valuable and even recycle materials involves an important reduction in final costs.

[0069] It is also important to point out that the coupling means between adjacent panels and the wall-fastening means have been conceived for the purpose of enabling an easy dismantling of the covering, even if dismantling is partial.

[0070] Actually, in contrast to the known art, dismantling and optional replacement of a single panel located at any place in the wall is advantageously made possible.

[0071] Furthermore, since the wall-fastening edge has been provided downwardly, a correct support of the panel is ensured even in the case the stop element should become slack.

[0072] In addition, use of an elastic seal over the whole extension of at least two adjacent sides enables an excellent hermetic tightness to atmospheric factors to be reached, referring particularly to moisture and rain.

Claims

1. A covering element for walls, comprising:

- a plate-like body (2) having an edge (3) and a lip (4) disposed peripherally;
- engagement means (5) active on the edge (3) of the plate-like body (2) to fasten the covering element to a support wall (7); and
- coupling means (6) active on said edge (3) for engagement of said covering element with at least one covering element adjacent thereto, characterized in that said coupling means (6) is capable of, under fastening conditions of the covering element to the support wall (7), enabling relative displacements between said edge (3) and the lip (4) of an adjacent covering element.

2. A covering element as claimed in claim 1, characterized in that said edge (3) has at least one groove (8) on which an engagement means (5) is active, which groove, under fastening conditions to the support wall, has a substantially vertical axis (9).

3. A covering element as claimed in claim 2, characterized in that the engagement means (5) comprises at least one stop element (10) operating at said at least one groove (8) and adapted to be secured at a plurality of different engagement positions along said vertical axis (9).

4. A covering element as claimed in claim 2, characterized in that, under fastening conditions to the wall (7), said edge (3) is disposed downwardly of said plate-like body (2) and in that said groove (8) has an end (8a) open at the lower part thereof.

5. A covering element as claimed in claim 1, characterized in that it comprises a heat and/or sound insulating body (13) located in a gap (12) defined between the plate-like body (2) and the support wall (7).

6. A covering element as claimed in claim 1, characterized in that it comprises an insulating body (13) located in a hollow space (15) defined internally of said plate-like body (2).

7. A covering element as claimed in claim 1, characterized in that it further comprises an elastic seal (24) associated with said perimetric edge (3) to ensure a hermetic tightness between the edge itself and the corresponding lip (4) of the adjacent covering element.

8. A covering element as claimed in claim 7, characterized in that said elastic seal (24) comprises an anchoring portion (25) engaging in a cavity (26) of said perimetric lip (4) by means of tabs (27) extending transversely in an opposite direction relative to a fitting direction of the anchoring portion into said cavity.

9. A covering element as claimed in claim 8, characterized in that said elastic seal (24) comprises a sealing portion (28) defined by an arm having a decreasing thickness away from said anchoring portion (25).

10. A covering element as claimed in claim 1, characterized in that said coupling means (6) comprises a connecting element (16) of elastic material.

11. A covering element as claimed in claim 10, characterized in that said connecting element (16) comprises a first connecting portion (16a), to be engaged with said lip (4) of the adjacent covering element, and a second connecting portion (16b), to be engaged with said edge (3) of the plate-like body (2), said edge (3) and lip (4) being preferably overlapped under engagement conditions of the covering element with the covering element adjacent thereto.

12. A covering element as claimed in claim 11, characterized in that said connecting element (16) at least at the first connecting portion (16a) is formed with a seating of elongated conformation (17) which, under engagement conditions of the covering element with the support wall, has a major axis (18) extending in a substantially horizontal direction.

13. A covering element as claimed in claim 12, characterized in that said elongated seating (17) is threaded for engagement, by means of a screw (17a), with said lip (4) of the adjacent covering element.

14. A covering element as claimed in claim 11, characterized in that said second connecting portion (16b) of the connecting element (16) is adapted for snap fitting into a corresponding matching seating (19) defined in said edge (3) of the covering element.

15. A covering element as claimed in claim 12, characterized in that said connecting element (16) comprises:

- a central portion (21) of tubular conformation defining said elongated seating (17);
- a perimetric portion (22) located externally of the central portion (21); and
- resilient support means (23) operatively interposed between the central portion and perimetric portion and capable of enabling displacements of said central portion (21) relative to said perimetric portion (22) at least along an axis orthogonal to the major axis (18) of said elongated seating (17).

16. A covering element as claimed in claim 15, characterized in that said resilient support means (23) comprises support arms and/or deformable inserts.

17. A covering element as claimed in claim 8, characterized in that said plate-like body (2) is a quadrilateral and in that said elastic seal (24) extends at least at two adjacent sides of the plate-like body.

18. A covering element as claimed in claim 1, characterized in that said perimetric edge (3) of the plate-like body, under conditions of relative engagement between two adjacent elements, defines discharge openings (29, 31) with the corresponding perimetric

edge (4) of the adjacent plate-like body (2) to enable said relative displacements.

19. A covering element as claimed in claim 11, characterized in that said first portion (16a) is fastened to the lip (4) of an adjacent covering element.

20. A covering element as claimed in claim 11, characterized in that said second portion (16b) is slidably engaged in a matching seating (19) defined in the plate-like body edge (3).

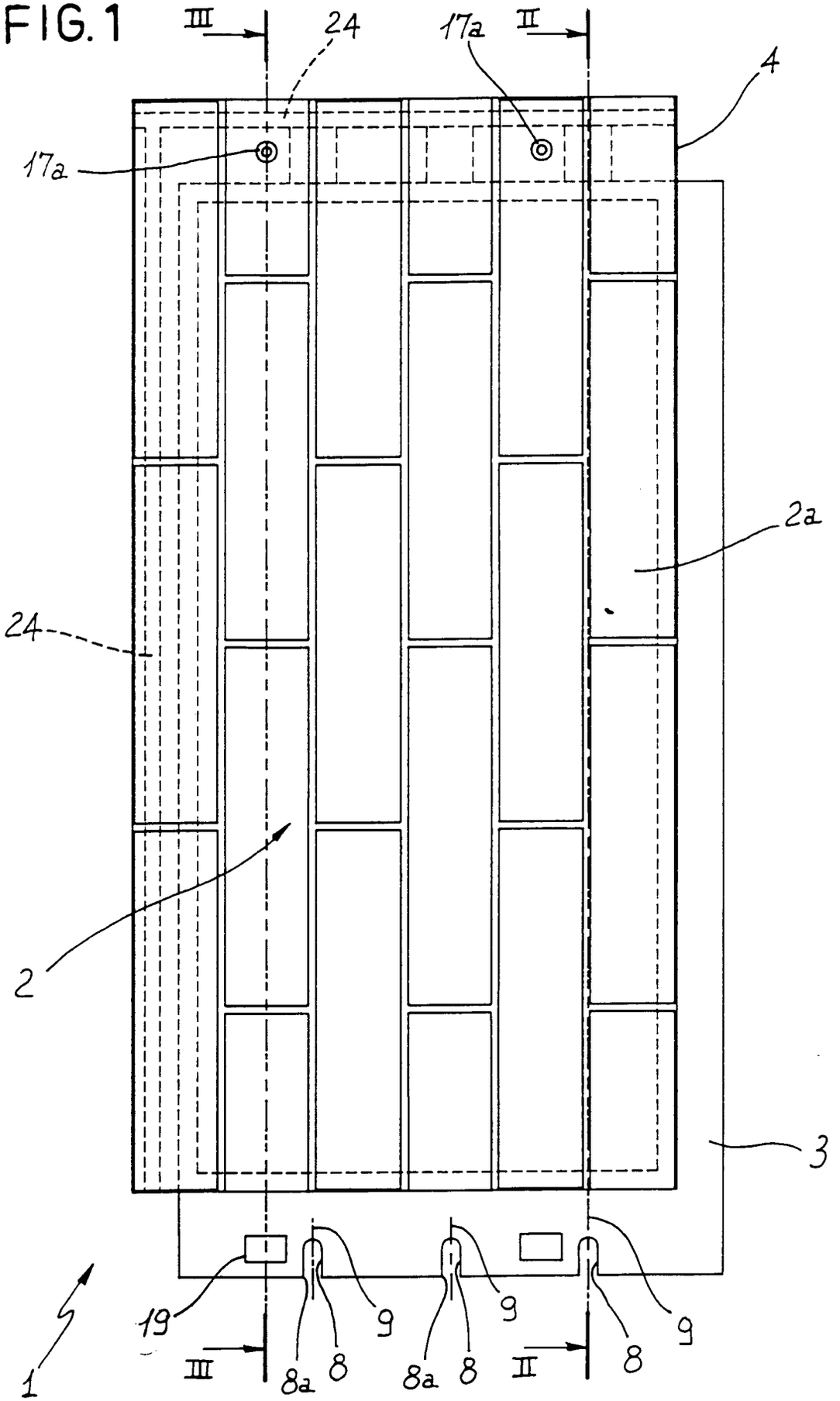
21. A covering element as claimed in claim 20, characterized in that said second portion (16b) can be moved in the matching seating (19) along a vertical direction.

22. A vertical covering wall characterized in that it is formed with a plurality of covering elements of the type described in claim 1.

23. A vertical covering wall as claimed in claim 22, characterized in that it comprises:

- a first series of covering elements (1), each in engagement with contiguous elements, said first series comprising covering elements each having an insulating body (13) operatively interposed between the plate-like body (2) and the support wall (7), said first series defining a lower band of said vertical wall;
- a second series of covering elements (1), each in engagement with contiguous elements, said second series defining a remaining upper band of said vertical wall.

FIG. 1



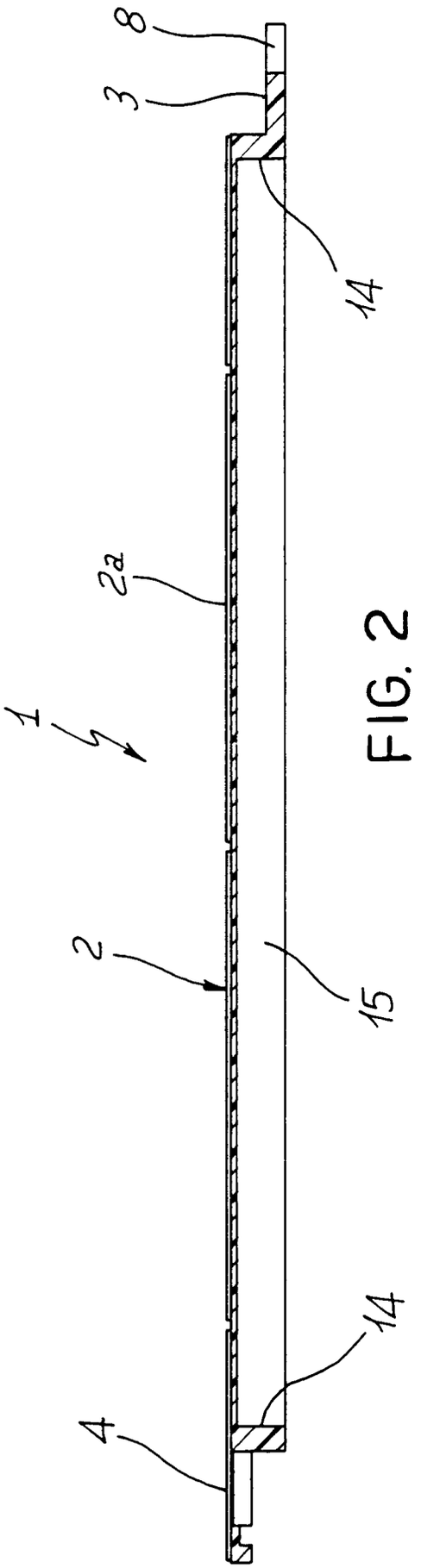


FIG. 2

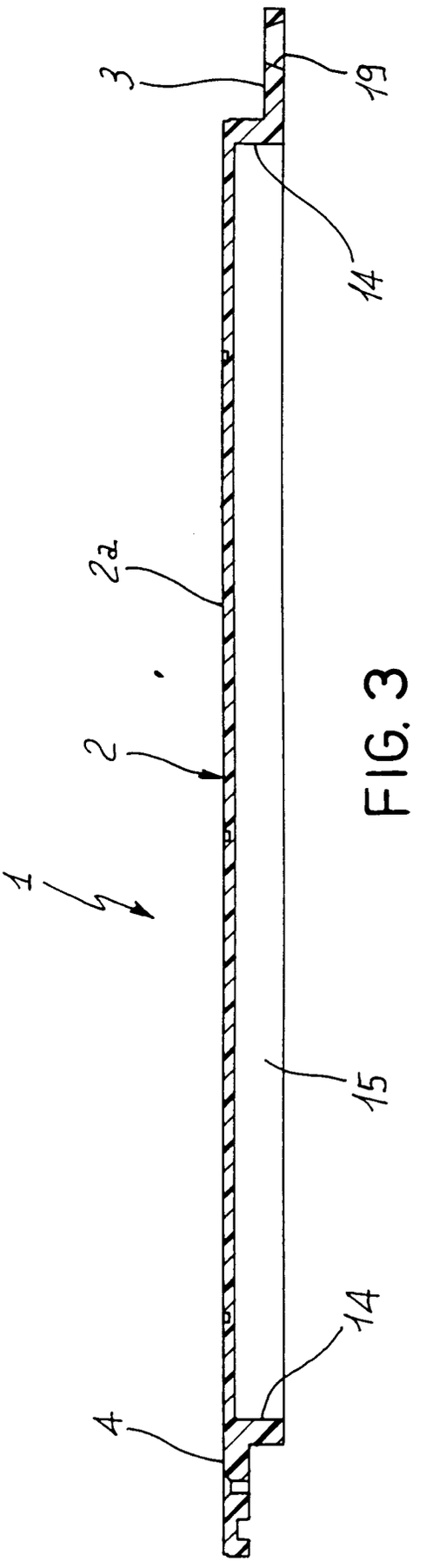


FIG. 3

FIG. 4

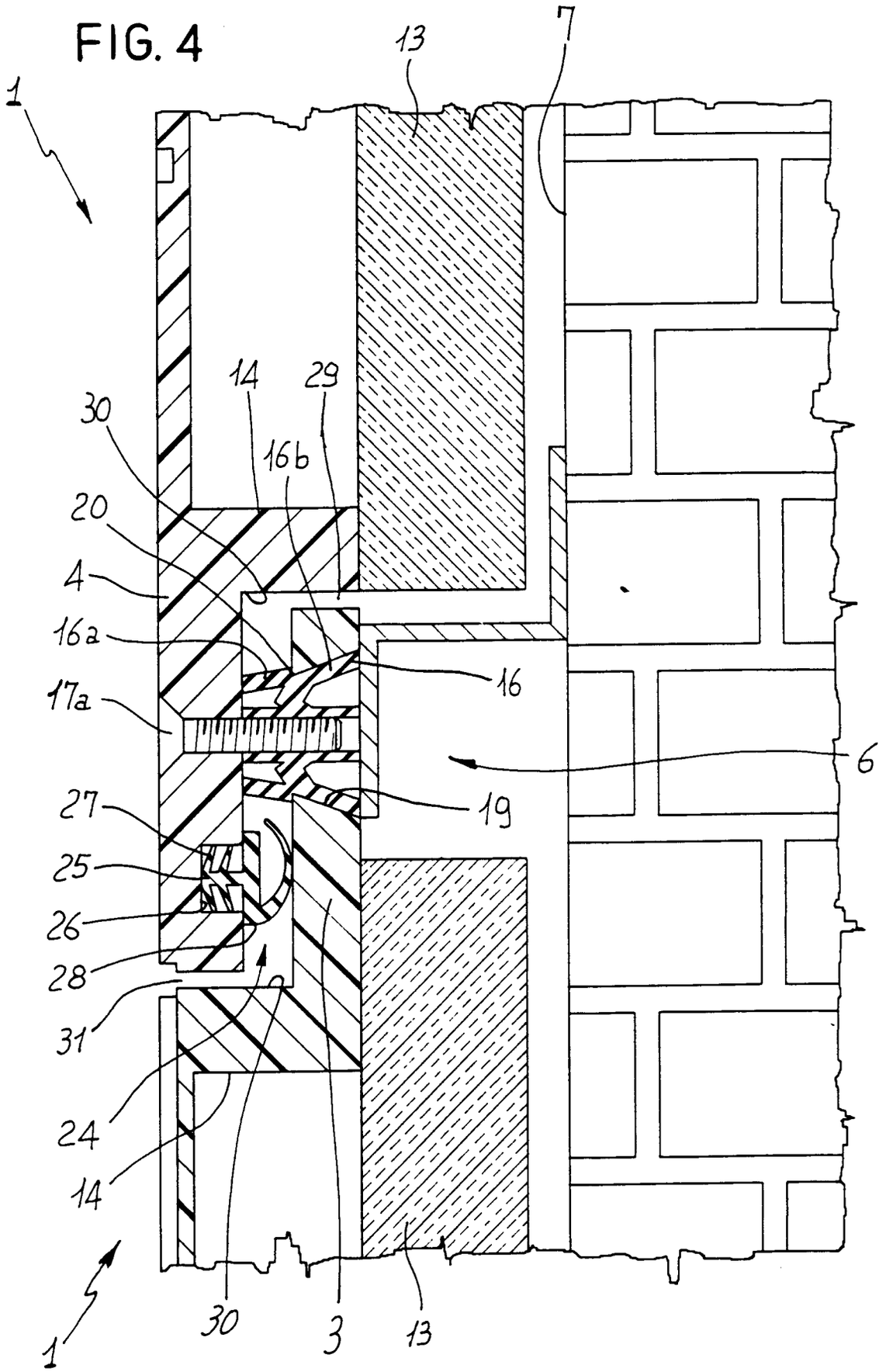
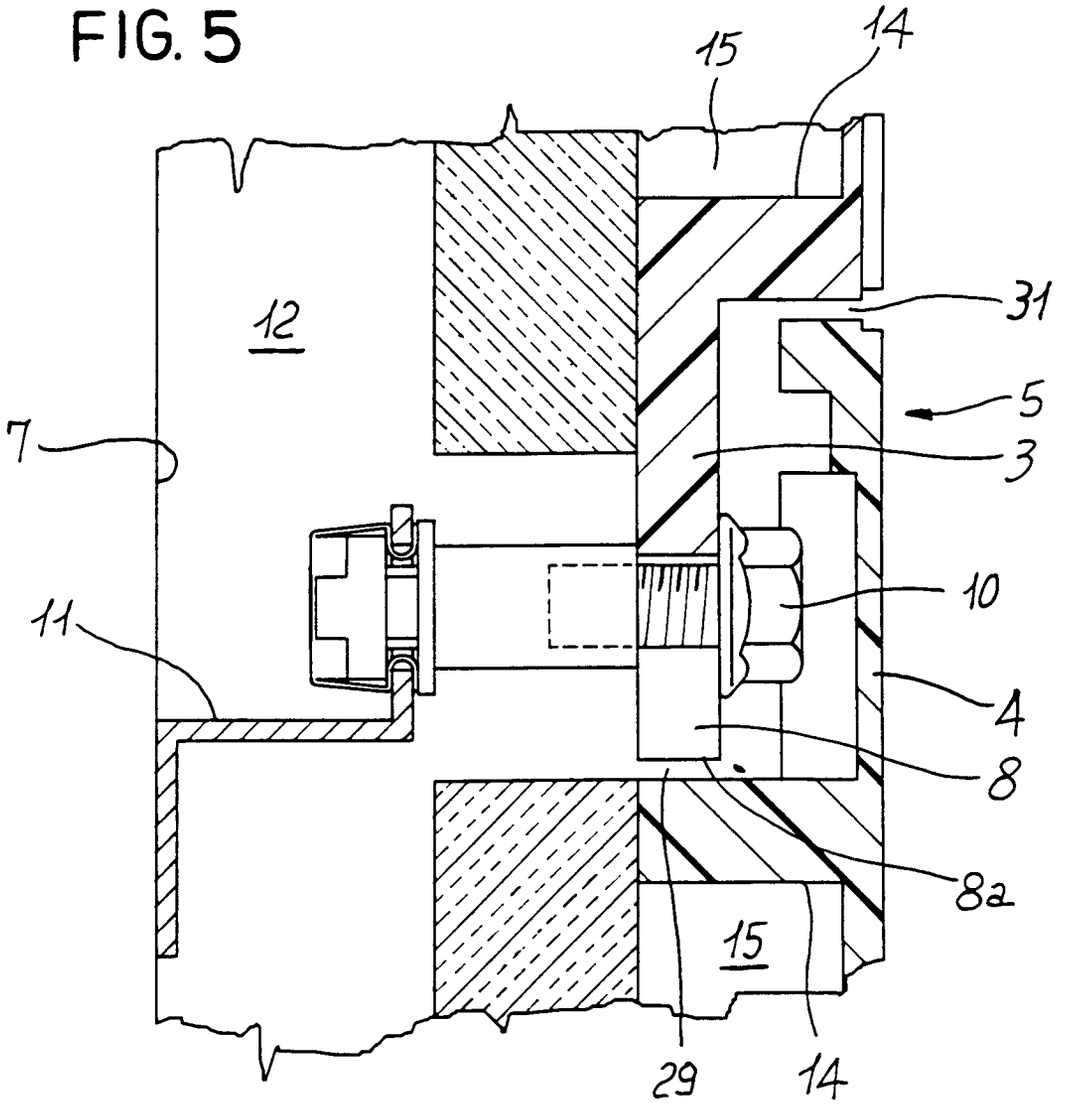


FIG. 5



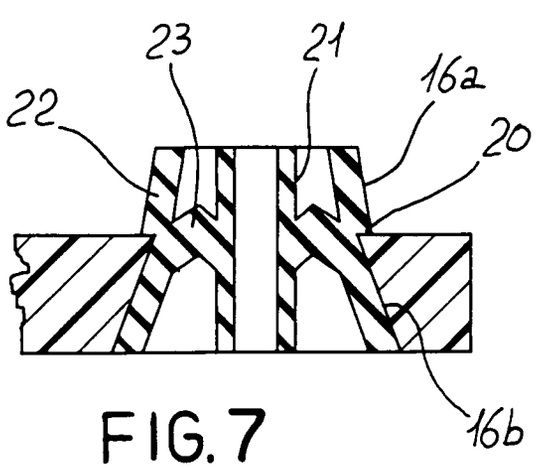


FIG. 7

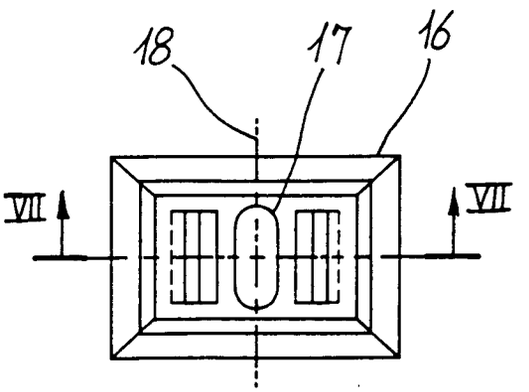
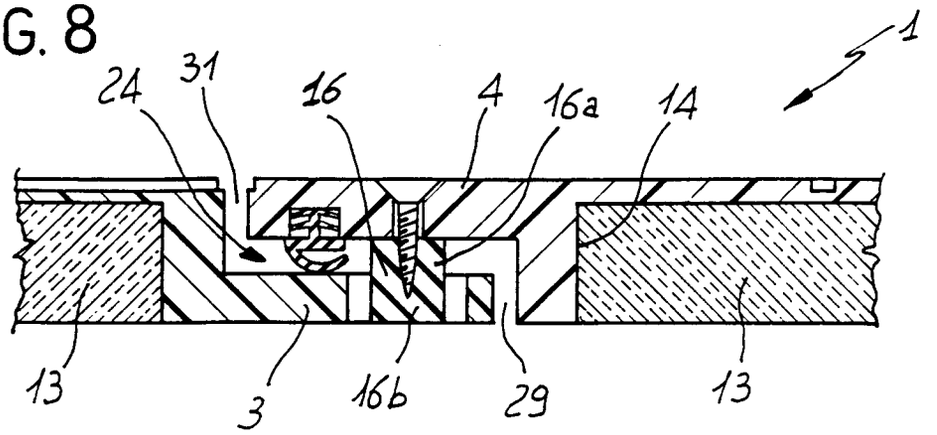


FIG. 6

FIG. 8



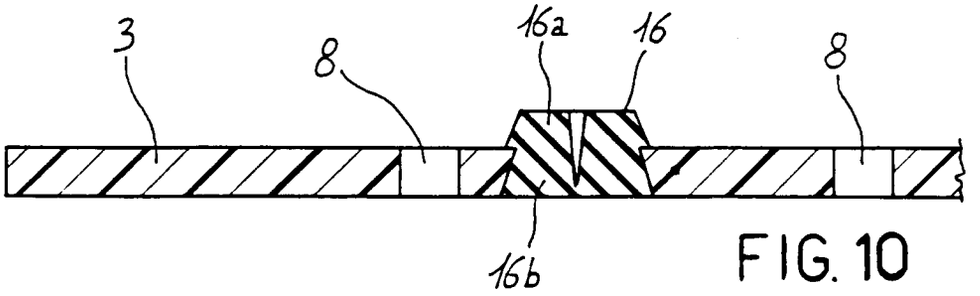
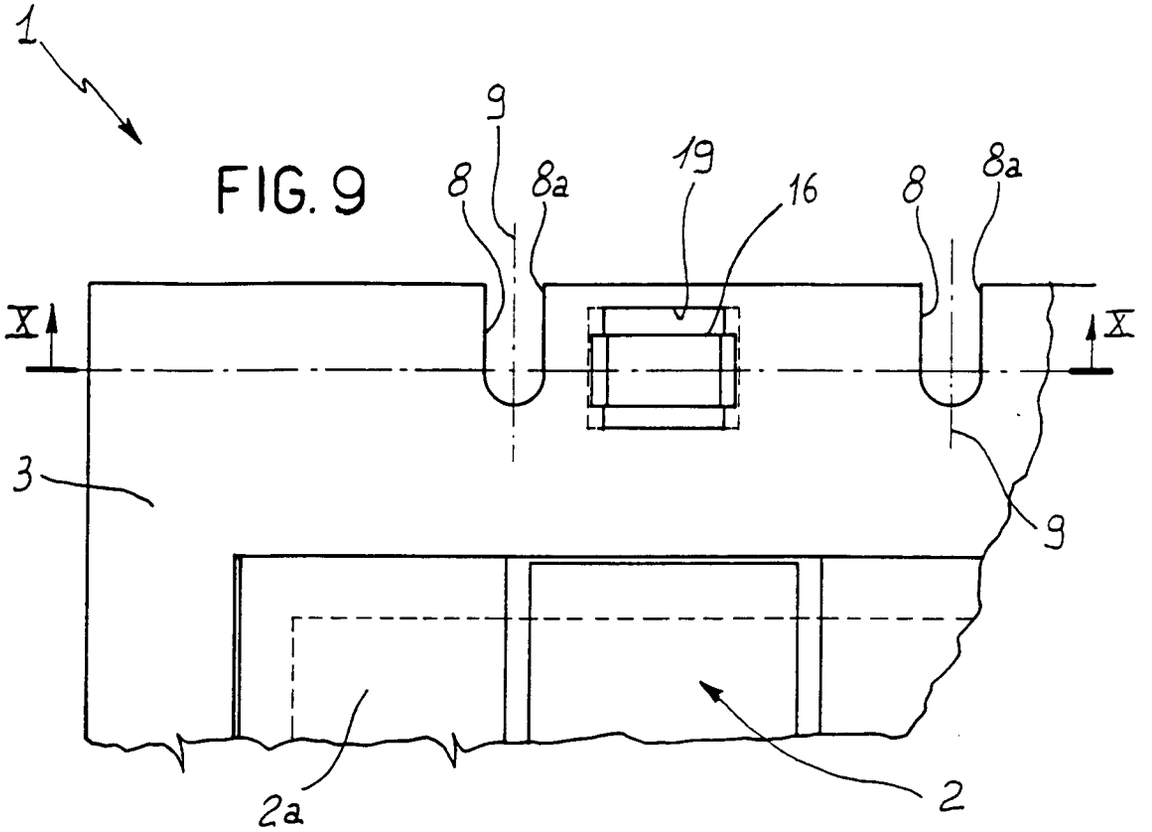


FIG. 10

FIG. 9



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EUROPEAN SEARCH REPORT

Application Number
EP 97 83 0511

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	EP 0 201 630 A (STRAUB) * the whole document *	1	E04F13/00 E04F13/08
A	US 4 741 136 A (THOMPSON) * the whole document *	1	
A	GB 1 151 861 A (FINDLAY) * the whole document *		
A	FR 2 141 210 A (FASTH)		
A	LU 80 342 A (S.A. BOISMANU -PLASTICS)		
A	US 3 376 683 A (EPSTEIN)		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 March 1998	Vijverman, W

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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& : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 97 83 0511

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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05-03-1998

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 201630 A	20-11-86	DE 3517443 A	20-11-86
		DE 3583680 A	05-09-91
		EP 0429431 A	29-05-91
US 4741136 A	03-05-88	NONE	
GB 1151861 A	14-05-69	NONE	
FR 2141210 A	19-01-73	SE 362125 B	26-11-73
		SE 353118 B	22-01-73
		DE 2227456 A	28-12-72
		GB 1390831 A	16-04-75
LU 80342 A	07-05-80	NONE	
US 3376683 A	09-04-68	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82