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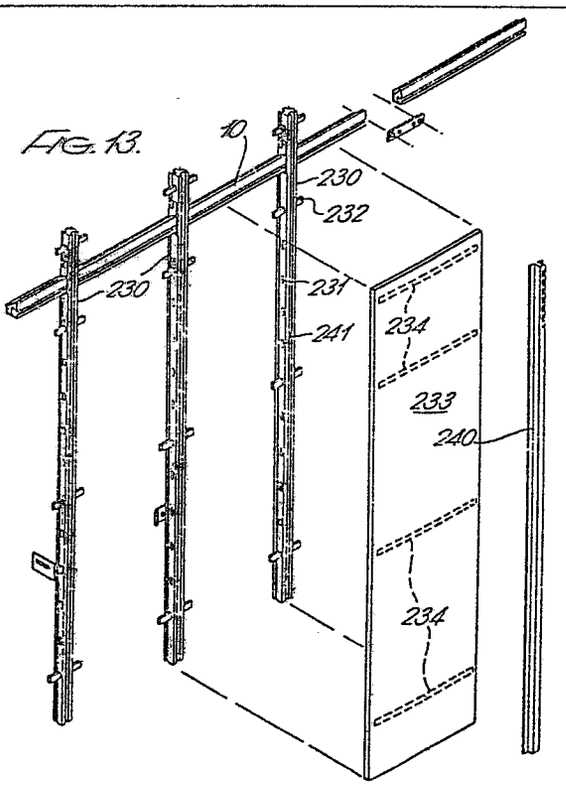
(54) **Improvements in wall cladding.**

(57) A wall cladding assembly has one or more panels (12, 13, 14; 233) and means for supporting the panels on a wall. The support means include a single, elongate, load bearing support beam (10) for securement to a wall horizontally and the beam (10) supports and provides a reference position for location of the panels (12, 13, 14; 233). The support means further comprise at least two elongate members (16, 17; 230) associated with and supporting the or each panel, the elongate members being adapted to be hung vertically from the beam (10). The elongate members (16, 17; 230) are held against the wall.



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IMPROVEMENTS IN WALL CLADDING

The invention relates to the cladding of walls, and more particularly but not exclusively to the cladding of interior walls with panels, there being a possibility that the invention can be used for exterior wall cladding too.

The cladding of interior walls with panels is a well known practice, and of particularly common use in shop fitting, where panels, often already decorated, are attached to bare or unsightly walls in order to provide a covering for such walls. The general practice in the past has been to attach wooden strips to the wall to be clad, and then attach the panels to the wooden strips. The wooden strips may be secured individually on site, a skilled operation for a joiner, or may be partly pre-fabricated into a wooden framework and then taken to the site and secured. Irregularities in the wall have to be taken into account, requiring care and skill, and securement of the panel to the wooden strips has to be carried out through the panel which can detract from the decorative effect.

According to the invention, there is provided a wall cladding assembly comprising one or more panels and means for supporting said panel or panels on a wall, in use, said support means including a single, elongate, load-bearing support beam for securement to a wall horizontally, in use, to support and to provide a reference position for location of the or each panel, at least two elongate members associated with and supporting the or each panel, which elongate members are adapted to be hung vertically from said beam, and means for holding the elongate members against the wall, in use.

The elongate members may be separable from the associates panel or panels, or may be fixed to the associated panel or panels.

Where the elongate members are separable from the associated panel or panels, the elongate members preferably include a plurality of supports, the or each panel having engagement means adapted to engage the supports on the elongate members to mount the or each panel on the elongate members, in use.

The supports may be bars engageable in any one of a multiplicity of slots in the elongate members to extend laterally thereof.

The elongate members are preferably mounted on the beam to be spaced apart by the width of a panel to be mounted, although it will be appreciated that the system is flexible in that exact spacing of the elongate members is not required.

The elongate members may carry accessories such as a slotted channel element to allow engagement of, for example, shelves or the like.

According to a further aspect of the invention, there is provided a method of cladding a wall with a cladding assembly according to the invention, which method comprises the steps of securing to a wall said single, elongate, load-bearing support beam, mounting said elongate members and the associated panel or panels on the beam, and securing the elongate members to the wall with said holding means.

Where the elongate members are secured to associated panels, the step of mounting said elongate members and the associated panel or panels on the beam is a single step.

However, where the panel or panels are separable from the associated elongate members, the method comprises separate steps of hanging the elongate members on the beam, securing the elongate members to the wall and mounting the panel or panels on the elongate members.

By way of example, embodiments of a cladding assembly

and method of cladding a wall according to the invention ill now be described with reference to the accompanying drawings in which:-

Figure 1 is a perspective exploded view illustrating the component parts of the cladding assembly;

Figure 2 is an elevational view of a typical wall clad with a cladding assembly according to the invention;

Figure 3 is a plan view of the clad wall of Figure 2;

Figure 4 is a sectional view of a support member;

Figure 4 is a view of part of a panel illustrating an edge profile element and rail element;

Figure 6 is an illustration of a wedge adaptor for adjusting spacing between the securement member and a wall;

Figure 7 is a plan view illustrating a joint between two panels;

Figure 8 is a plan view illustrating an alternative joint between two panels;

Figure 9 is a plan view illustrating a yet further joint between two panels;

Figure 10 is a plan view illustrating one example of cladding at a reveal;

Figure 11 is a view illustrating operation of a base securement member;

Figure 12 is an exploded view of a modified form of the cladding assembly described in Figures 1 to 11;

Figure 13 is an exploded view of a second embodiment of the cladding assembly according to the invention;

Figure 14 is a front view of the cladding assembly of Figure 13 assembled in a typical arrangement;

Figure 15 shows a detail of a post of the assembly of Figures 13 and 14;

Figure 16 is a plan view illustrating part of the cladding assembly of Figures 13 and 14;

Figure 17 is a view illustrating how a panel is

supported in the cladding assembly of Figures 13 and 14; and

Figure 18 is a plan view illustrating compatibility of the cladding assemblies according to the two embodiments of the invention.

With reference to Figure 1, the various components involved in a wall cladding system according to the invention are illustrated. A beam 10 in the form of a metal extrusion is secured to a wall, adjustment to allow for irregularities in the wall being provided by wedge adaptor elements 11 which will be described in more detail with reference to Figure 6.

Panels 12 and 13 (panel 13 being shown with panel portion 14 removed) are hung on the beam 10 by engagement means in the form of rail elements 15 secured to elongate members in the form of edge profile elements 16 and 17. Stiffening rails 18 are provided, the completed panel being self-supporting. An attachment rail 25 allows attachment of skirting, equipment and the like.

Base fixing plates, two embodiments 20 and 21 of which are illustrated in Figure 1 are engaged in the edge profile elements 16 and 17 and then screwed to the wall to secure the panel to the wall. Similarly, intermediate fixing plates 22 are used to hold a central portion of the panels to the wall.

Figures 2 and 3 illustrate a typical wall clad with a cladding assembly according to the invention. The beam 10 is the main load bearing member and on the beam 10 hang panels 30, 31, 32, 33, 34, 35 and 36. To clad the wall below a window 37, a secondary beam 38 is provided from which is hung a panel 39. Base fixing plates 40 and intermediate fixing plates 41 are illustrated.

Figure 3 illustrates that narrow reveal panels 50, 51, 52 and 53 are used to panel the interior faces of the window and door reveals. Further description in relation

to Figure 10 will illustrate cladding at a reveal. Figure 3 also illustrates how corner panels 55 (outside corner) and 36 (inside corner) deal with cladding at corners.

Figures 1, 2 and 3 are general illustrations of the cladding assembly according to the invention; detailed aspects of the various elements will now be described with reference to the further drawings.

Figure 4 is a sectional view through the beam 10 and illustrates the profile of the beam 10. The beam 10 is an extrusion of metal, for example aluminium or aluminium alloy. The beam is secured to the wall by screws or the like engaging slots 60 and the beam 10 has an upwardly extending lip 61 over which the rail elements 15 of the panels hang. The beam 10 is essentially of double channel section, main channel 62 facing towards the wall in use and having a pair of mutually facing ribs 63, 64.

Where the wall to be clad has an uneven surface, the beam 10 can be adapted for securement to the wall by adjustable wedge elements 11 shown in Figure 6. The wedge element 11 has a block 70 with slots 71, 72 which are engaged, in use, by the ribs 63 and 64 of the beam 10. A block holder 73 has a tubular spigot 74 which passes through a slot 75 in the wedge 11 and engages the block 70. It will be appreciated that, depending on the position of the block 70 in relation to the wedge 11, the spacing of the beam 10 from the wall can be altered. When the wedge is at a desired position, the beam can be secured to the wall by screwing through the beam 10, the block 70 and the tubular spigot 74 into the wall.

Figure 5 shows a detail of a panel framework with the rail element 15 and edge profile element 16 referred to previously in Figure 1. The rail element 15 has a profile the same as that of the beam 10, but inverted, to provide a downwardly extending lip 79 to engage the lip

61 of the beam 10. The rail element 15, and a corresponding element at the other side of the panel framework is welded in place although it will be appreciated that alternative means of fixing may be used. It will also be appreciated that alternative profiles may be used for the beam 10 and the rail elements 15, the essential requirement being that the hooking action is provided to support the panels on the beam 10.

Figure 5 also shows in some detail the edge profile element 16, which is also conveniently an extrusion of constant cross-section and conveniently of metal, for example aluminium or aluminium alloy. The element 16 has a panel support portion generally indicated at 80 having a flange 81 and a panel engaging rib 82 on a further flange 83. Extenting rearwardly of the flange 81 is a web 84 from which extends a fixing plate engaging portion 85 which will be described later with reference to Figure 11.

The edge profile element 16 illustrated in Figure 5 may be modified to provide a different external appearance, notably different slots or flush appearance between panels and various alternatives will now be described with reference to Figures 7, 8 and 9.

Figure 7 shows two abutting panels 90, 91 and associated edge profile elements 92, 93. As with the edge profile element 16, the elements 92 and 93 have panel support portions with respective ribs 94, 95 engaging grooves in the panels 90, 91 respectively. The ribs 94 and 95 are barbed in cross-section to grip the respective panels.

Extending from the panel support portions are respective webs 96, 97 and it will be seen that there is a planar profile extending from the exposed edge of the panels 90 and 91 to provide a rearwardly extending

channel 98 between the panels. As with the element 16, there are fixing plate engagement portions 99, 100 respectively extending from the webs 96 and 97.

Figure 8 shows a further alternative in which panels 101, 102 abut directly with no gap therebetween. In order to achieve this effect, panel support portions of edge profile elements 103, 104 respectively do not extend to the exposed surface of the panels 101 and 102 but end with panel engaging ribs 105, 106 which are the same in profile as the ribs 94 and 95 of the Figure 7 embodiment. In other respects, the edge profile elements 103 and 104 are the same as the edge profile elements 92 and 93 of Figure 7. It will be seen that the panel support portions of the elements 103 and 104 allow the panels 101 and 102 to abut to provide an essentially flush panel surface, although chamfered edges 107, 108 are shown on the panels to provide a groove.

Figure 9 shows a yet further alternative arrangement of adjacent panels 110 and 111. Panel 110 is supported by an edge profile element 112 identical with edge profile element 92 of Figure 7. However, the panel 111 is supported by an edge profile element 113 essentially the same as the edge profile element 16 shown in Figure 5. Using this combination, a slot 114 is provided between the panels 110 and 111 but this slot extends only to the depth of the panels, not further as was the case in the Figure 7 embodiment. It will be appreciated that by using two panels of the type referred to under numeral 113, the width of the slot 114 can be doubled.

It will be appreciated that although certain variations have been described with reference to the foregoing Figures, many variations can be achieved in slots or the like between adjacent panels and that the profiles of these slots can be arranged to accept, for example, shelf supports, lighting or electrical appliance

supports or other equipment which might conveniently be supported on a wall. The cladding assembly is thus versatile in this respect.

The foregoing description has dealt with cladding essentially planar walls, albeit with adaptor elements for dealing with irregularities in the wall surface at the beam level. It is important, however, to be able to clad at reveals and Figure 10 illustrates a typical way of achieving such cladding.

Figure 10 shows a panel 120 supported along one edge by an edge profile element 121 identical to the edge profile element 93 of Figure 7. To the element 121 is secured by a concealed fixing (the type of fixing does not form part of this invention and it will be appreciated that a variety of proprietary concealed fixings is available. For example, a stud and keyhole arrangement may be used) a reveal panel 122. A spacer block 123 is included in the Figure 10 embodiment but it will be appreciated that this may be omitted and a recess 124, shown in chain lines to indicate an optional feature, if flush securement of the reveal panel 122 is required.

Figure 11 illustrates securement of edge profile elements to a wall using a fixing plate. Edge profile elements 130, 131 are identical to the edge profile elements 96 and 97 shown in Figure 7 but it will be appreciated that alternative elements could be used as fixing plate engagement portions 132 and 133 are common to all the edge profile elements.

The fixing plate engagement portions 132 and 133 each have an elongate recess 134, 135 respectively part cylindrical in cross-section accessed by a tapering slot 136, 137 respectively. Webs 138, 139 respectively extend outwardly from the recess region and flanges 140, 141 extend perpendicular to the respective webs 138, 139 to

provide engagement lips 142, 143 respectively.

A typical fixing plate 150 is illustrated in two different positions in Figure 11, an adjustment position shown in chain lines where the plate 150 can be slid up and down the edge profile element 130, and a final fixing position shown in solid lines where the plate 150 is secured to a wall 151 by means of a screw 152. The plate 150 has a rib 153 essentially of keyhole cross-section which is engageable in the recess 135 of the element 130 (or equally the recess 134 of the element 131). The rib 153 is conveniently slid into the recess 135 from the end of the element 130 but the shape of the element 130 is such that, when the plate 150 is affixed to a wall, it is possible to remove and replace panels from the fixing element by sufficient pressure, the rib 153 being engageable in the recess 135 with a snap-fit.

The plate 150 also has elongate hook elements 155, 156, the former snapping over the lip 143 of the edge profile element 130 and the latter snapping over the lip 142 of the edge profile element 131.

The sequence of operation is as follows:-

1. The panel attached to the edge profile element 130 is supported on the beam 10.

2. The fixing plate 150 is engaged with the edge profile element 130 by entering the rib 153 into the recess 135 and sliding to the appropriate position.

3. The fixing plate 150 is rotated to snap the hook element 155 over the lip 143.

4. The fixing plate 150 is secured to the wall by one or more screws 152 engaging slots in the fixing plate 150.

5. The adjacent panel secured to the edge profile element 131 is snapped into place, being held by the hook element 156 engaging the lip 142 of the edge profile element 131.

In this way, cladding is progressed along a wall in one direction, this arrangement of fixing plate being sufficient to hold the base of the panels as all vertical load bearing is taken by the beam 10.

Intermediate fixing plates may also be added where additional support is required.

Figure 12 shows a modified cladding assembly, similar in essentials to that of Figures 1 to 11. Like references will be used in Figure 12 to those in Figures 1 to 11. A beam 10 in the form of a metal extrusion is secured to a wall, there being the possibility of spaces as hereinbefore described.

A panel 12 is illustrated assembled and in exploded form in Figure 12, the panel 12 having a panel portion 14 secured to elongate members in the form of edge profile elements 16 and 17, stiffening rails 18 extending between the edge profile elements 16 and 17.

The edge profile elements 16 and 17 have cut out portions 19 and 23 in which are secured profiled engagement elements 24 and 25, this being the main difference between the panels 12 in this modified embodiment and the embodiment described with reference to Figures 1 to 11.

An attachment rail 26 allows attachment of skirting, equipment and the like. The edge profile elements 16 and 17 are capable of supporting linking tongues 27, conveniently of polyvinyl chloride or other suitable material, to link together panels, wall plates 28 or reveal straps 29 where the panel edges on to a reveal.

Figures 13 and 14 illustrate a second embodiment of a cladding assembly according to the invention.

As with the first embodiment, a beam 10 is attached to the wall and this is a common feature of the two embodiments of assembly. In the second embodiment, however, the assembly sequence is different in that a

series of elongate members in the form of posts 230 including a cut out and engagement portion to be described in more detail with reference to Figure 15 is hung from the beam 10.

The posts are laterally slotted with slots 231 and support bars 232 are engageable in the slots 231 at a variety of different heights.

The beam 10 provides level hanging for all the posts 230 so that positioning of the posts is assured and, once hung in approximately the correct spacing, the posts 230 are secured to the wall to which the beam 10 is attached already by means of plates or reveal straps as described previously with reference to the first embodiment. The posts 230 may also be screwed directly to a wall.

Panels 233, of which one is shown in Figure 13, carrying rails and hooks 234 to be described in more detail with reference to Figure 17 are then hung on the support bars 232 to attach the panels 233 to the beam and post structure already secured to the wall. In this way, there is no evidence at the front of the panel 233 of any means of attachment to the wall, a plain surface being exposed.

There are various options available at joints between panels. The panels can simply abut one another with square edges to provide a continuous surface, or be set apart to feature the joint between panels, in which case the panel edges may be rounded or otherwise shaped. When panels are set apart a channel 240 may be engaged in the slot 241 to provide an additional feature. The channel 240 may be provided with slots to provide a means of supporting outwardly facing brackets to support shelving or other equipment in front of the panel. The assembly is thus versatile and can be altered in accordance with the needs of a particular room or area.

The posts 230 can be engaged by wall plates or

reveal straps as will be described in more detail with reference to Figure 16.

Figure 14 illustrates the cladding assembly of Figure 13 partly in position on a wall and shows how the hooks 234 engage the support bar 232. Figure 14 also shows in general terms what happens at a reveal, there being a wall plate 235 and a reveal strap 236 illustrated; these elements will be described in more detail with reference to Figure 16.

Figure 15 shows a detail of one of the posts 230 shown in Figures 13 and 14. The post 230 has a cut out portion 250 in which is riveted a hook element 251. The hook element 251 is a short length of extrusion of the same cross-section as the beam 10 arranged upside down with respect to the beam 10 so that the beam 10 and the hook element 251 engage one another. Also in Figure 15 can be seen one of the slots 231.

Figure 16 shows the various components of the cladding assembly of Figures 13 and 14 in plan view attached to a wall 260.

The beam 10 is not illustrated, Figure 16 being a sectional view, but it can be seen that the post 230 is attached to the wall by a series of screws 261, by a wall plate 266 and by a reveal strap 267. In general, securement to a plain wall will be by the wall plates, and securement at reveals will be by the reveal straps. One of the support bars 232 is illustrated and engaged by hooks 234 of adjacent panels 233. The slotted channel 240 is also present, engagement of the slotted channel 240 being a sliding one in a recess in the extrusion of the post 230.

The post 230 in Figure 16 is illustrated at a reveal and in part cylindrical portions 262 and 263 in the post 230 are engaged circular ribs 264 and 265 of a wall plate 266 and a reveal strap 267 respectively. The wall plate

266 is used , as in the first embodiment, for securement to a plain wall, and the reveal strap 267 is used for securement at a reveal.

Figure 17 is a sketch illustrating how a panel hangs on the support bars 232. A rail 270 is secured to the back of the panel 233 and in a lipped recess 271 at the base of the rail 270 is slidingly engaged the hook 234 described previously. The hook passes over the support bar 232 and the edge of the panel 233 abuts the post 230 to form a secure fixing.

Figure 18 illustrates compatibility of the cladding assemblies of the two different embodiments, the post 230 of the second embodiment supporting one of the panels 233 and one of the edge profile elements 16, 17 supporting one of the panels 12. Thus, in some circumstances one type of assembly will be appropriate whereas in other circumstances the type of assembly will be appropriate but transition between the two types is readily achieved.

The profiles of the posts 230 in the second embodiment and the edge profile elements 16 and 17 of the first embodiment are similar, thus enabling the wall plates and reveal straps to be common to both embodiments. In both embodiments, the wall plates and reveal straps can be slid along the posts 230 or elements 16 and 17 to a desired position before fixing.

A first advantage of the embodiments of a cladding assembly according to the invention is that one element only, namely the beam 10, requires accurate fixing on the wall, the beam 10 also being the essential load bearer of the assembly. Once the beam 10 is in position, in the first embodiment cladding panels are hung and progressively secured to the wall, and in the second embodiment posts are progressively secured to the wall and the cladding panels mounted on the posts. While the securement of the beam 10 to the wall requires care, once

the beam 10 is in position, all subsequent positioning is taken from the beam 10 and the panel hanging operation can be carried out by unskilled labour.

A second advantage of the embodiments of a cladding assembly according to the invention is that all fixings are concealed and the variety of different profiles on the edge profile elements and the possibility of different profiles for the posts in the second embodiments provides for many possibilities of supporting shelves, fitments, electrical appliances or the like to be an integral part of the cladding assembly.

A still further advantage is that in the first embodiment, the panels of the cladding assembly are rigid in themselves, owing to the edge profile elements and stiffening rails, and in the second embodiment that the panels are supported at regular intervals to avoid flexing.

CLAIMS

1. A wall cladding assembly comprising one or more panels (12, 13, 14; 233) and means for supporting said panel or panels on a wall, in use, said support means including a single, elongate, load bearing support beam (10) for securement to a wall horizontally, in use, to support and to provide a reference position for location of the or each panel (12, 13, 14; 233), at least two elongate members (16, 17; 230) associated with and supporting the or each panel, (12, 13, 14; 233), which elongate members (16, 17; 230) are adapted to be hung vertically from the said beam (10), and means for holding the elongate members (16, 17; 230) against the wall, in use.

2. A cladding assembly as claimed in Claim 1 wherein the elongate members (16, 17) are fixed to the associated panels (12, 13, 14) prior to hanging the elongate members (16, 17) from said beam (10).

3. A cladding assembly as claimed in Claim 1 wherein the elongate members (230) are separable from the associated panels (233).

4. A cladding assembly as claimed in Claim 3 wherein the elongate members (230) include a plurality of supports (232), the or each panel (233) having engagement means (234) adapted to engage the supports (232) on the elongate members (230) to mount the or each panel (233) on the elongate members (233), in use.

5. A cladding assembly as claimed in Claim 4 wherein the supports are bars (232) engageable in any one of a multiplicity of slots (231) in the elongate members (230) to extend laterally thereof.

6. A cladding assembly as claimed in any preceding Claim wherein the elongate members (16, 17; 230) carry accessories to allow engagement or support of additional apparatus by the elongate members (16, 17; 230).

7. A cladding assembly as claimed in any preceding Claim wherein the beam (10) includes a lip extending along its length and the elongate members (16, 17; 230) include a hook element (15; 234) having a downwardly extending lip.

8. A method of cladding a wall with a cladding assembly as claimed in Claim 1, which method comprises the steps of securing to a wall said single, elongate, load bearing support beam (10) mounting said elongate members (16, 17; 230) and the associated panel or panels (12, 13, 14; 233) on the beam (10), and securing the elongate members (16, 17; 230) to the wall with said holding means.

9. A method as claimed in Claim 8 in which the elongate members (16, 17) are secured to associated panels (12, 13, 14), the step of mounting said elongate members (16, 17) and the associated panel or panels (12, 13, 14) is a single step.

10. A method as claimed in Claim 8 comprising separate steps of hanging the elongate members (230) on the beam (10), securing the elongate members (230) to the wall and mounting the panel or panels (233) on the elongate members (230).

FIG. 1.

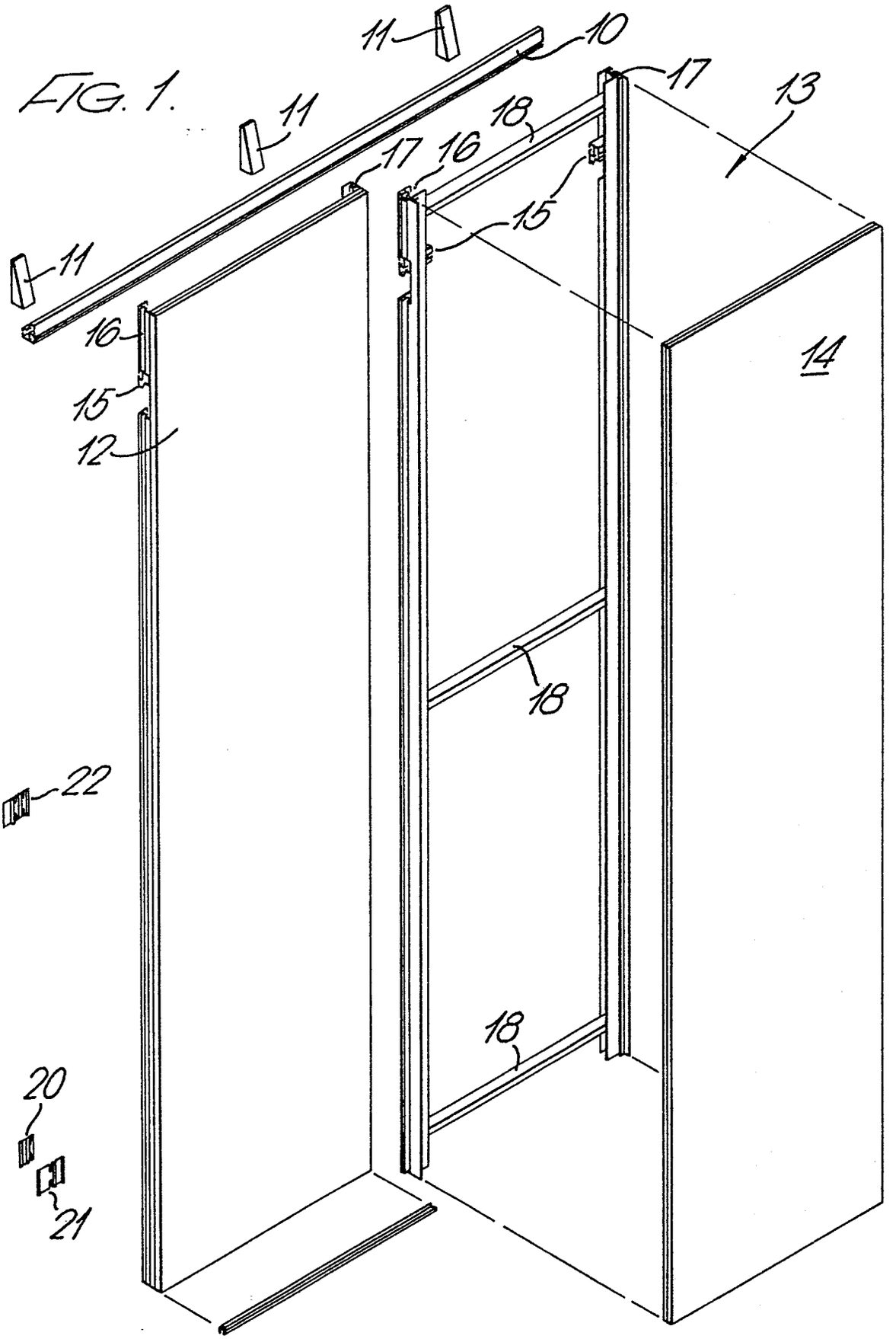


FIG. 3.

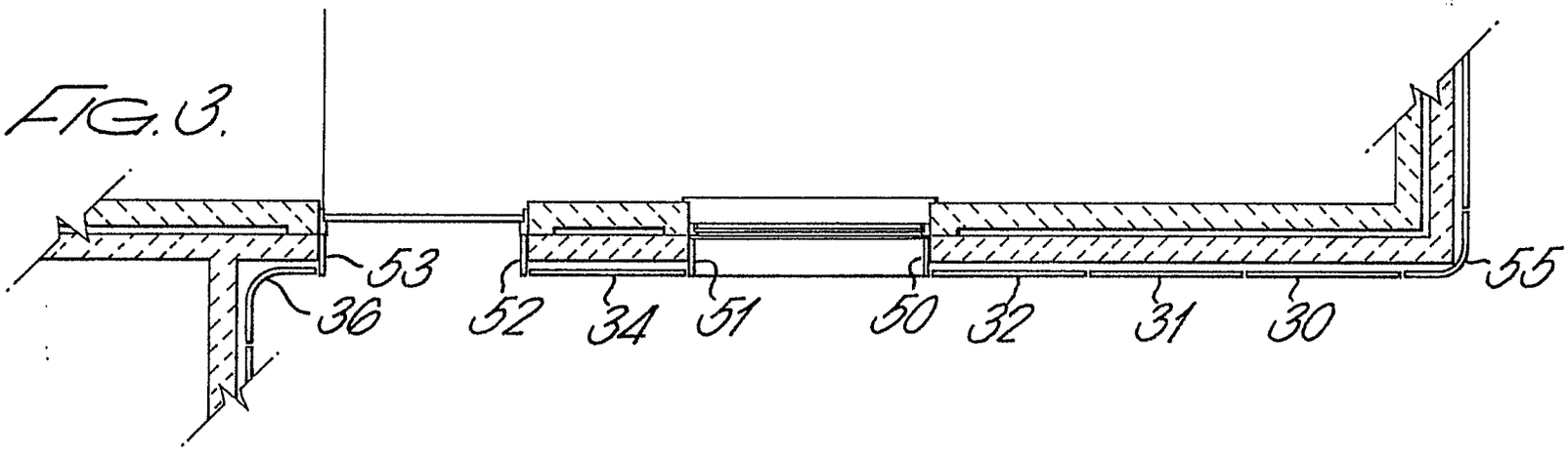
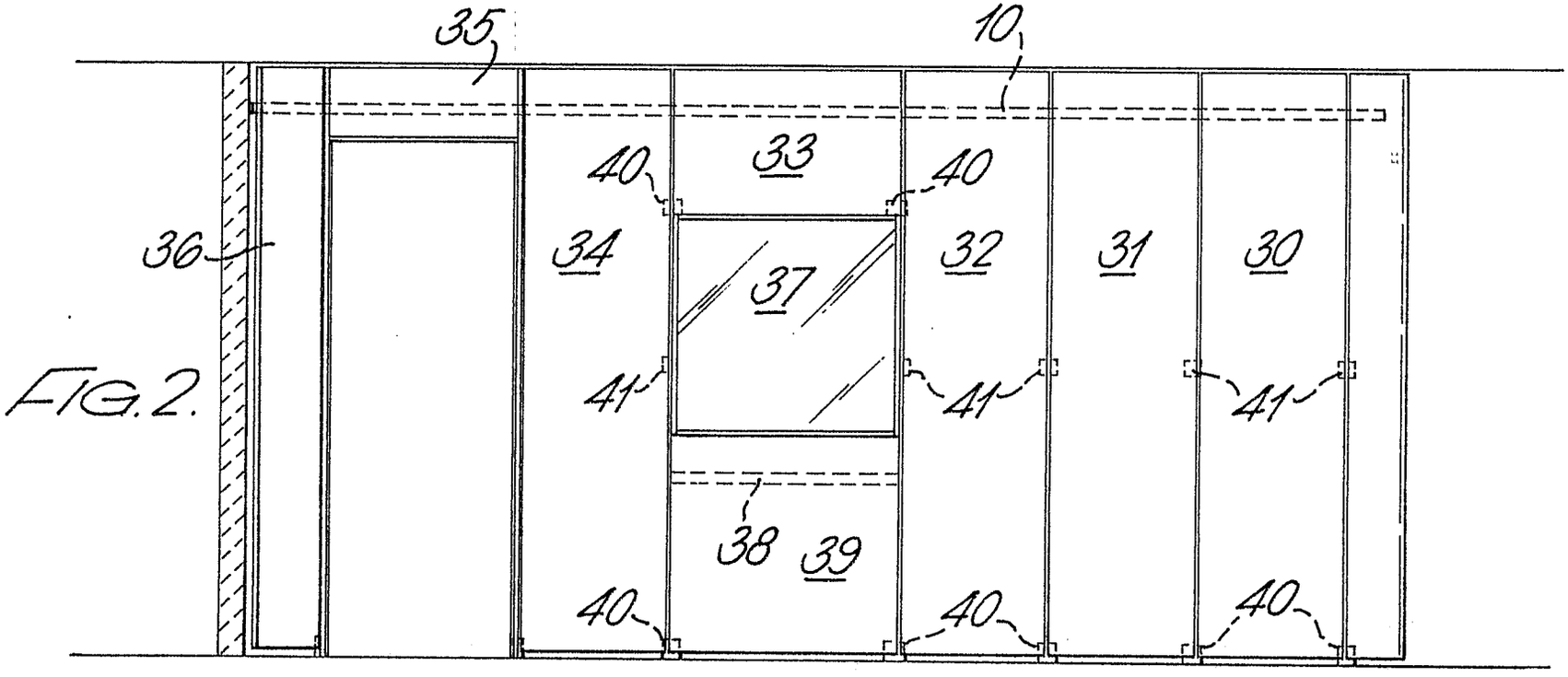


FIG. 2.



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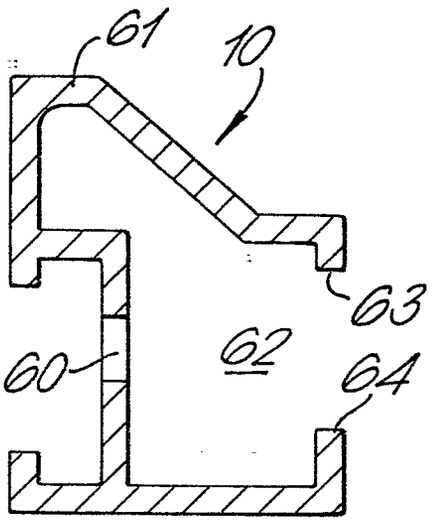

FIG. 4.

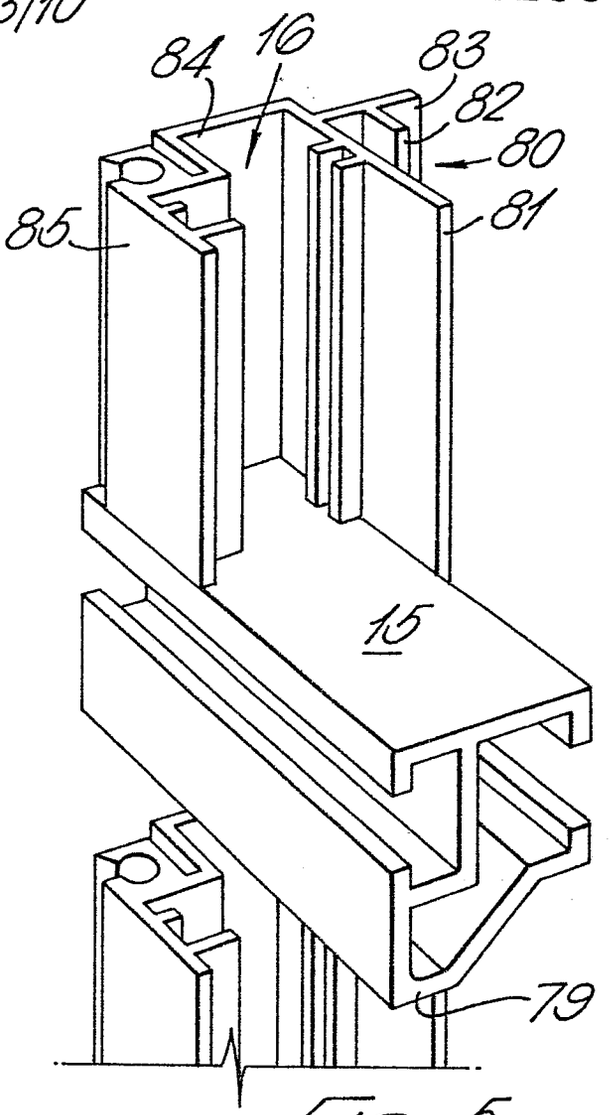

FIG. 5.

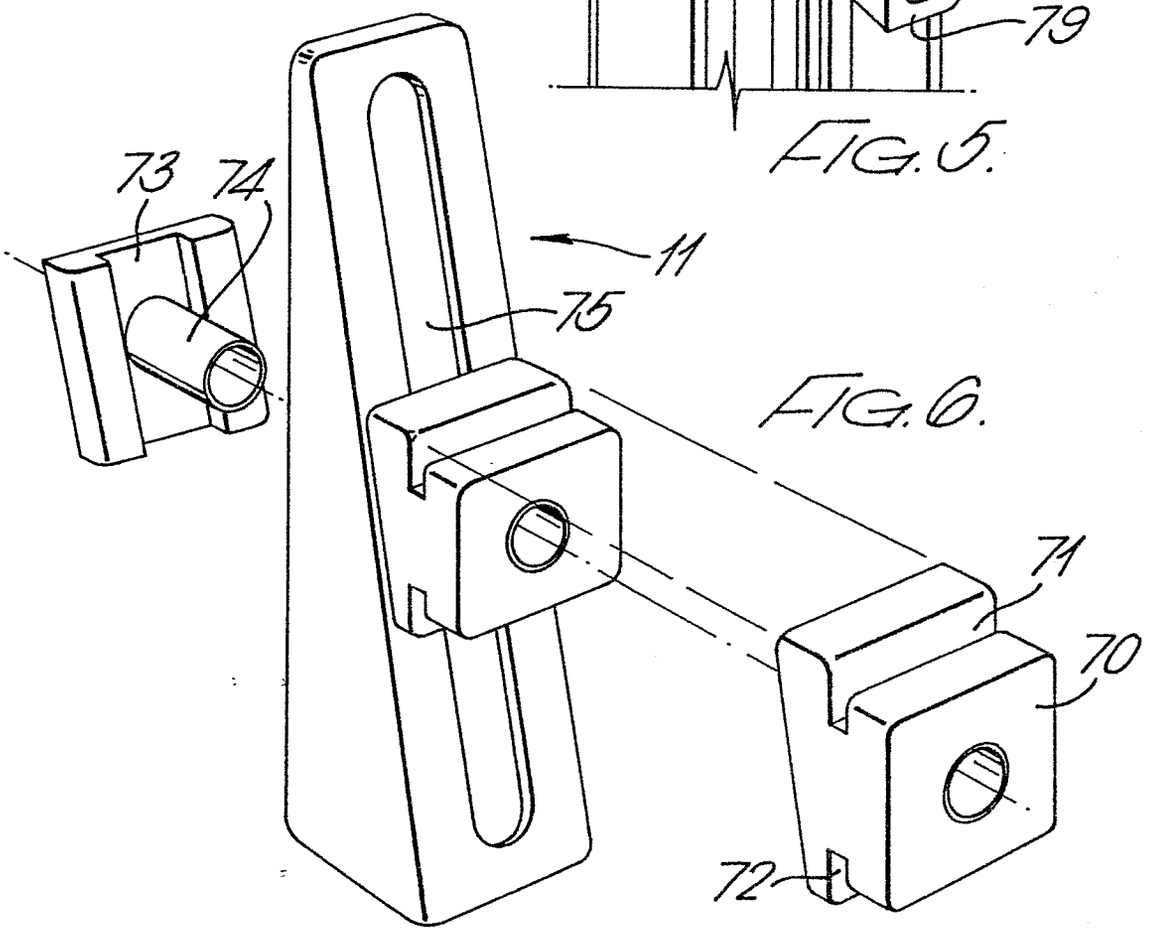

FIG. 6.

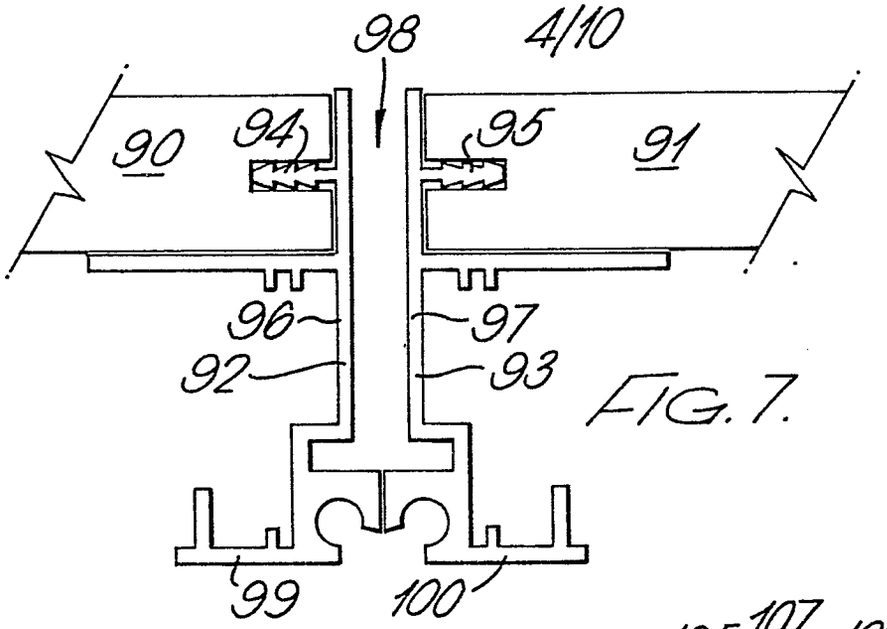

FIG. 7.

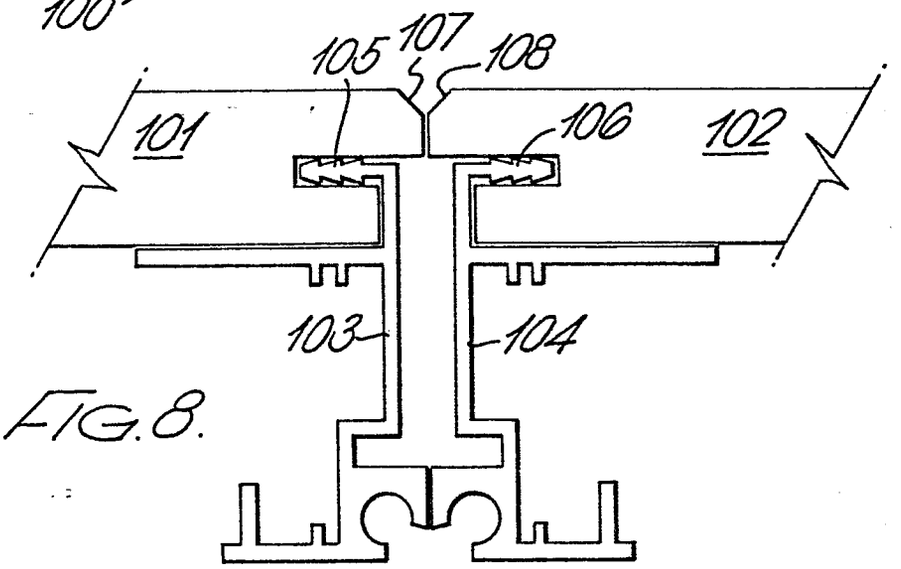

FIG. 8.

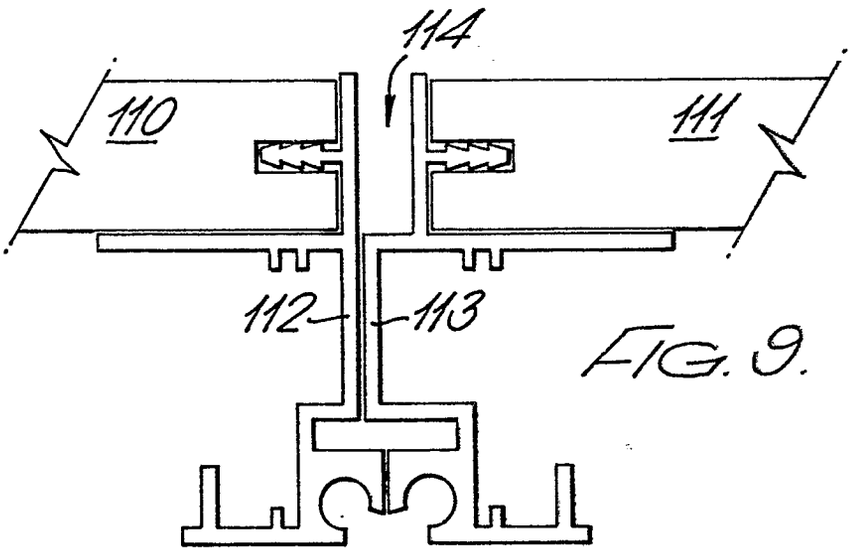

FIG. 9.

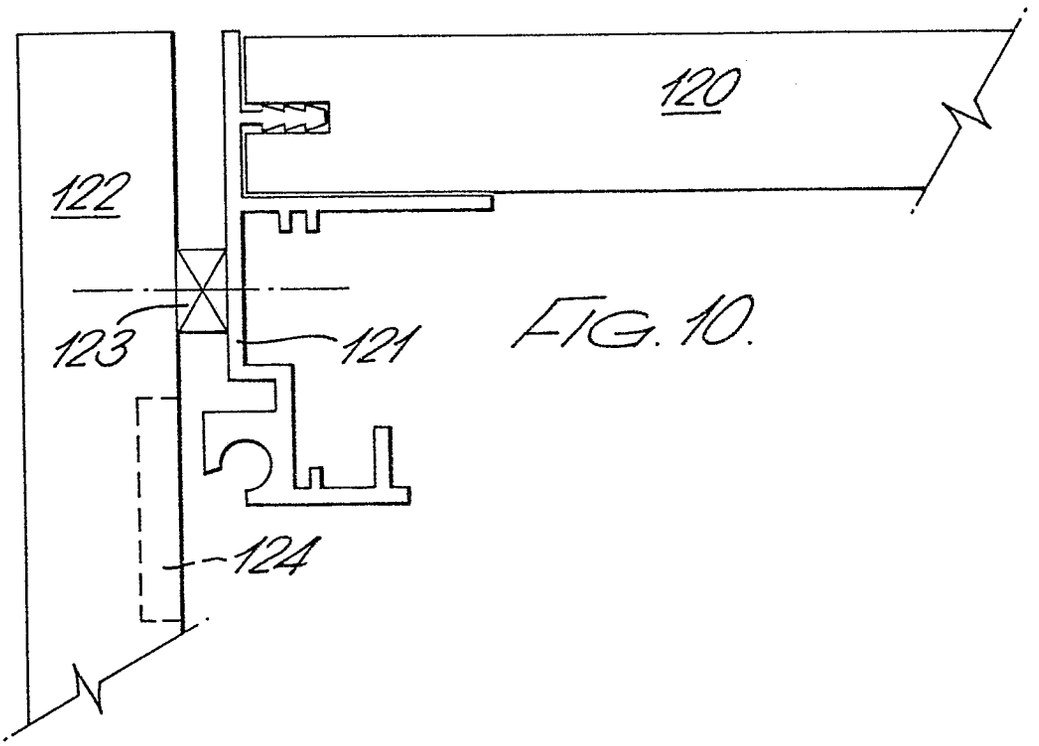
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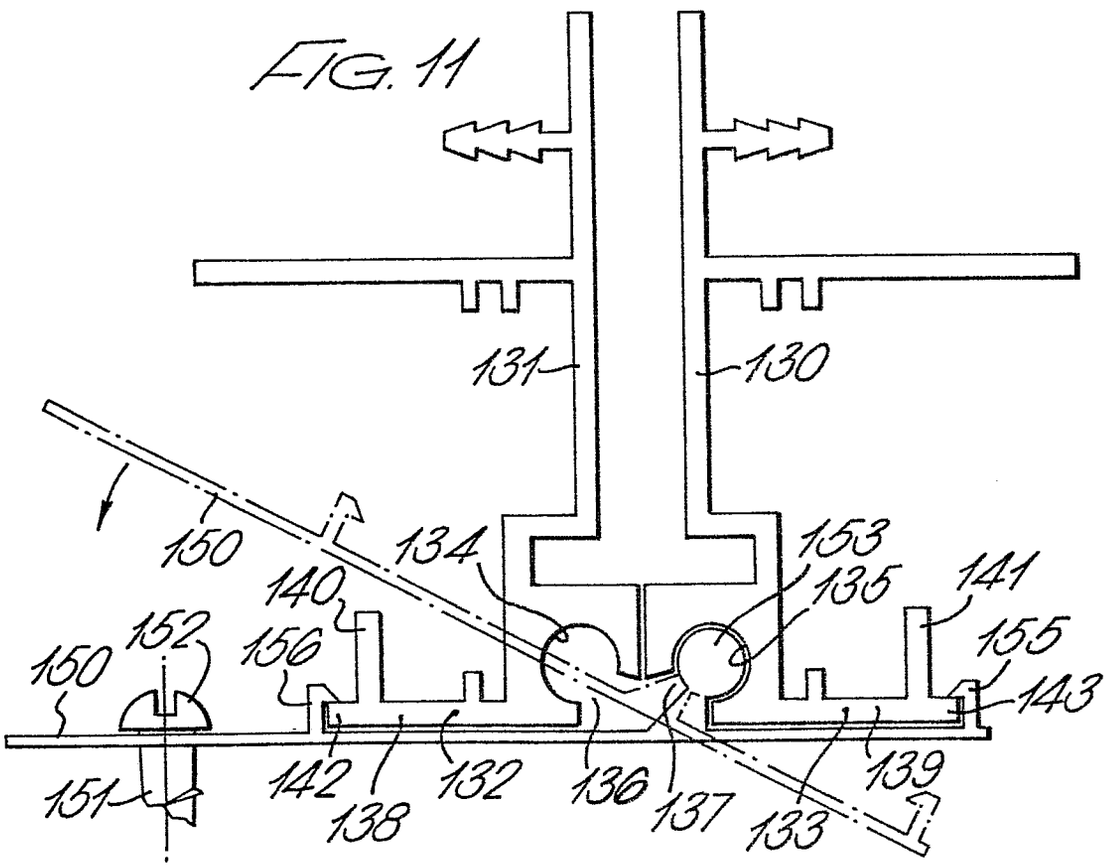
FIG. 10.

FIG. 11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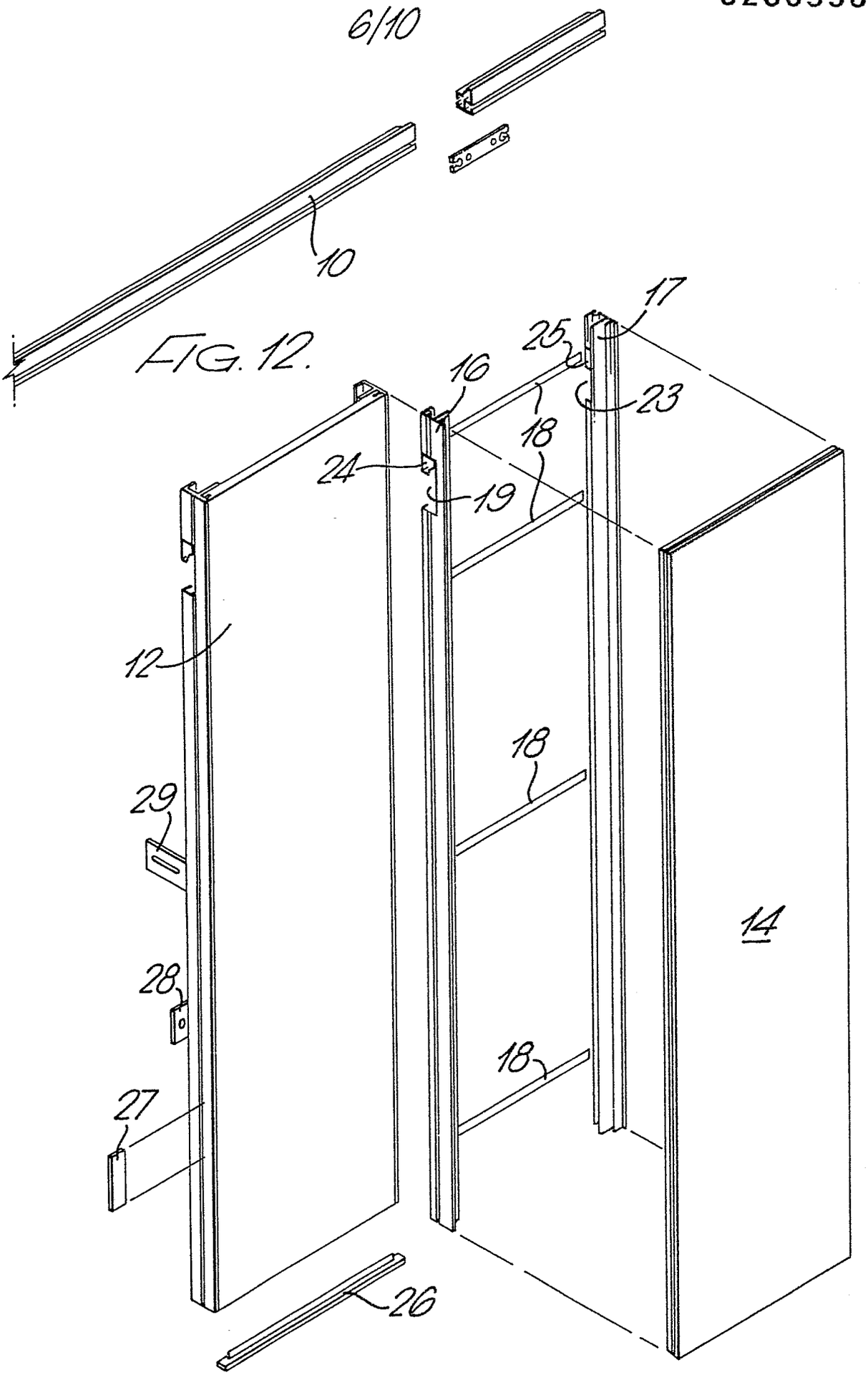
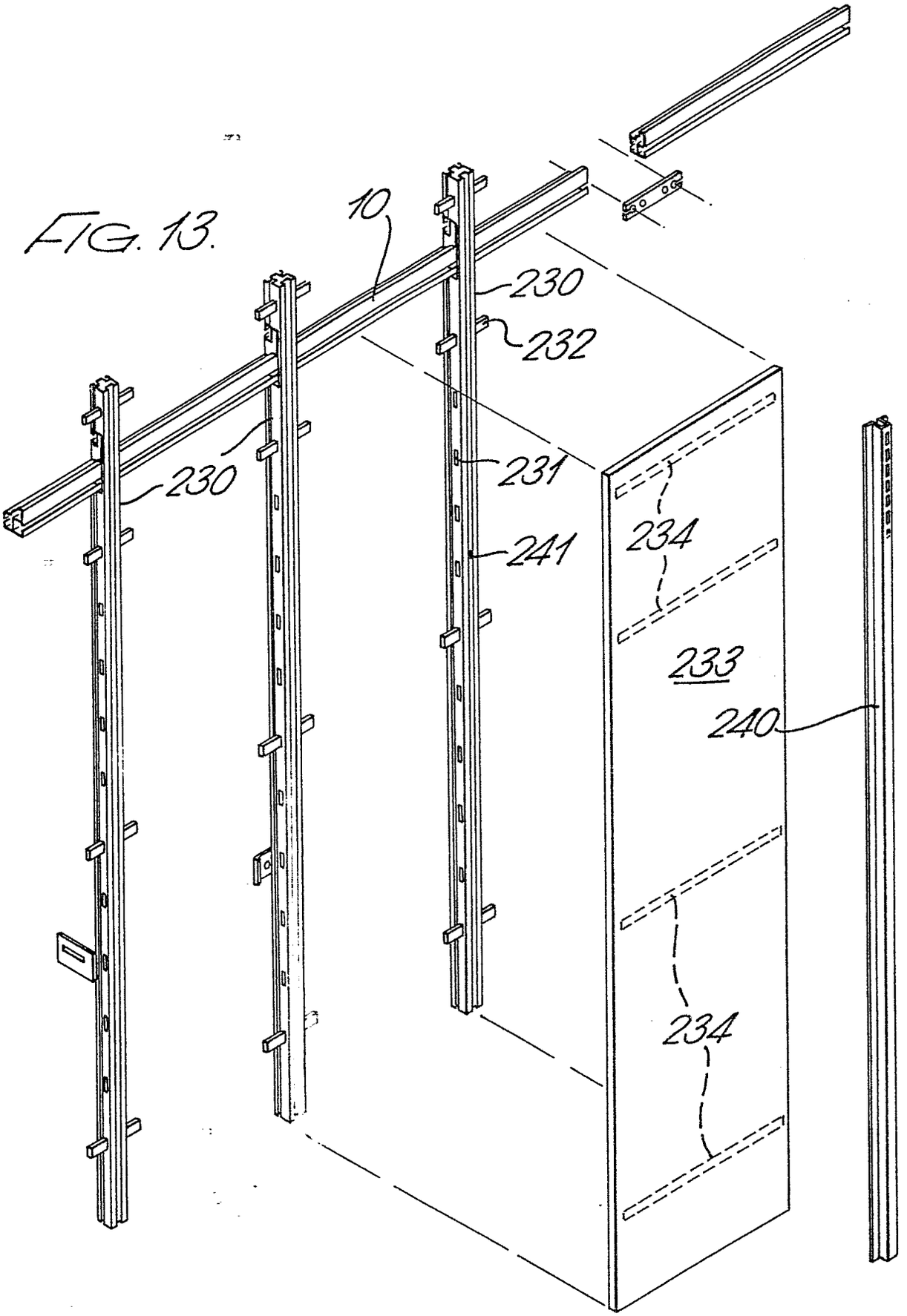


FIG. 12.

FIG. 13.



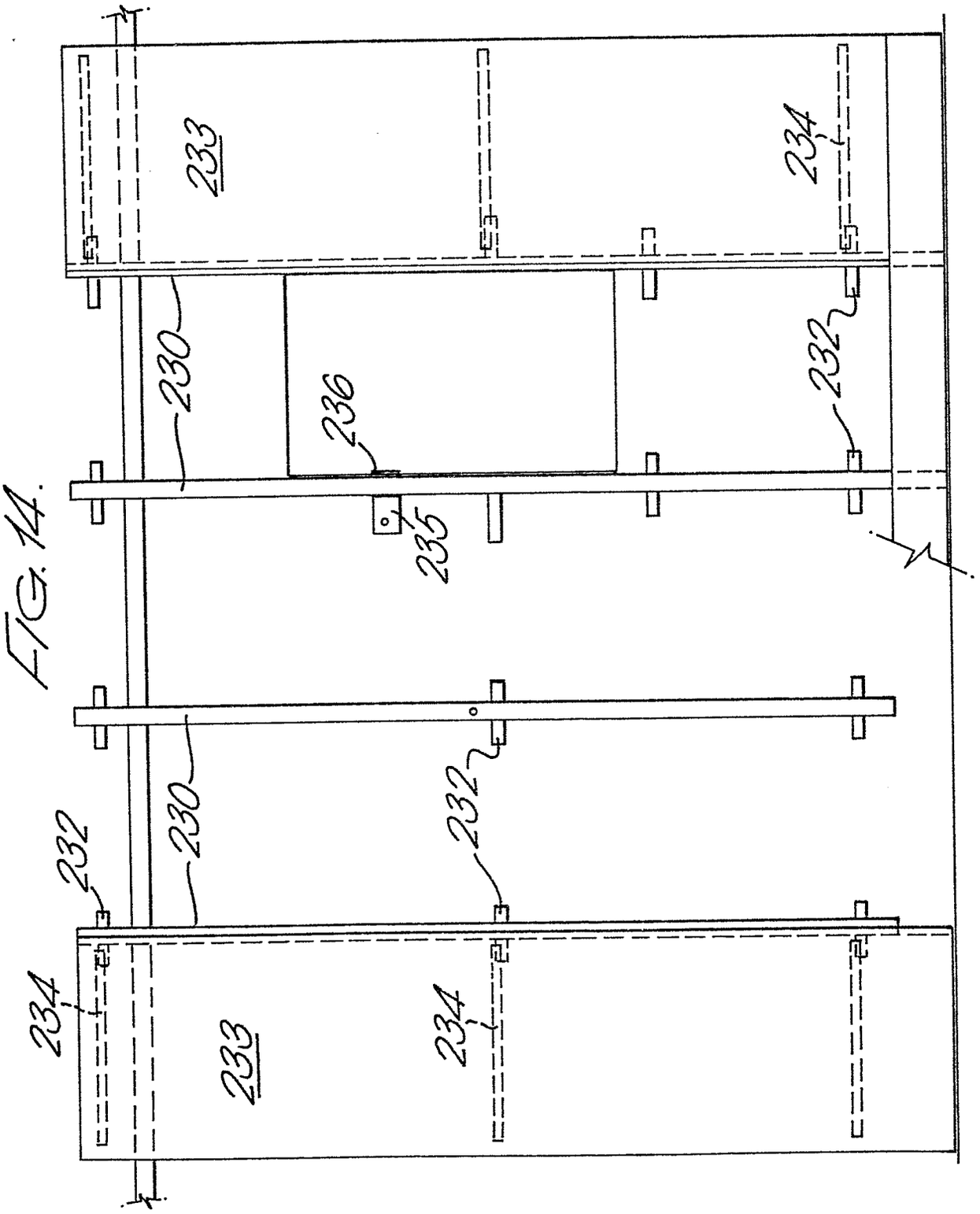


FIG. 14.

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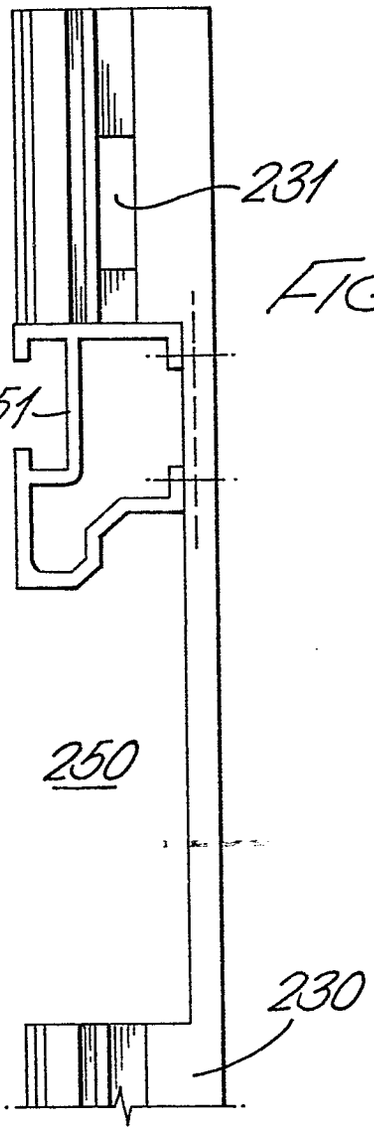

FIG. 15.

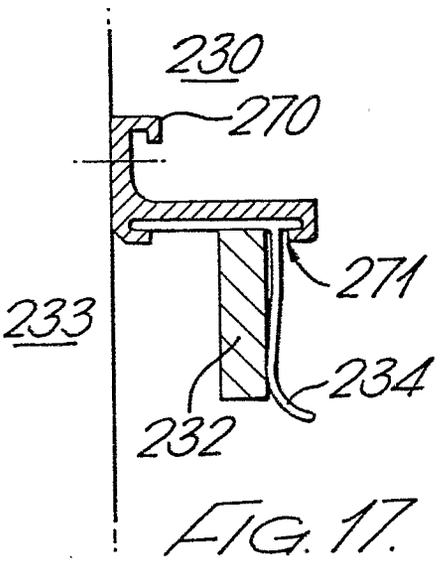

FIG. 17.

FIG. 18.

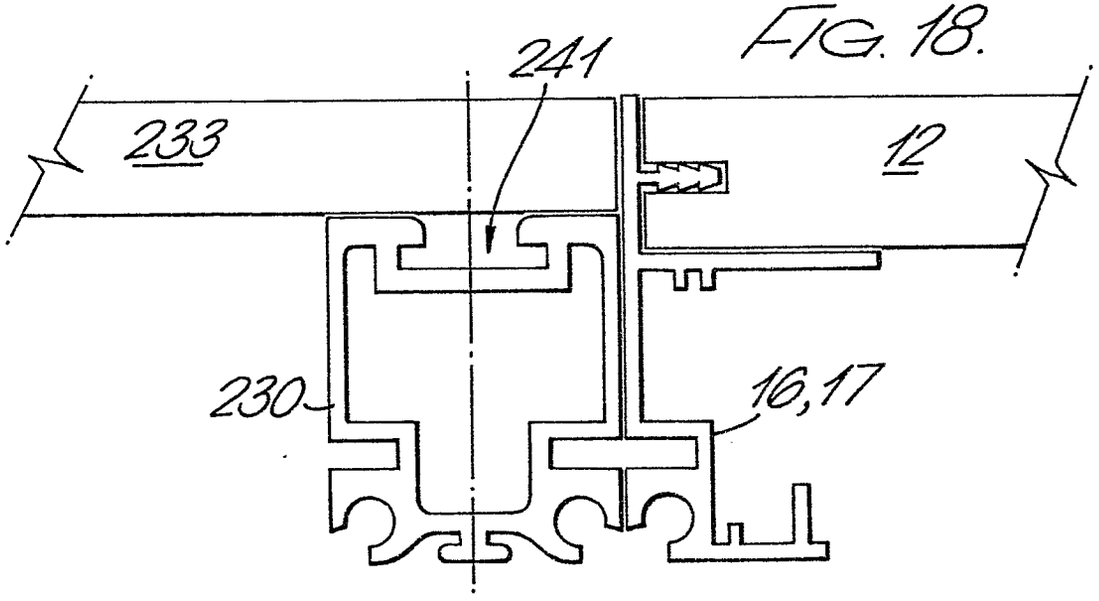

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FIG. 16.