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(71) Applicants:
• **DECOMA DESIGN S.r.l.**
22060 Figino Serenza CO (IT)
• **O.M.M. s.a.s. dell'Ing. Roberto Mariani & C.**
20033 Desio (MB) (IT)

(72) Inventors:
• **Mascheroni, Luigi**
I-22060 Figino Serenza - Como (IT)
• **Mariani, Roberto**
I-20033 Desio - MB (IT)

(74) Representative: **Cicogna, Franco**
Ufficio Internazionale Brevetti
Dott.Prof. Franco Cicogna
Via Visconti di Modrone, 14/A
20122 Milano (IT)

(54) **Supporting structure for supporting shelves on a wall**

(57) A supporting structure for supporting shelves on a wall, **characterized in that** said supporting structure comprises a plurality of supporting uprights consisting of a metal section member therein are formed spaced recesses for housing shelf holder arms, said shelf holder arms comprising adjusting means for adjusting the inclination of said shelf holder arms with respect to said uprights, said supporting construction comprising moreover a plurality of shelves, each of them is made of a panel

which is coated on substantially a single side thereof and being folded as a book thereby causing the coated surface to face the outside, at the bottom and top thereof, said supporting structure comprising moreover one or more slidable wings, applied between a top shelf and a bottom shelf by slidably coupling means built-in in one of said shelves.

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a supporting structure for supporting shelves on a wall.

[0002] Supporting structures for supporting on a wall shelves, panels and the like are already known in the furnishing field, and are frequently used in offices, homes and shops, to exhibit articles on sale, said structures generally comprising a plurality of metal material uprights fixed to a wall by expansion plugs, which uprights comprise a plurality of slots to which fittings, horizontal panels and shelves are connected by screw, hook assemblies and other connecting means.

[0003] While said prior supporting structures and systems are advantageous from an installation and use standpoint, or due to their pleasant aesthetic aspect, however, all these advantages are not simultaneously provided by said prior supporting structures, or are provided thereby only in a very limited manner.

SUMMARY OF THE INVENTION

[0004] Accordingly, the aim of the present invention is to provide such a supporting structure which is advantageous both from a making and an aesthetic standpoint thereof.

[0005] Within the scope of the above mentioned aim, a main object of the invention is to provide such a supporting structure which is a very simple low cost construction-wise and safe in use.

[0006] Yet another object of the present invention is to provide such a support structure which may be easily assembled and disassembled.

[0007] Yet another object of the present invention is to provide such a support structure made with easily available elements and materials and also very competitive from a mere economic standpoint.

[0008] Yet another object of the present invention is to provide such a support structure which, owing to its specifically designed features, is very reliable in operation.

[0009] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a supporting structure for supporting shelves on a wall, **characterized in that** said supporting structure comprises a plurality of supporting uprights consisting of a metal section member therein are formed spaced recesses for housing shelf holder arms, said shelf holder arms comprising adjusting means for adjusting the inclination of said shelf holder arms with respect to said uprights, said supporting construction comprising moreover a plurality of shelves, each of which is made of a panel which is coated on substantially a single side thereof and being folded as a book thereby causing the coated surface to face the outside, at the bottom and top thereof, said supporting structure com-

prising moreover one or more slidable wings, applied between a top shelf and a bottom shelf by slidably coupling means built-in in one of said shelves.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative, but not limitative, example in the accompanying drawings, where:

Figure 1 is a perspective view of the supporting structure for supporting shelves on a wall, according to the present invention;

Figure 2 is an exploded perspective view of a support section member and related shelf holders;

Figure 3 is a perspective view of the support section member and related shelf holder or support assemblies in an assembled condition thereof;

Figure 4 is an exploded view of a shelf holder or supporting assembly;

Figure 5 shows the shelf holder element assembly in an assembled condition;

Figure 6 is a perspective view showing several shelf holder adjusting elements;

Figure 7 is a perspective view showing an operating step for applying the shelves to the support structure therefor;

Figure 8 is a side elevation view showing the subject structure in a region of a shelf holder element, as longitudinally cross-sectioned, during an inclination adjusting operating step;

Figure 9 is a side elevation view showing the subject structure in a region of a top and bottom shelf holder element, as longitudinally cross-sectioned;

Figure 10 is a perspective view showing the subject structure at a region of a top and bottom shelf holder elements;

Figure 11 is a perspective view of a plate element to be used for making a shelf, during a starting machining operating step of the latter;

Figure 12 is a view similar to figure 11, showing a subsequent machining operating step;

Figure 13 shows yet another shelf machining operating step;

Figure 14 shows an end operating step of the method for making a shelf according to the present invention; Figure 15 shows a bending operating step for bending the shelf making plate according to the present invention;

Figure 16 shows a shelf made according to the present invention;

Figure 17 is a perspective view of the shelf supporting structure including a sliding wing;

Figure 18 is a further perspective view showing a first operating step of an assembling method for as-

sembling the sliding wing, according to the present invention;

Figure 19 is a cross-sectioned side elevation view showing an operating step for applying a bracket-pulley assembly;

Figure 20 is a view similar to figure 19 showing an operating step for applying a top guide sliding block; Figure 21 is a view similar to figure 10 showing the bracket and sliding block in assembled conditions thereof;

Figure 22 is a perspective view of the wing rear side; Figure 23 shows an operating step for applying the wing to the bracket-guide sliding block assembly; and

Figure 24 is a cross-sectioned side elevation view showing the wing in an assembled condition thereof and during an adjustment of its position.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0011] With reference to the number references of the above mentioned figures, the supporting structure for supporting shelves on a wall, according to the present invention, comprises a plurality of a supporting uprights 1 consisting of metal section members, therein are formed spaced recesses for housing step by step corresponding shelf holder elements or arms.

[0012] The shelf holder elements comprise crank arms, generally indicated by the reference number 2, consisting of substantially tubular elements having a vertical portion 5 engaging the supporting upright 1 through engagement pins 3 and a horizontal portion 6 for engaging a corresponding shelf 11.

[0013] In the vertical portion 5 a small plate 7 including a nut screw for engaging with a dowel 8 is arranged.

[0014] Said dowel 8 comprises a dowel end portion rotatably associated with a recess 9 formed in said upright 1, as shown in figure 6, thereby allowing the crank arm 2 inclination to be adjusted with respect to said upright, as shown in figure 8.

[0015] The end part of the horizontal portion 6 of the shelf holder element 2 comprises a contoured recess or seat 4 engaging a metal profile 17 in turn engaged in the shelf 11, as shown in figure 8.

[0016] The pin 3 coupling the shelf holder element 2 to the upright 1 and the plate 7 allows the crank arm 2 to horizontally slide with respect to the upright 1 within a dimensional difference range of the mentioned two elements, as shown in figure 10.

[0017] The shelf holder elements 2 are herein assembled with the vertical portions 5 thereof facing either upward or downward thereby allowing to assemble the shelf holder elements 2 at the two end portions of each supporting upright 1 without projecting therefrom, as schematically shown in figures 9 and 10.

[0018] The uprights 1 are clamped to the wall by clamping plug elements 10.

[0019] Said shelf holder elements 2 have been specifically designed for supporting respective shelves 11, each of which is made starting from a panel 12 on a side and on a small portion of the other side of which a coating 13 is applied.

[0020] As schematically shown in figure 11, the coated panel is further machined by linear continuous milling operations 15.

[0021] Moreover, said panel may optionally be subjected to further cross milling operations 16 to provide a connection arrangement for connecting it to the shelf holder elements, as is schematically shown in figure 12.

[0022] Then, fittings comprising, for example, a metal section member 17 are applied, and the panel is closed by longitudinal continuous milled portions 15, as schematically shown in figures 13, 14 and 15.

[0023] The metal profile 17 operates as a shelf 11 stiffening element and comprises a cavity for slidably engaging therein slide or carriage elements, as disclosed hereinafter.

[0024] Thus, it is possible to make, as shown in figure 16, a shelf finished at both sides thereof and including dedicated cross recesses or seats for engaging the end portions of the shelf holder elements 2.

[0025] According to a further aspect of the present invention, the supporting structure may also comprise sliding wings 30, applied between two adjoining shelves 11.

[0026] In particular each sliding wing 30 is coupled by a clamping bracket 31 including corresponding pulleys 32 and top guide sliding blocks 33, said bracket 31 being clamped, for example by clamping screws, to the opposite surfaces of the bracket 11, as shown in figures 19-21.

[0027] The top guide sliding blocks 33, in turn, are slidably engaged in a recess defined by the metal section member 17, as shown in figure 21.

[0028] The sliding blocks 33 are in turn clamped to a top section member 34 connected to the rear surface of the wing 30, while the pulleys 32 are engaged in a profile element 35 also fixed to the rear surface of the wing 30, which, in this manner, will be fully suspended, without bearing on the underlying shelf, as is shown in figure 24.

[0029] Figure 24 also shows an adjusting system for adjusting the wing, which adjusting system may be easily accessed by a screw driver.

[0030] It has been found that the invention fully achieves the intended aim and objects.

[0031] In fact, the invention has provided a supporting structure for supporting on a wall shelf elements, which supporting structure has a very pleasant aesthetic aspect and, moreover, may be easily installed or assembled.

[0032] In fact, the bracket holder element arm and sliding wing adjusting system allows to precisely assemble the subject structure thereby advantageously improving its functional and aesthetic properties.

[0033] Moreover the inventive supporting structure and the shelves thereof may be easily made with thin wing sliding means and shelf holder clamping means built-in therein in a substantially concealed to view man-

ner.

[0034] In practicing the invention, the used materials, as well as the contingent size, can be any, depending on requirements.

Claims

1. A supporting structure for supporting shelves on a wall, **characterized in that** said supporting structure comprises a plurality of supporting uprights consisting of a metal section member therein are formed spaced recesses for housing shelf holder arms, said shelf holder arms comprising adjusting means for adjusting the inclination of said shelf holder arms with respect to said uprights, said supporting construction comprising moreover a plurality of shelves, each of which is made of a panel which is coated on substantially a single side thereof and being folded as a book thereby causing the coated surface to face the outside, at the bottom and top thereof, said supporting structure comprising moreover one or more slidable wings, applied between a top shelf and a bottom shelf by slidably coupling means built-in in one of said shelves. 5
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2. A supporting structure, according to claim 1, **characterized in that** said supporting structure comprises a shelf holder element including a crank arm made of substantially tubular elements comprising a vertical portion engaging a supporting upright of said structure by engaging pins, and a horizontal portion, designed for engaging said shelf, in said vertical portion in the plate is included a nut screw for engaging with a dowel having an end portion thereof rotatably associated with a recess formed in said upright thereby allowing the crank arm inclination to be adjusted with respect to said upright being arranged. 30
35
3. A supporting structure, according to claims 1 and 2, **characterized in that** said shelf holder elements are indifferently assemblable with a vertical portion thereof facing either upward or downward to allow the two end portions of the supporting uprights to be assembled while preventing the shelf holder elements from projecting therefrom. 40
45
4. A supporting structure, according to one or more of the preceding claims, **characterized in that** said shelf holder elements comprise a recess for coupling with a metal profile engaged in a said shelf. 50
5. A supporting structure, according to one or more of the preceding claims, **characterized in that** said shelf holder elements are laterally adjustable with respect to said uprights. 55
6. A supporting structure, according to one or more of the preceding claims, **characterized in that** each said shelf is made starting from a panel to which a coating is applied only on a side thereof and a limited portion of the other side thereof, said coated panel being subjected to linear continuous milling operations and optional further cross milling operations to provide a connection arrangement with the shelf holder elements, said shelf comprising furthermore a metal profile applied in the inside thereof before closing as a book said panel along the longitudinal continuous heel portions and thereby said metal profile element is adapted to stiffen the shelf and operate as a guide for slidably engaging sliding block or carriage elements.
7. A supporting structure, according to one or more of the preceding claims, **characterized in that** said supporting structure comprises at least a slidable wing applied between two adjoining shelves by a mounting bracket including top pulleys and guide sliding blocks.
8. A supporting structure, according to one or more of the preceding claims, **characterized in that** said bracket is clamped to the opposite top and bottom surfaces of said shelves, whereas said top guiding sliding blocks are slidably engaged in a seat defined by the metal profile or cross-section elements of the top shelf.
9. A supporting structure, according to one or more of the preceding claims, **characterized in that** said slidable wing is fully suspended on a bracket including a plurality of pulleys, and does not bear on a bottom shelf.
10. A supporting structure, according to one or more of the preceding claims, **characterized in that** said slidable wing comprises an adjusting system for adjusting a distance between said wing and shelves.

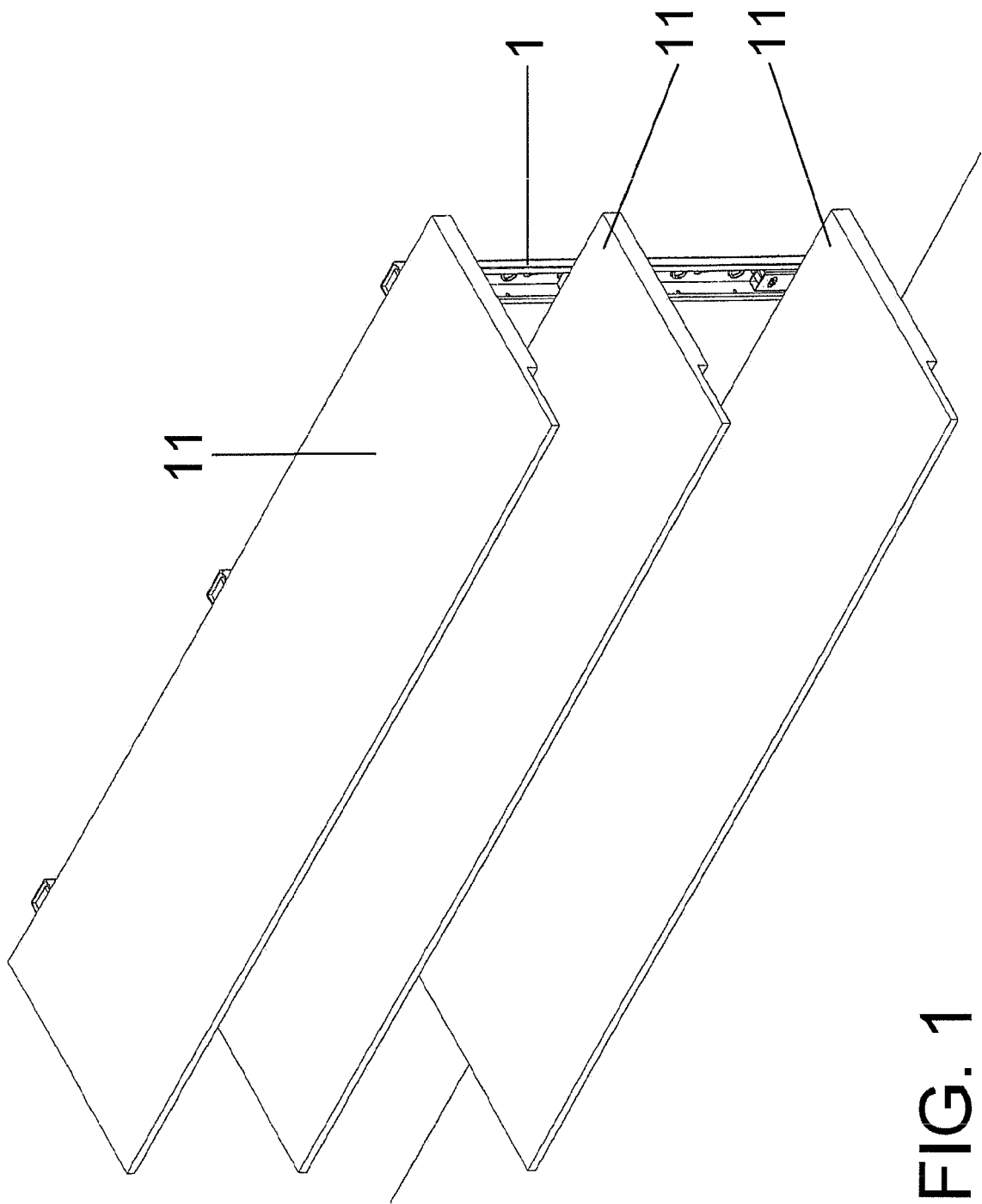


FIG. 1

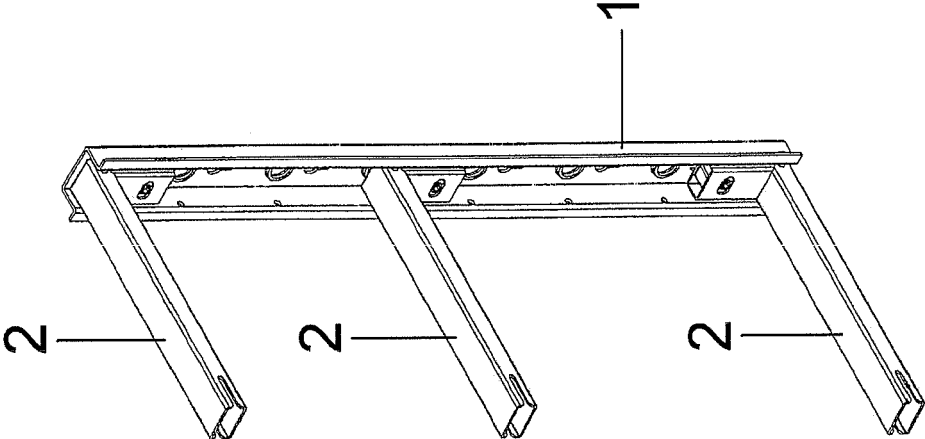


FIG. 3

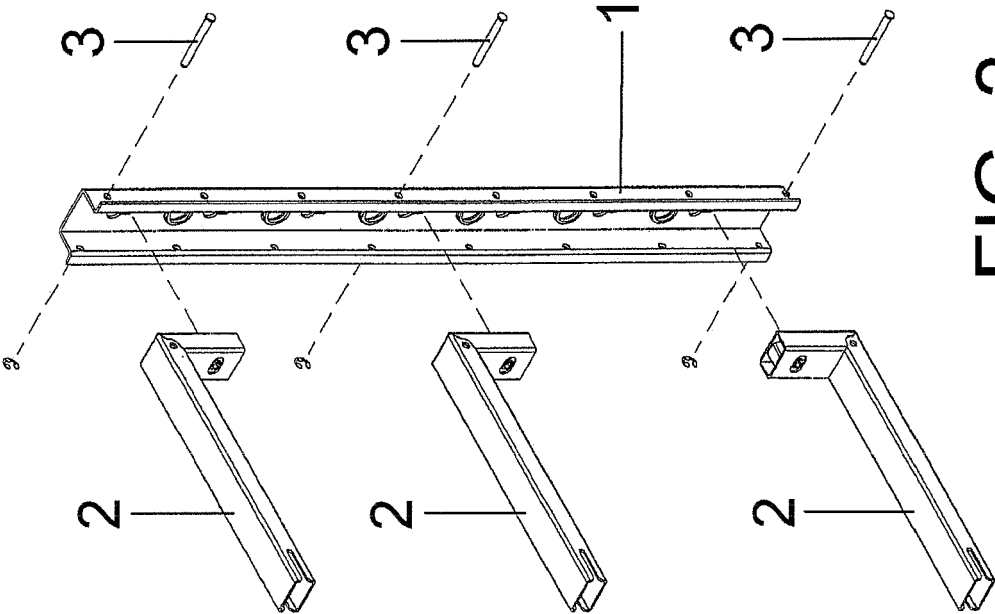


FIG. 2

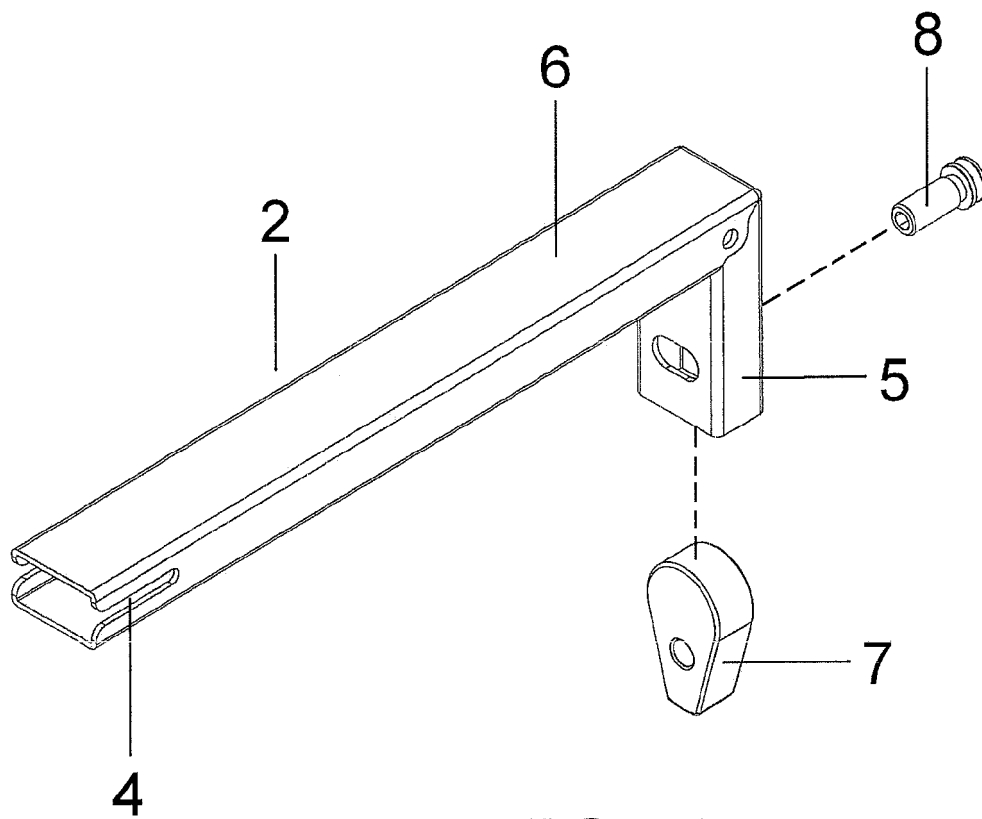


FIG. 4

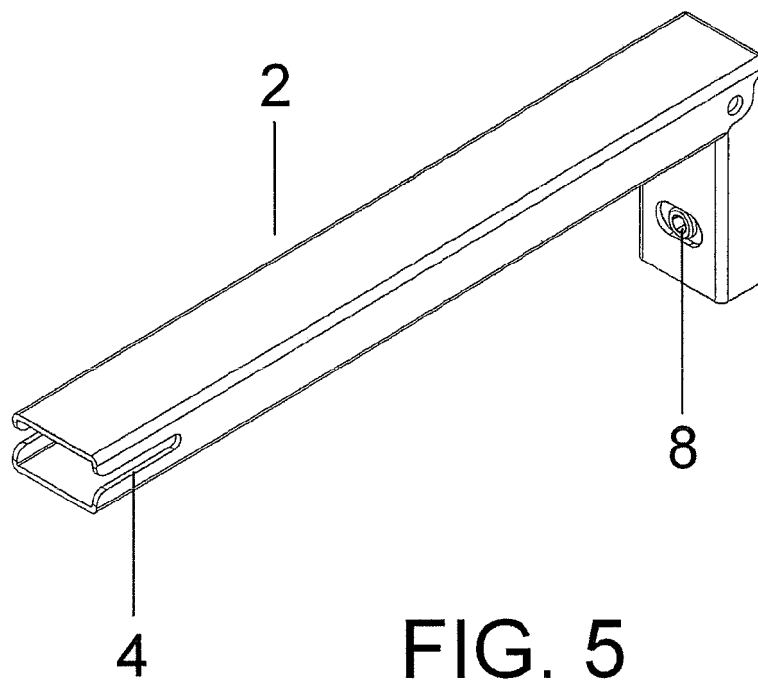


FIG. 5

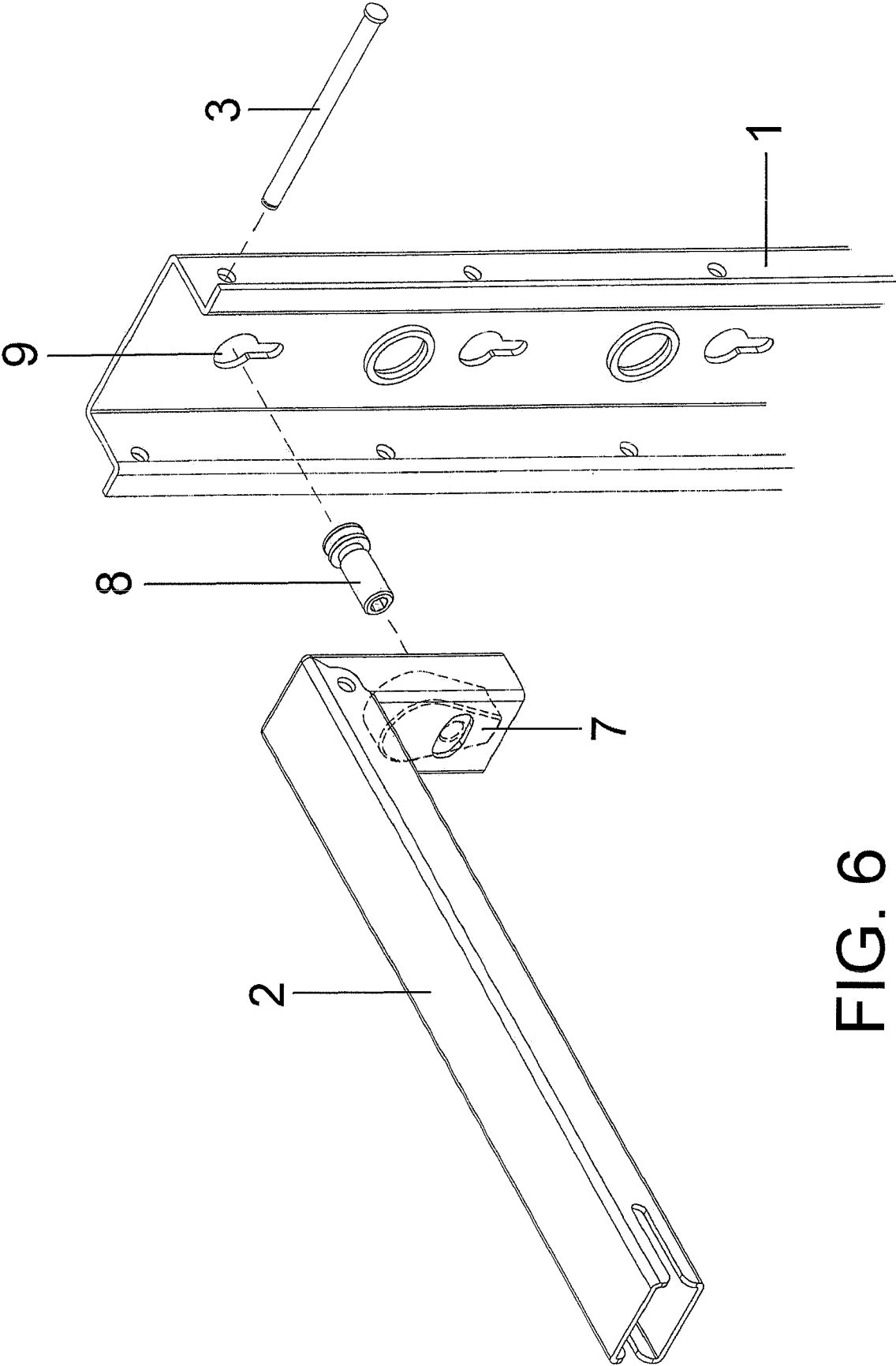


FIG. 6

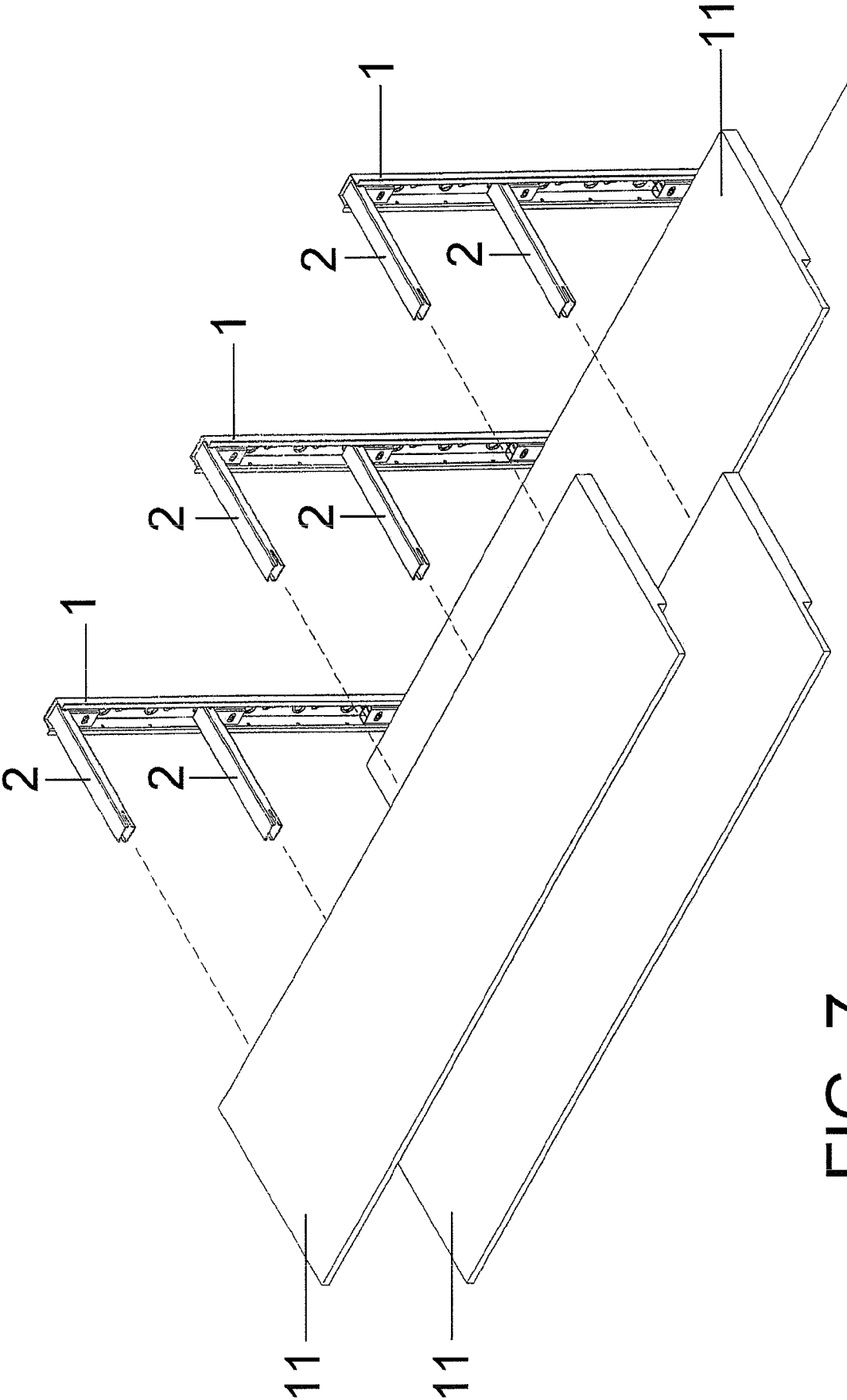
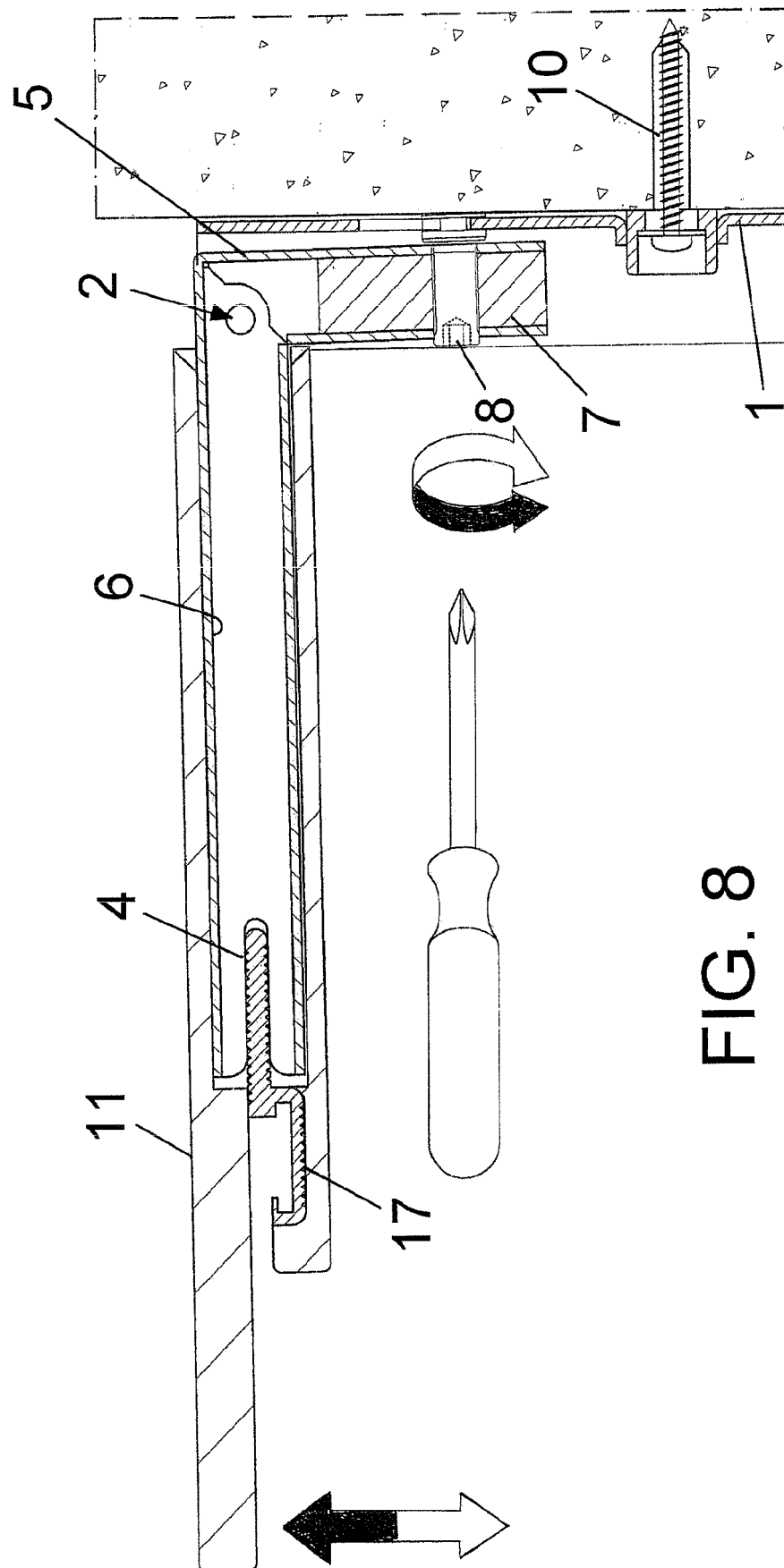


FIG. 7


$$\frac{F}{G} \infty$$

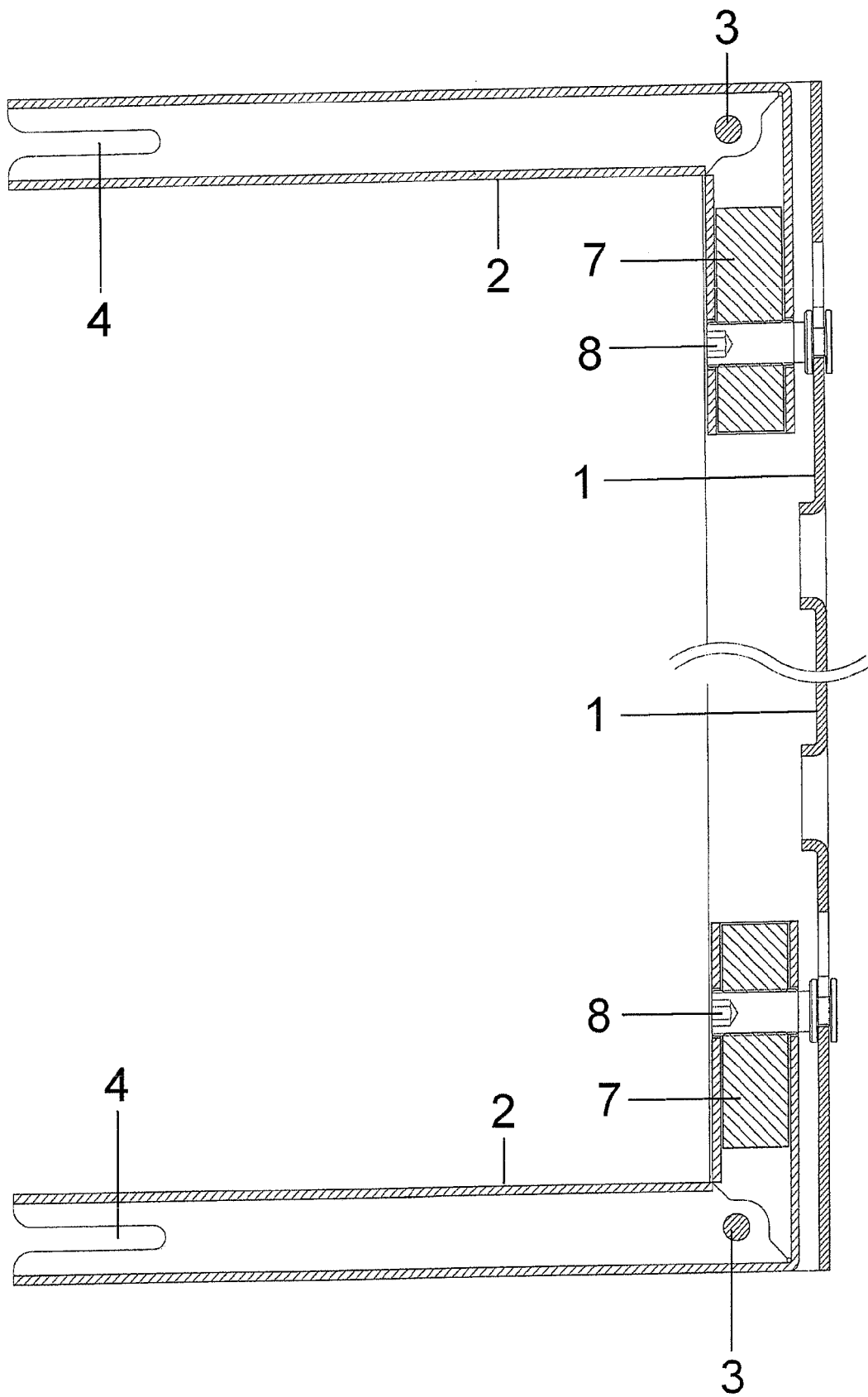
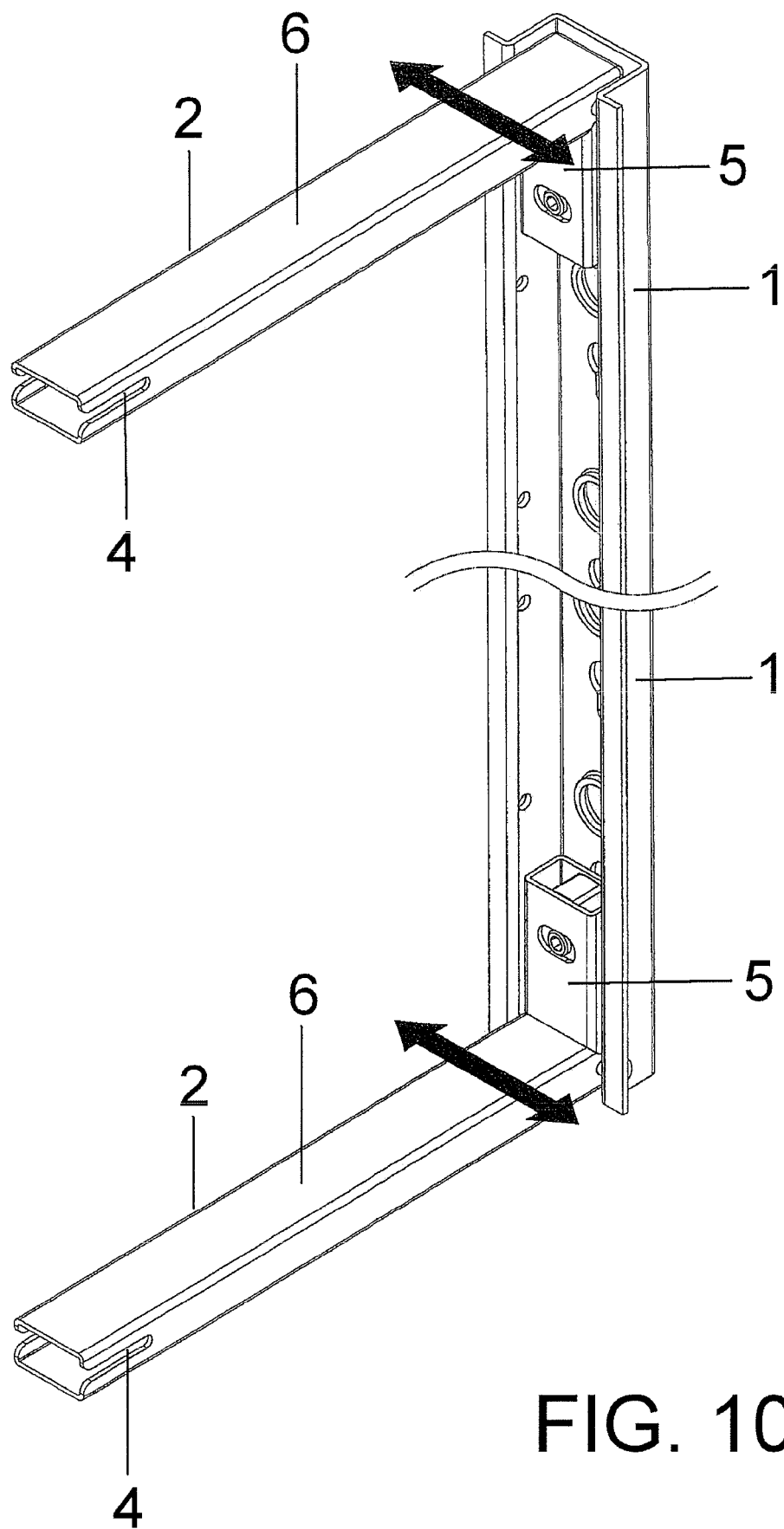


FIG. 9



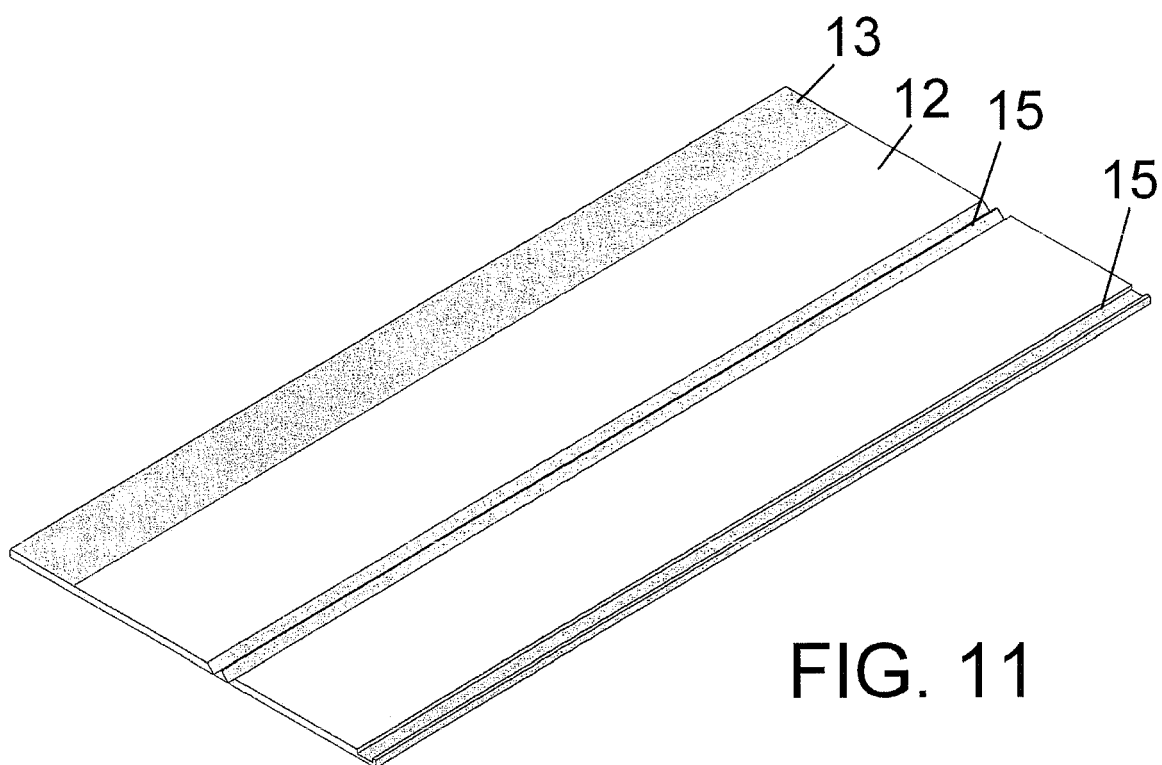


FIG. 11

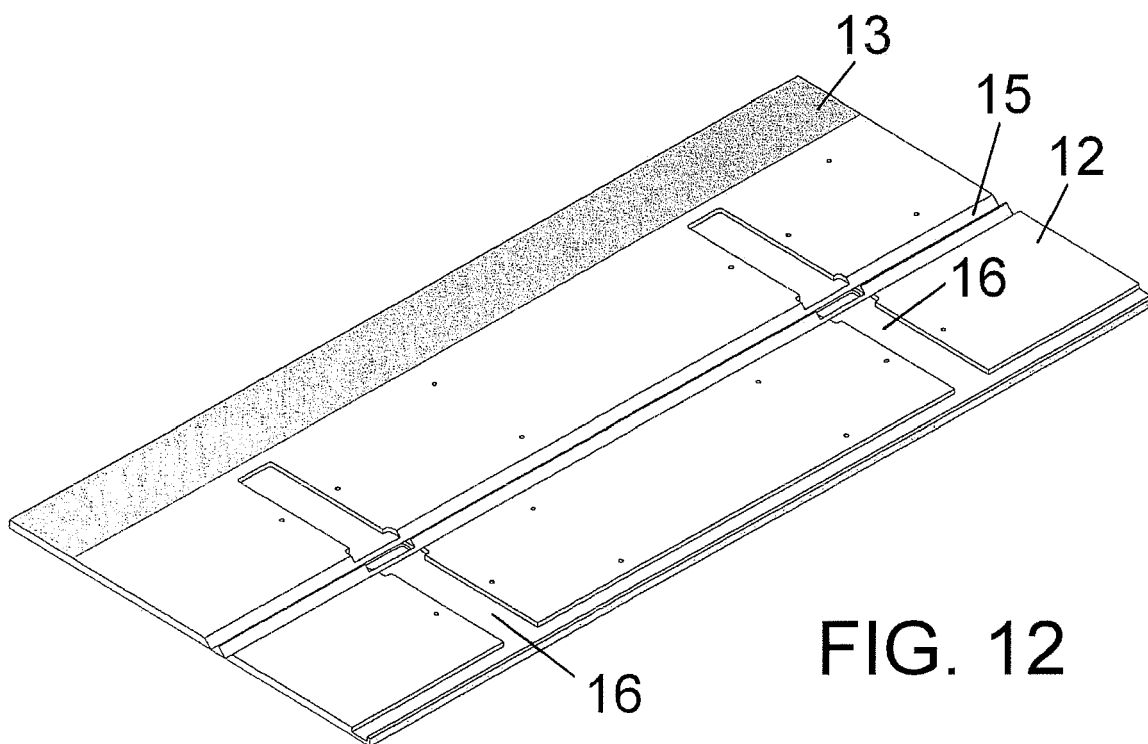


FIG. 12

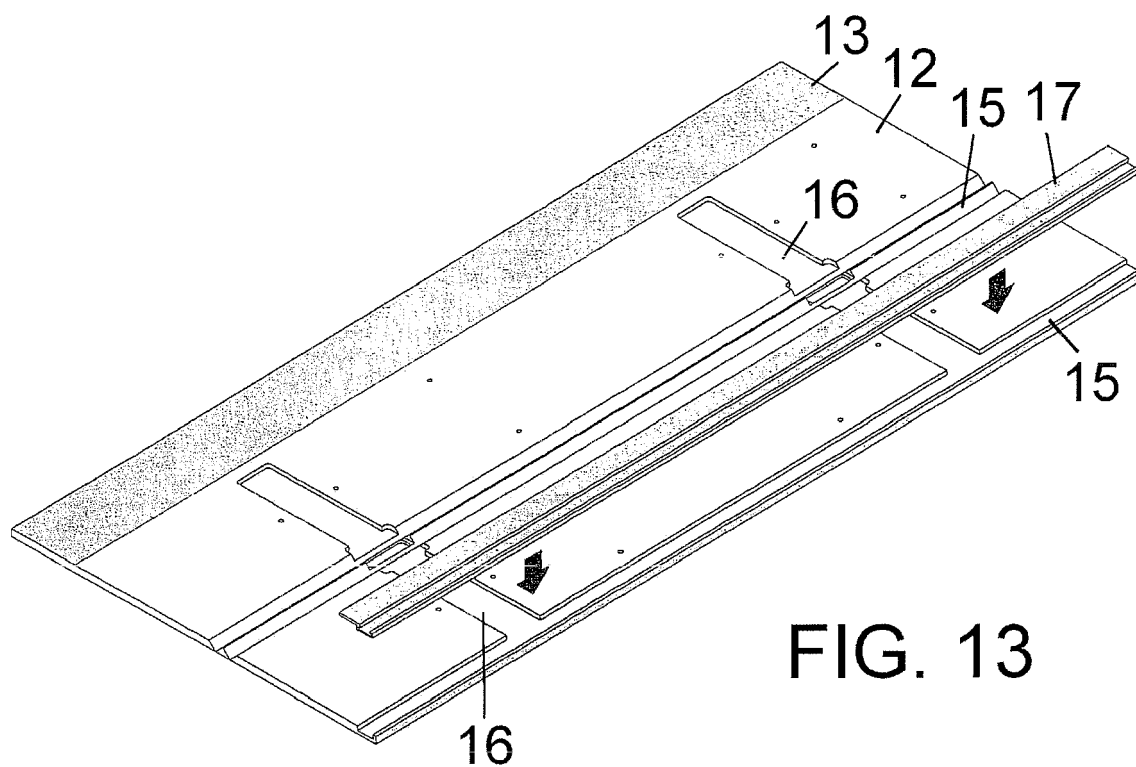


FIG. 13

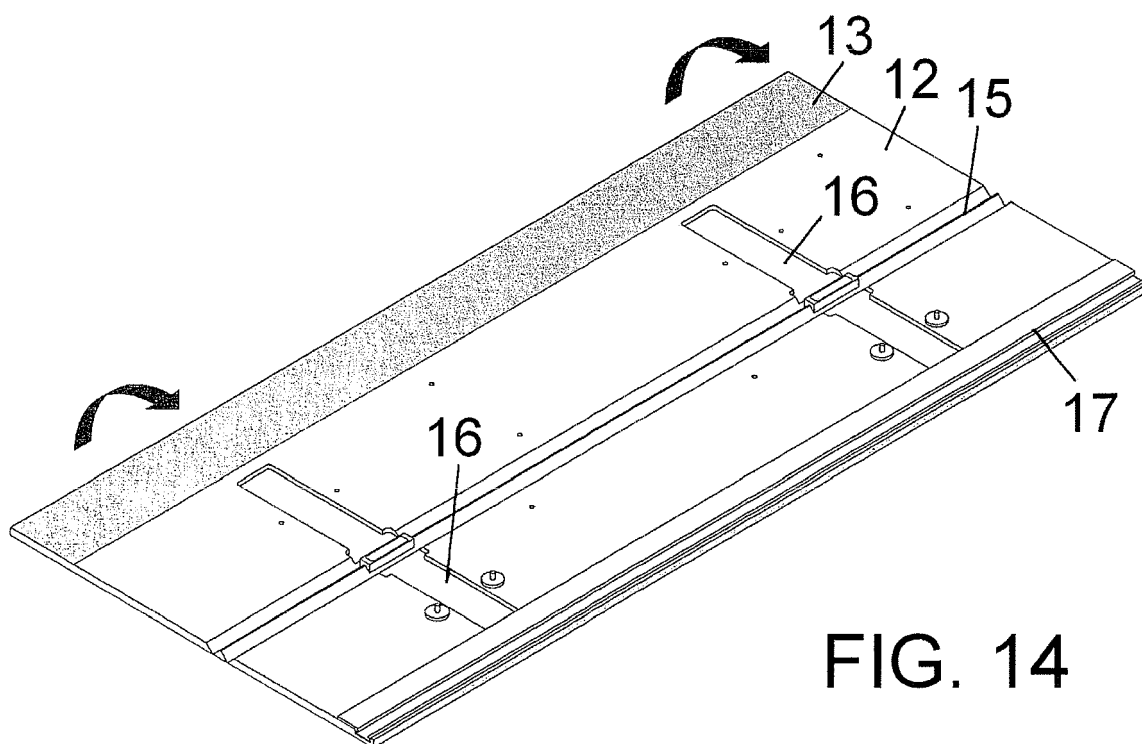


FIG. 14

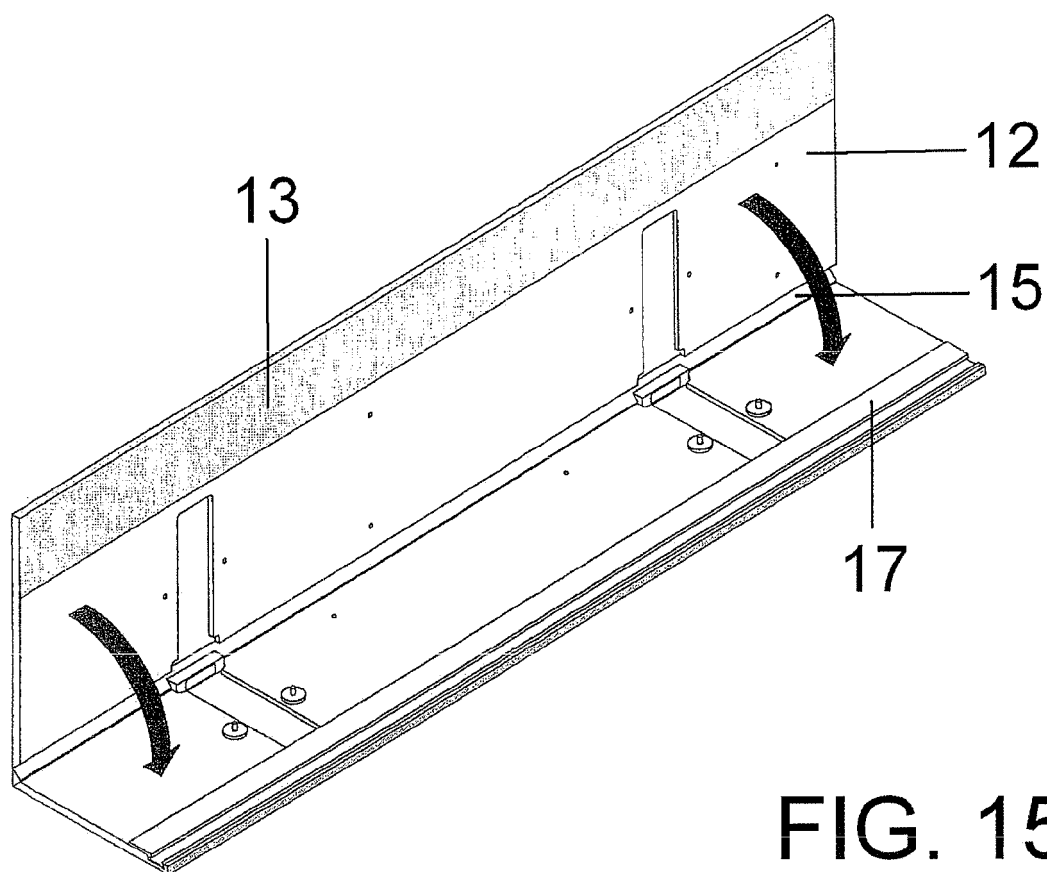


FIG. 15

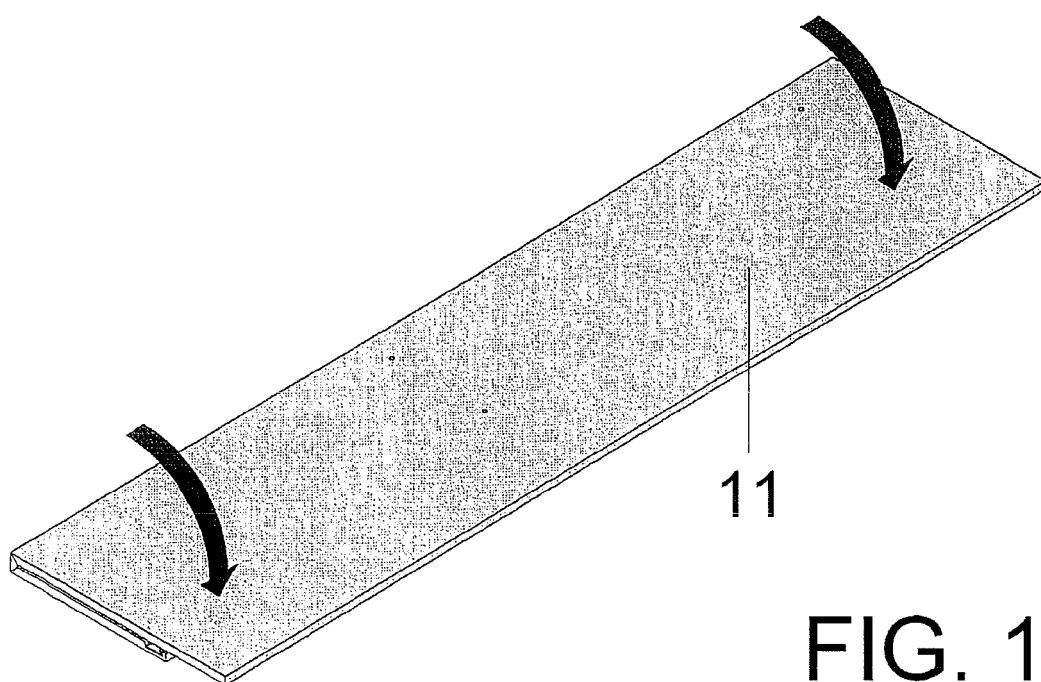


FIG. 16

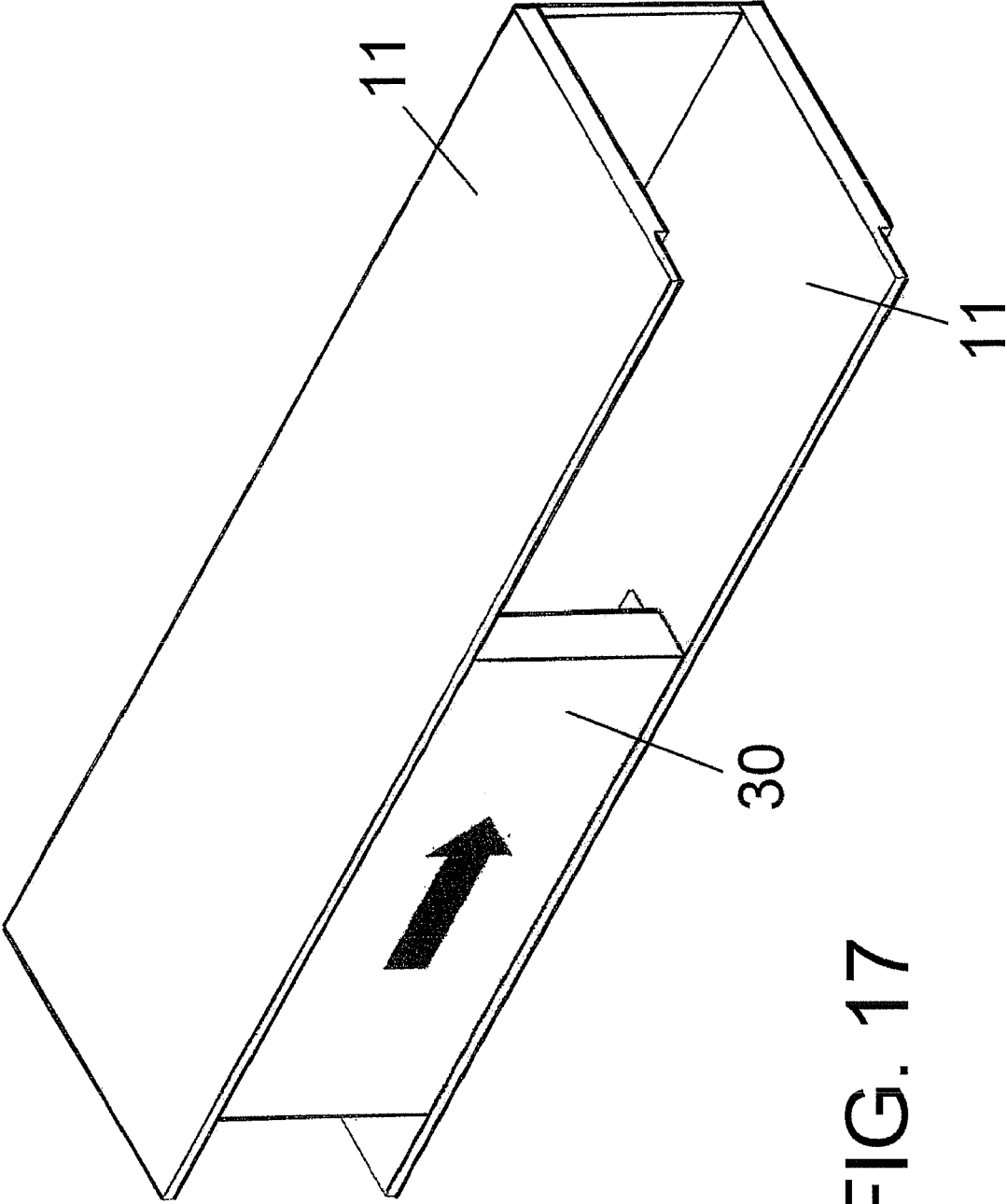


FIG. 17

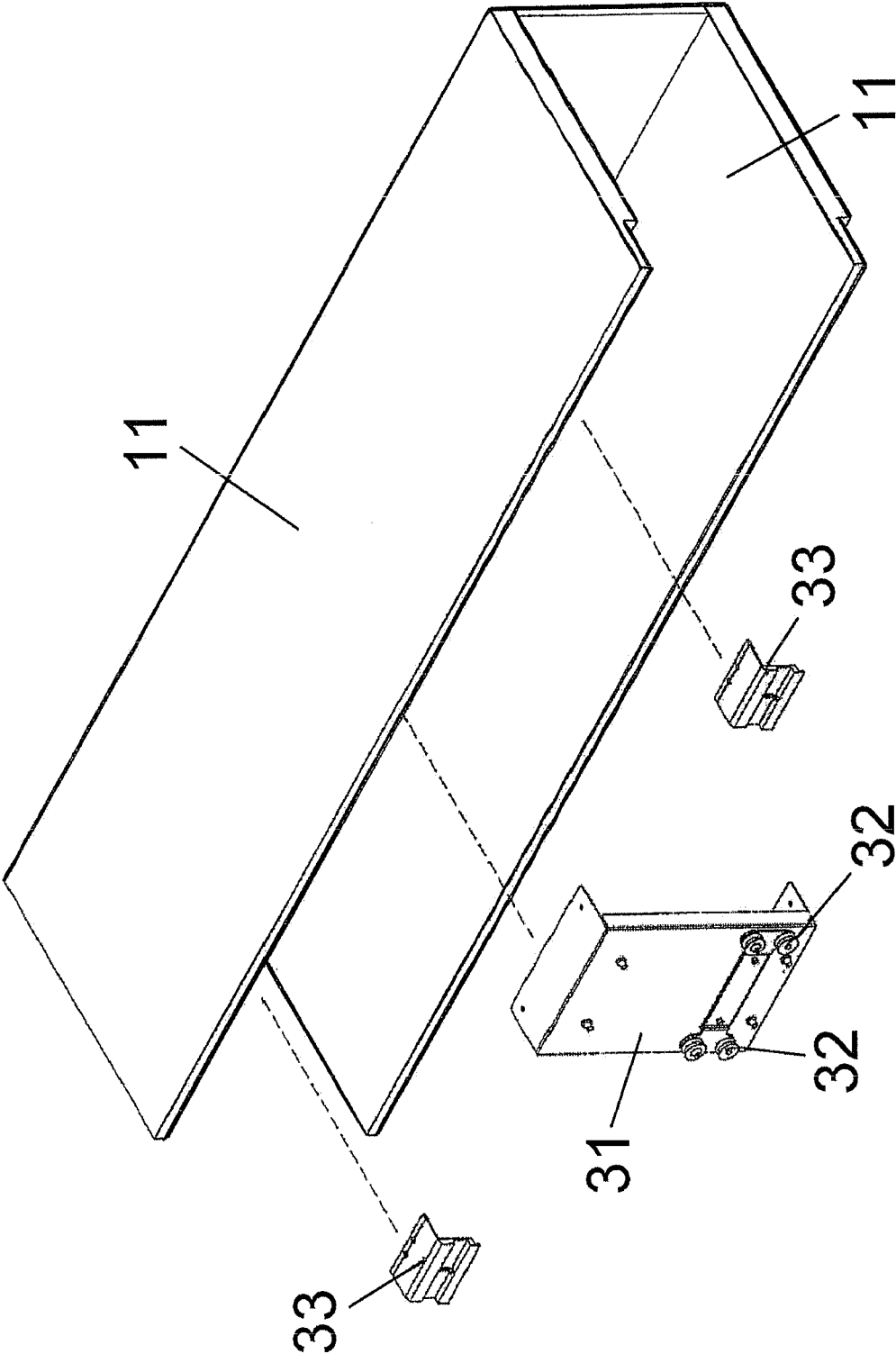


FIG. 18

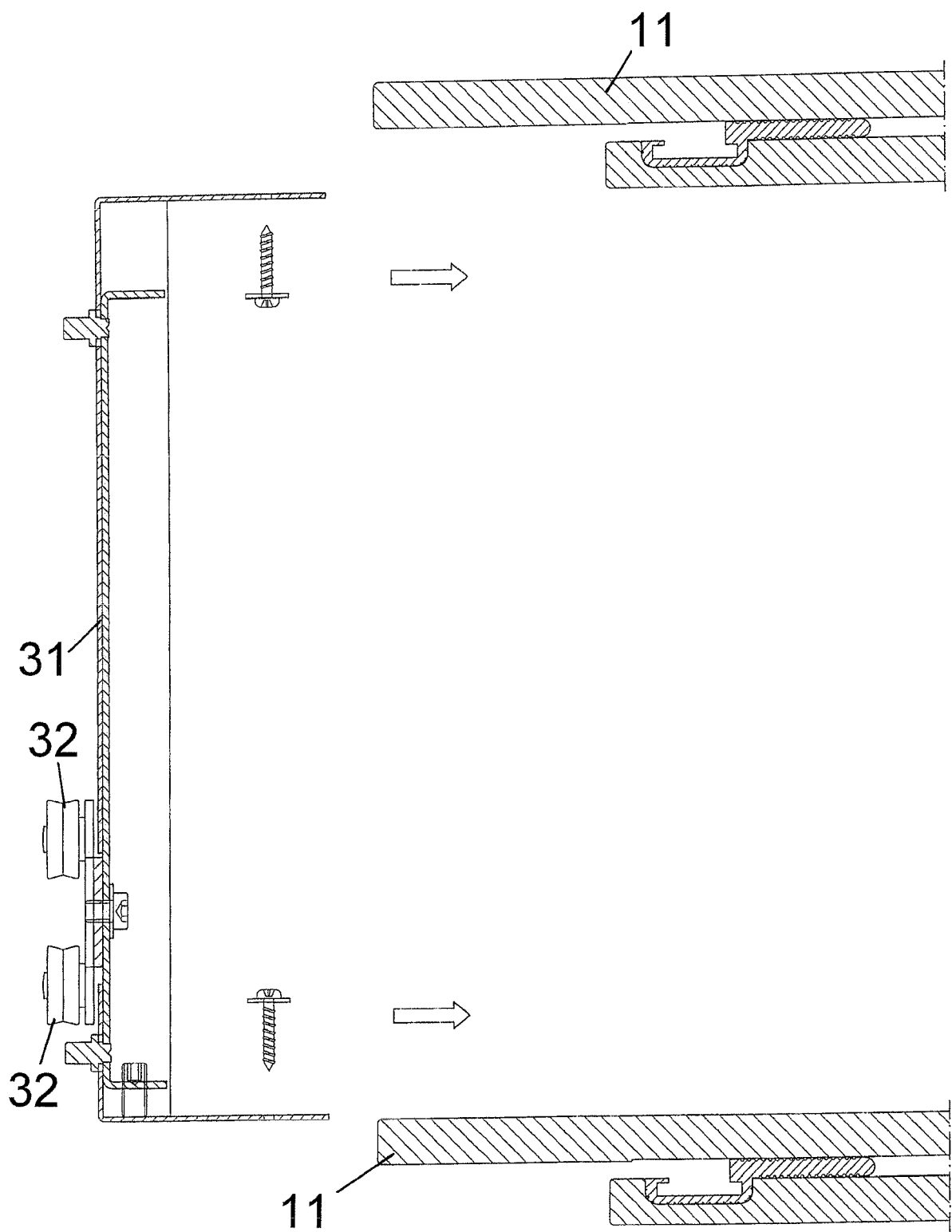
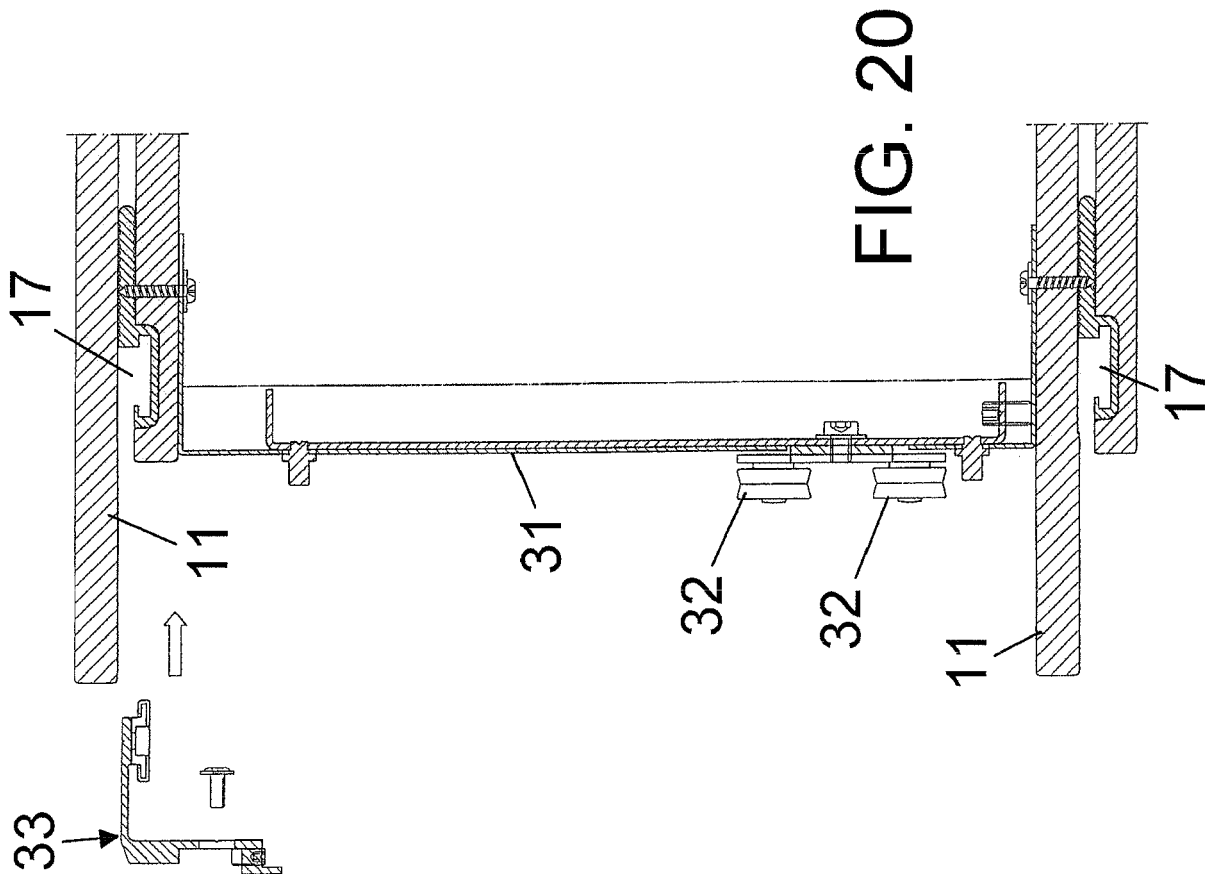
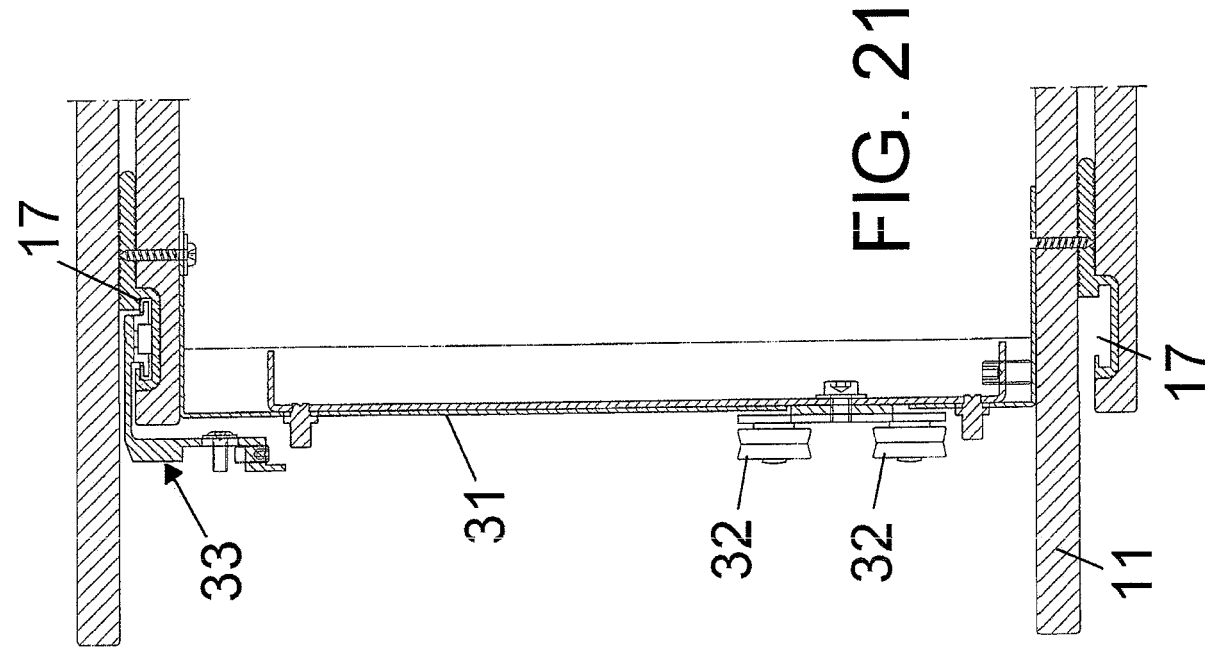


FIG. 19



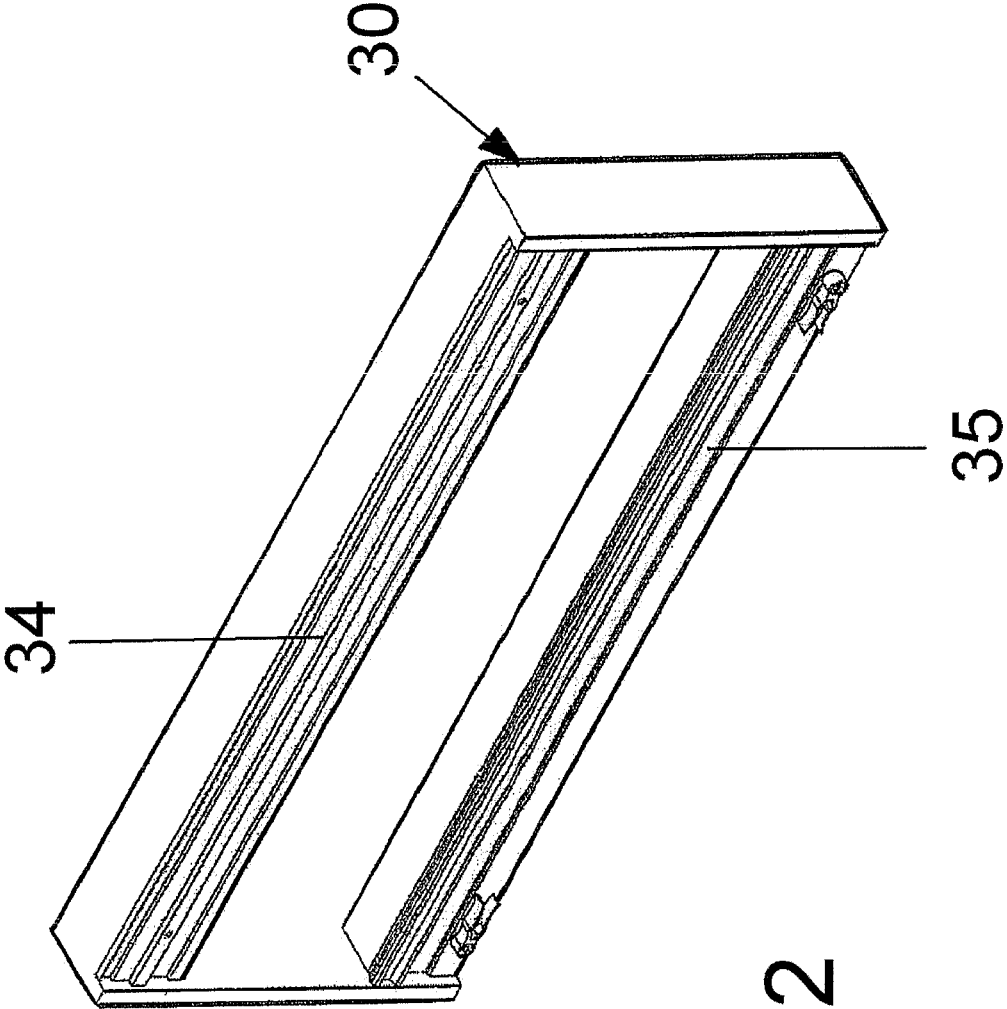


FIG. 22

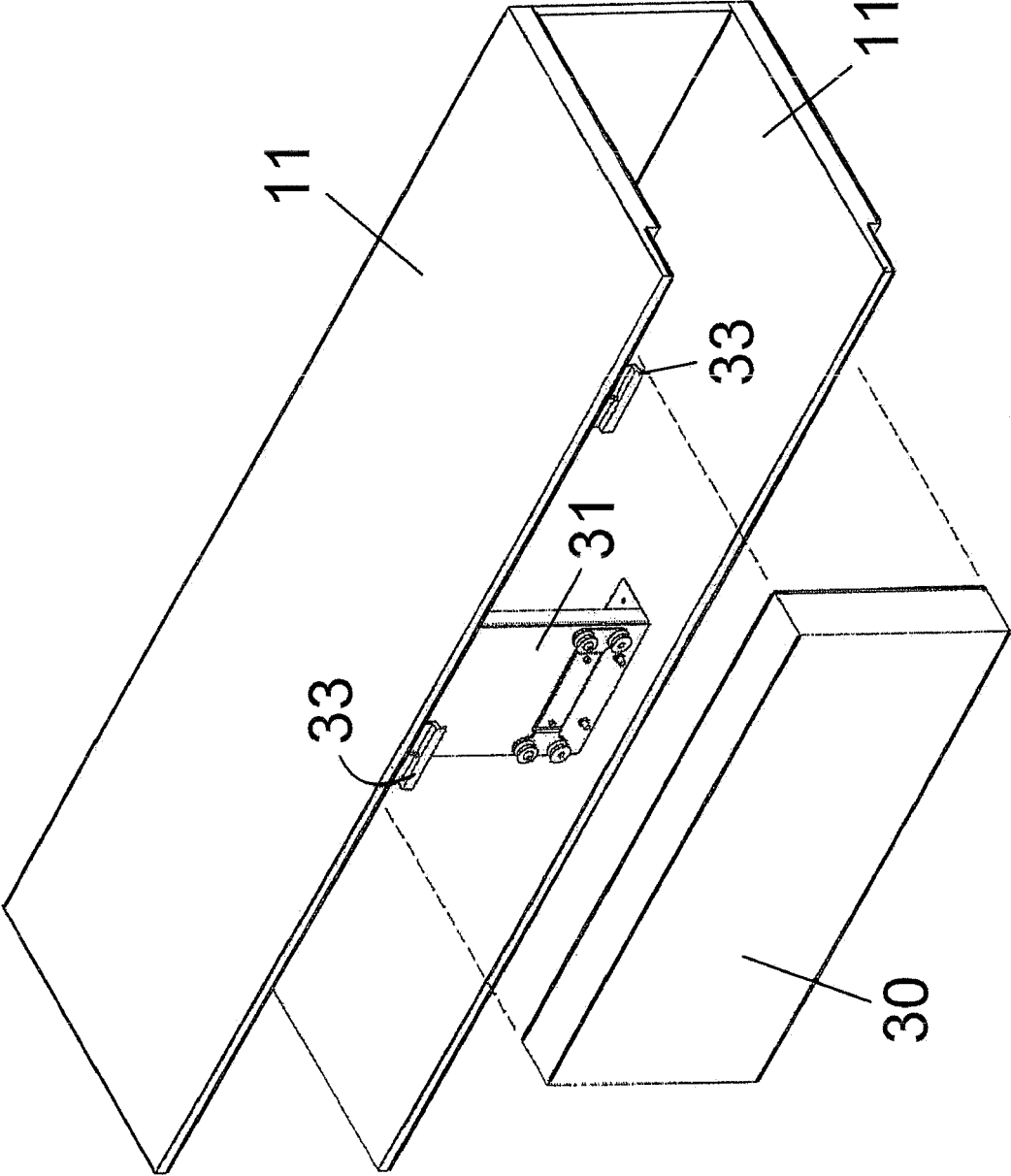


FIG. 23

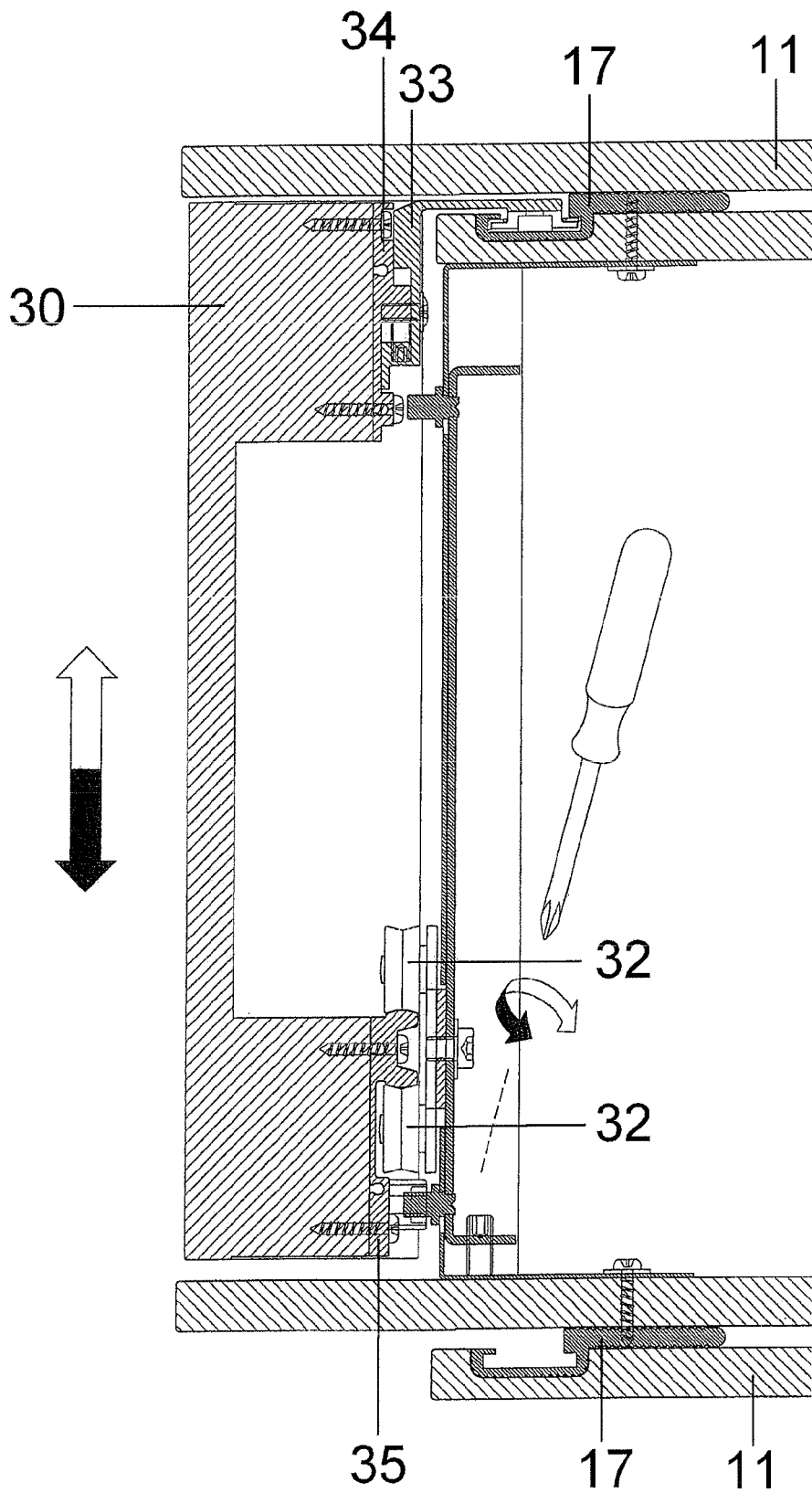


FIG. 24



EUROPEAN SEARCH REPORT

Application Number
EP 12 16 0710

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	GB 2 343 613 A (BELLPLEX LTD [GB]; GRUTTIS CARLO DE [GB] GRUTTIS DE CARLO [GB]) 17 May 2000 (2000-05-17) * the whole document *	1	INV. A47B96/06 A47B96/07
A	WO 2010/132394 A1 (RED STAR TRADERS LLC; APGOOD WILLIAM G II [US]; VAINBERG LENNY [US]; A) 18 November 2010 (2010-11-18) * figure 8 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 July 2012	Examiner Kohler, Pierre
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 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 16 0710

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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12-07-2012

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