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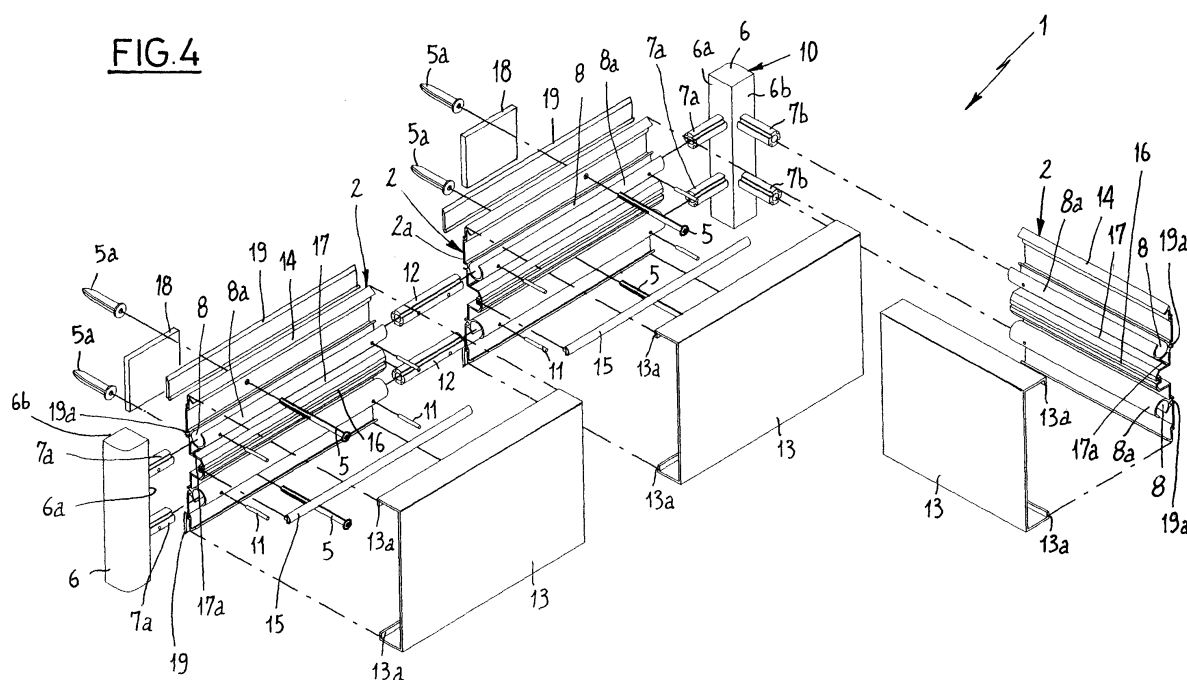
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(54) **A modular protection structure**

(57) A modular structure is described for the realisation of mouldings serving as bumpers and/or hand-rails, comprising support bars (2) able to be fastened to a wall possibly with the interposition of spacers (3) or plugging gaskets (19). Terminal elements (6) and/or junction elements (10) are engageable to the opposite

ends of each support bar (2), by means of connecting inserts (7a, 7b) able to be inserted by axial sliding into respective engagement seats (8) positioned symmetrically in the section of the bar. To each bar (2) can be associated a covering element (13) on the side opposite the wall fastening side (2a).



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Description

[0001] The present invention relates to a modular structure for the realisation of mouldings along walls of buildings, of the type comprising the characteristics expressed in the preamble of claim 1.

[0002] In particular, the modular structure according to the invention is suitable for the realisation of mouldings serving as bumpers and/or handrails of the type commonly installed for instance inside hospitals, schools, supermarkets and the like to protect the walls against impacts and/or providing a bearing or gripping surface to facilitate walking.

[0003] To this end, modular structures are currently employed which essentially comprise a plurality of support bars, normally made of extruded aluminium, which are secured to the walls in mutual alignment relationship, at a pre-set height from the floor.

[0004] On the support bars are engaged, by snap insertion, one or more covering elements made of plastic material, destined to finish the visible surface of the moulding.

[0005] One or more gaskets interposed between the support bars and the covering elements serve the purpose of damping the impacts whereto the moulding can be subjected, for instance by persons or objects, such as carts, seats or others, which are made to slide on the floor.

[0006] In correspondence with the extremities of the moulding, terminal elements are engaged having each at least a plate-shaped insert suitable to be inserted into a respective engagement seat defined in the cross section profile of the support bar and fastened therein by means of threaded elements. Between different moulding portions delimited in correspondence with the edges of the wall are also positioned junction elements each fitted at the respective opposite ends with inserts engaging the support bar in a manner similar to the one described above for the terminal elements.

[0007] Depending on whether the moulding is intended to serve exclusively as a bumper or also as a handrail, the support bar presents a fastening side directly engageable against the walls of the building, or it is structured in such a way as to be engaged to the walls themselves by interposing suitable brackets able to maintain the fastening side suitably distanced from the wall itself.

[0008] The Applicant has noted that the modular structures of the type described above can be improved in several aspects, particularly in relation to constructive simplification and to their ease of installation and mounting, as well as in relation to structural strength and reliability over time.

[0009] In particular, it has been found that the quantity of different types of components able to be associated in modular fashion to obtain the mouldings can be considerably reduced.

[0010] It is also possible to improve the system where-

by the different components are connected, for the sake of greater strength and simplicity of installation.

[0011] Therefore, the subject of the present invention is a modular structure for the realisation of wall mouldings in buildings, comprising the features expressed in the characterising part of claim 1.

[0012] Further features and advantages of the invention shall be made more readily apparent from the content of the detailed description that follows of preferred, but not exclusive, embodiments of a modular structure for the realisation of mouldings along walls of buildings, according to the present invention.

[0013] The description shall be provided below with reference to the accompanying drawings, provided purely by way of non-limiting indication, wherein:

- Figure 1 is a perspective exploded view of an example of wall moulding obtainable by means of a first embodiment of the modular structure according to the invention;
- Figure 2 shows a section taken according to trace II-II of Figure 1, highlighting the shape of the engagement seats and of the respective inserts of a junction element comprised in the modular structure;
- Figure 3 shows a terminal element section according to a horizontal median plane;
- Figure 4 shows a perspective exploded view of a moulding obtainable with a modular structure according to a second embodiment of the invention;
- Figure 5 shows a perspective exploded view of a moulding obtainable by means of a third embodiment of the invention;
- Figure 6 shows a moulding obtainable by means of a further embodiment of the invention;
- Figure 7 shows a section taken according to trace VII-VII of Figure 5.

[0014] With reference to the aforementioned figures, the number 1 indicates in its entirety a modular structure for the realisation of wall mouldings in buildings, according to the present invention.

[0015] The modular structure comprises at least a support bar 2, for instance made of extruded aluminium, suitable to be rigidly engaged to a wall of a building (not shown) by means of its fastening side 2a oriented towards the wall itself. More in particular, normally a plurality of support bars 2 is present, which bars can also be considered as segments obtained by cutting the same section bar to measure and subsequently aligned to follow the development of the walls of the building, at a pre-set height from the floor.

[0016] In the embodiment shown in Figure 1, where the modular structure realises a moulding usable both as a handrail and as a bumper for the protection of the walls, each bar 2 is fastened to the respective wall by interposing spacers 3 set to maintain the fastening side 2a of the bar itself at a pre-set distance from the wall.

Each spacer 3 presents a plate shaped terminal portion 3a with rectangular profile, which engages in a longitudinal seat 4 obtained on the fastening side 2a. This longitudinal seat 4 appears as a recess defined between two coplanar surfaces of the fastening side 2a. The width of the longitudinal seat substantially corresponds to the vertical dimension of the terminal portion 3a of the spacer 3, thereby being suited to engage the latter rigidly upon rotation. Each spacer 3 can then be placed in any position along the support bar 2 but, as an effect of the engagement of its terminal portion 3a in the longitudinal seat 4, it is advantageously inhibited from rotating with respect to the bar itself.

[0017] A pair of threaded elements 5 extending through holes obtained in the bar and in the spacer 3 and engaging in respective dowels 5a inserted in the wall ensures the stable fastening of the bar 2.

[0018] The modular structure 1 further comprises terminal elements 6 each engageable to a respective end of one of the support bars 2.

[0019] Each terminal element presents two opposite ends 6a, 6b oriented according to mutually orthogonal directions. On a first end 6a is positioned at least a first connecting insert 7a suitable to be inserted in a respective engagement seat 8 defined in the cross section profile of the support bar 2. More in particular, at least two first connecting inserts 7a are provided, oriented parallel and mutually distanced according to a vertical direction, parallel to the fastening side 2a of the support bar 2. The support bar 2 in turn presents two engagement seats 8, distanced according to a direction parallel to the fastening side 2a to house the respective connecting inserts 7a.

[0020] Each of the engagement seats 8 is defined by an engagement portion 8a projecting from the support bar 2, opposite with respect to the fastening side 2a and shaped according to an arched profile.

[0021] As the accompanying figures clearly show, each connecting insert 7a presents substantially cylindrical conformation, and is suitable to be engaged in the respective seat 8 by means of axial insertion according to a direction parallel to the longitudinal development of the support bar 2.

[0022] In correspondence with the second end 6b of each terminal element 6, internally hollow, an auxiliary seat 9a is defined for the snap engagement of a substantially plate shaped closure portion 9. Said closure portion 9 can present a substantially planar external surface 9b, positioned flush with the second end 6b, to prevent the entry and accumulation of dirt and/or detritus in the terminal element 6. Alternatively, to the closure portion 9 is associated at least a second connecting insert, and more specifically two connecting inserts 7b, projecting from the external surface 9b.

[0023] The second connecting inserts 7b are shaped similarly to the first inserts 7a, and each is positioned coplanar according to a perpendicular orientation with respect to one of the first inserts themselves. The sec-

ond inserts 7b thus are suitable to engage in the engagement seat 8 provided in the bar 2, in a manner similar to that described for the first connecting inserts 7a.

[0024] In the presence of the second connecting inserts 7b, the terminal element 6 constitutes an angular junction indicated in its entirety with the number 10, connecting two contiguous support bars 2 angularly positioned to follow the development of the walls in correspondence with an angle. Advantageously, the engagement seats 8, as well as the connecting inserts 7a and 7b, are shaped and positioned symmetrically with respect to a first and a second mutually orthogonal axes of symmetry respectively indicated as X and Y in Figure 2, observable on the cross section profile of the terminal element 6 engaged to the support bar 2, as shown in Figure 2. Thanks to this feature, each terminal element 6 is suitable to be indifferently engaged to one or to the other end of a support bar 2, according to orientations offset 180° around the horizontal axis X, orienting the first inserts 6a towards the engagement seats 8 respectively in correspondence with one or the other end of the bar 2.

[0025] The symmetry with respect to the vertical axis Y also allows to engage the angular junction element 10 according to two different orientations mutually offset 180° around the vertical axis itself, to be selected respectively according to whether the junction element is to be positioned in corresponding with a convex angle (Figure 1, 5 and 6) or with a concave angle (Figure 4) formed by contiguous walls.

[0026] Advantageously, the engagement of the first and/or second inserts 7a, 7b in the respective seats 8 occurs by means of a simple inserting action with axial sliding in a direction parallel to the longitudinal development of the support bar 2, preferably until the end of the terminal element 6 bears against the corresponding end of the bar itself. Once the insertion operation is complete, each of the first and/or second connecting inserts 7a, 7b is suitable to be axially locked in the engagement seat 8 by means of at least a locking pin 11 which can be inserted through holes obtained, for instance upon installation, through the bar 2 and through the connecting insert 7a, 7b itself.

[0027] To connect two support bars 2 positioned in mutual alignment, the modular structure 1 provides for the use of connecting inserts 12 shaped similarly to the connecting inserts 7a, 7b and able to be inserted in the engagement seats 8 of the respective bars to assure the perfect alignment thereof in correspondence with their ends joined head-to-head. In this case as well, securing pins 11 can be inserted through respective through holes obtained in the bars 2 and in the connecting inserts 12 to assure the axial locking thereof in the respective engagement seats 8.

[0028] To each of the support bars 2 can moreover be associated at least a covering element 13, preferably made of extruded plastic material, set to cover the bar itself on the side opposite the fastening side 2a.

[0029] In the embodiment shown in Figure 1, each covering element 13 presents substantially C shaped section, with two terminal appendices 13a forming an undercut and set to be engaged by snapping, passing over the opposite longitudinal borders of the bar itself in correspondence with the fastening side 2a. To ease the snap engagement of the covering element 13, the bar 2 presents, along the opposite longitudinal borders, two guiding appendices 14 converging towards a horizontal plane containing the horizontal axis of symmetry X, thereby defining inclined sliding planes 14a that facilitate the spreading of the terminal appendices 13a when the covering element 13 is engaged to the bar 2 with a thrusting action directed towards the bar itself.

[0030] At least a bumper lining 15 engaged in a corresponding groove 16 provided in the bar 2, opposite to the fastening side 2a, is suitable to act internally against the covering element 13 to dampen impacts whereto the latter, and therewith the entire moulding formed by the modular structure 1, can be subjected.

[0031] The longitudinal groove 16 for the insertion of the bumper lining 15 is advantageously provided on a longitudinal bearing portion 17 projecting from the opposite side with respect to the fastening side 2a, for the purposes that will become more readily apparent farther on.

[0032] The embodiment shown in Figure 4 differs from the description above in that the spacers 3 are replaced by plate shaped bearing elements 18, suitable to be positioned along the longitudinal seat 4 and able to be fastened, by means of insertion therein, in rotational direction with the respect to the bar 2. In this embodiment, each of the support bars 2 is applied with its fastening side 2a directly against the walls of the building, possibly after interposing plugging gaskets 19 engageable in respective sealing grooves 19a provided on the fastening side 2a of the bar 2.

[0033] Otherwise, the embodiment of Figure 4 is substantially identical to the description given with reference to Figures 1 through 3.

[0034] In the embodiment of Figure 5, the support bars 2 are in the form of sections of very limited length mutually distanced along the respective walls. With respect to the embodiment described above, both the spacers 3 and the bearing plates 18 and plugging gaskets are lacking. Also absent are the connecting inserts 12 described with reference to the embodiment as per Figures 1 through 3. In this case, the mutual alignment between the different support bars 2 is assured by at least an auxiliary bar 20 able to be engaged by snapping on the bearing surfaces 17 belonging to different support bars 2 mutually aligned, preferably to replace the bumper lining 15.

[0035] More specifically, the engagement of the bar 20 on the bearing surfaces 17 occurs by snap coupling of first teeth provided along opposite terminal edges 20a of the auxiliary bar itself, engaging with second coupling teeth 17a (Figure 2) provided on the bearing portion 17.

[0036] The auxiliary bar 20 preferably presents, on a side oriented towards the covering element or elements 13, an auxiliary longitudinal seat 21a, suitable to house an auxiliary bumper lining 21 that serves the same functions described with reference to the bumper lining 15 as per the embodiment illustrated in Figures 1 through 4.

[0037] In the embodiment illustrated in Figures 6 and 7, each of the engagement seats 8 is defined by a tubular portion 8b with circular profile positioned along a longitudinal edge of the support bar 2.

[0038] The tubular portions 8b are mutually distanced according to such a measure as to define between them the longitudinal seat 4 for the engagement of the terminal portion 3a of each spacer 3.

[0039] As Figure 6 clearly shows, the terminal elements 6 and/or junction elements 10 present a curvilinear plan profile, with curvature radius correlated to the size of the spacers 3 and substantially equal to the distance of the median vertical axis Y from the wall against which the support bar 2 is fastened.

[0040] Each covering element 13 is counter shaped to the cross section of the support bar 2, with the respective terminal portions 13a shaped according to an arched profile.

[0041] The present invention attains important advantages.

[0042] The doubly symmetrical disposition of the engagement seats 8, along with the constructive solutions adopted in the realisation of the terminal elements, allow considerably to reduce, with respect to the state of the art, the number of component types necessary to realise moulding which may even differ from each other. In other words, the modular structure according to the invention allows to realise different types of mouldings assembling according to different configurations a limited number of components of the same type, that is to say obtainable from the same mould or from the same extrusion die plate.

[0043] In this regard, it should also be noted that all the embodiments as per Figures 1 through 5 are obtainable by means of the same base bar 2, covering element 13, terminal elements 6 and/or junction elements 10, as well as connecting inserts 12.

[0044] It should further be noted that the distanced positioning along the vertical axis Y of the engagement seats 8 and of the connecting inserts 7a, 7b, as well as their mutual engagement obtained by means of axial insertion in the direction of longitudinal development of the bar 2, allows to obtain an excellent structural resistance in the connection between each terminal and/or junction element and the bars themselves. In particular, the junction and/or terminal elements can also be exploited, if need be, to serve functions sustaining the support bars, for instance if, as may occur in correspondence with edges formed by pillars projecting from the wall, the reduced longitudinal development of the bar 2 and/or its positioning do not allow it to be fastened directly on the wall.

[0045] The invention further attains considerable improvements in terms of simplicity in setting up and installing the mouldings. In particular, each support and respective covering element, supplied in pre-assembled condition to the installer, can be cut to measure simultaneously. The structure of the terminal and/or junction elements allows to maintain the same length for each support bar and the respective covering element, circumstance which is not provided by prior art devices which require additional cutting operations on the support bar, which must necessarily present a slightly smaller longitudinal development.

[0046] Also the assembly of the terminal and/or elements to the support bars, which can be performed by means of simple axial insertion operations without requiring the use of any threaded element, is considerably simplified with respect to the prior art.

Claims

1. Modular structure for the realisation of mouldings along walls of buildings, comprising:

- at least a support bar (2) rigidly engageable to a wall of a building by means of its fastening side (2a) oriented towards the wall itself;
- at least a covering element (13) engageable on said support bar (2);
- terminal elements (6) engageable to the opposite ends of the support bar (2), each by means of the insertion of at least a first connecting insert (7a) borne by the terminal element itself in at least an engagement seat (8) defined in the cross section profile of the support bar (2),

characterised in that said at least one engagement seat (8) is shaped and positioned symmetrically with respect to a first and to a second axis of symmetry (X;Y), mutually orthogonal, presented by the cross section profile of the terminal element (6) engaged to the support bar (2).

2. Modular structure, in particular according to claim 1, characterised in that said at least one connecting insert (7a) presents substantially cylindrical shape and can be inserted in the respective engagement seat (8) by axial sliding in a direction parallel to the longitudinal development of the support bar (2).

3. Modular structure according to claim 2, wherein said support bar (2) comprises at least two engagement seats (8) mutually distanced along a direction substantially parallel to said fastening side (2a) and engageable by respective connecting inserts (7a) borne by said terminal elements (6).

4. Modular structure according to claim 1 or 2, further

comprising connecting inserts (12) between two support bars (2) respectively aligned, said connecting inserts (12) presenting substantially cylindrical configuration and being able to be inserted in the engagement seats (8) of the respective bars (2) by sliding in a direction parallel to the longitudinal development of the bars themselves.

5. Modular structure according to claim 2, further comprising securing pins (11) each able to be inserted axially through the support bar (2) and one of said inserts (7a) to lock the insert axially in the respective engagement seat (8).

6. Modular structure according to claim 1 or 2, wherein each of said terminal elements (6) presents a first extremity (6a) bearing at least one said first connection insert (7a), and a second extremity (6b), oriented perpendicularly with respect to the first extremity (6a), presenting a coupling seat for the engagement of a closure portion (9).

7. Modular structure according to claim 6, wherein to said closure portion (9) is associated at least a second connecting insert (7b) able to be inserted in a respective engagement seat (8) presented by the support bar (2).

8. Modular structure according to claim 1, wherein said support bar (2) presents, on the fastening side (2a), at least a longitudinal seat (4) to engage, rigidly to the rotation, at least a spacer element (3) which can be interposed between the support bar (2) and said wall.

9. Modular structure according to claim 1 or 2, wherein said support bar (2) presents at least a longitudinal bearing portion (17) bearing at least a longitudinal seat (16) for the engagement of a bumper lining (15) provided to act against an inner side of said covering element (13), on said bearing portion (17) being engageable an auxiliary bar (20) bearing an auxiliary bumper lining (21) provided to act against the inner side of the covering element (13) instead of said bumper lining (15).

10. Modular structure according to claim 8, wherein said longitudinal seat (4) is defined by a surface recess obtained between two planar surfaces of the fastening side (2a), engageable in bearing relation against said wall.

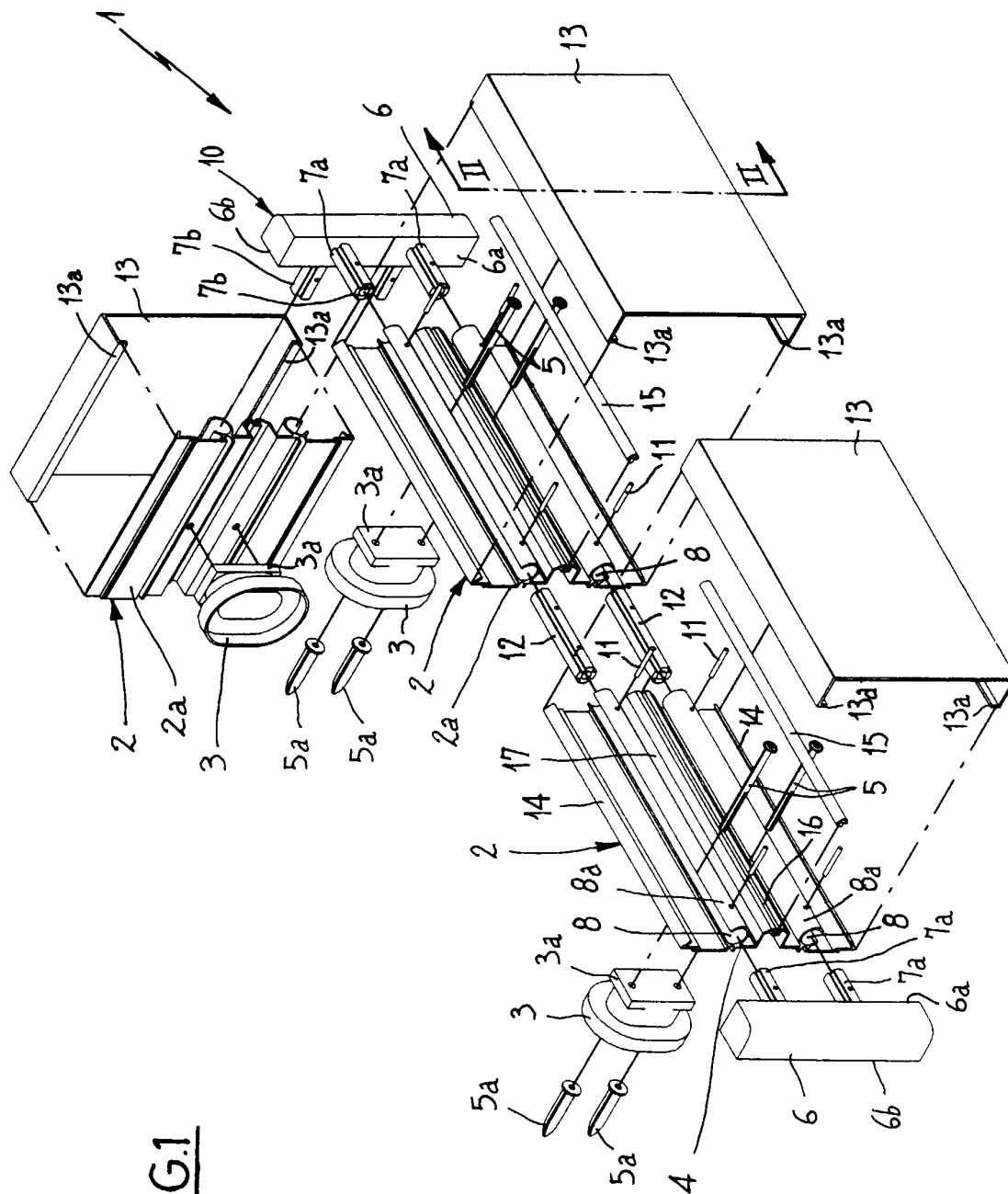


FIG.1

FIG.2

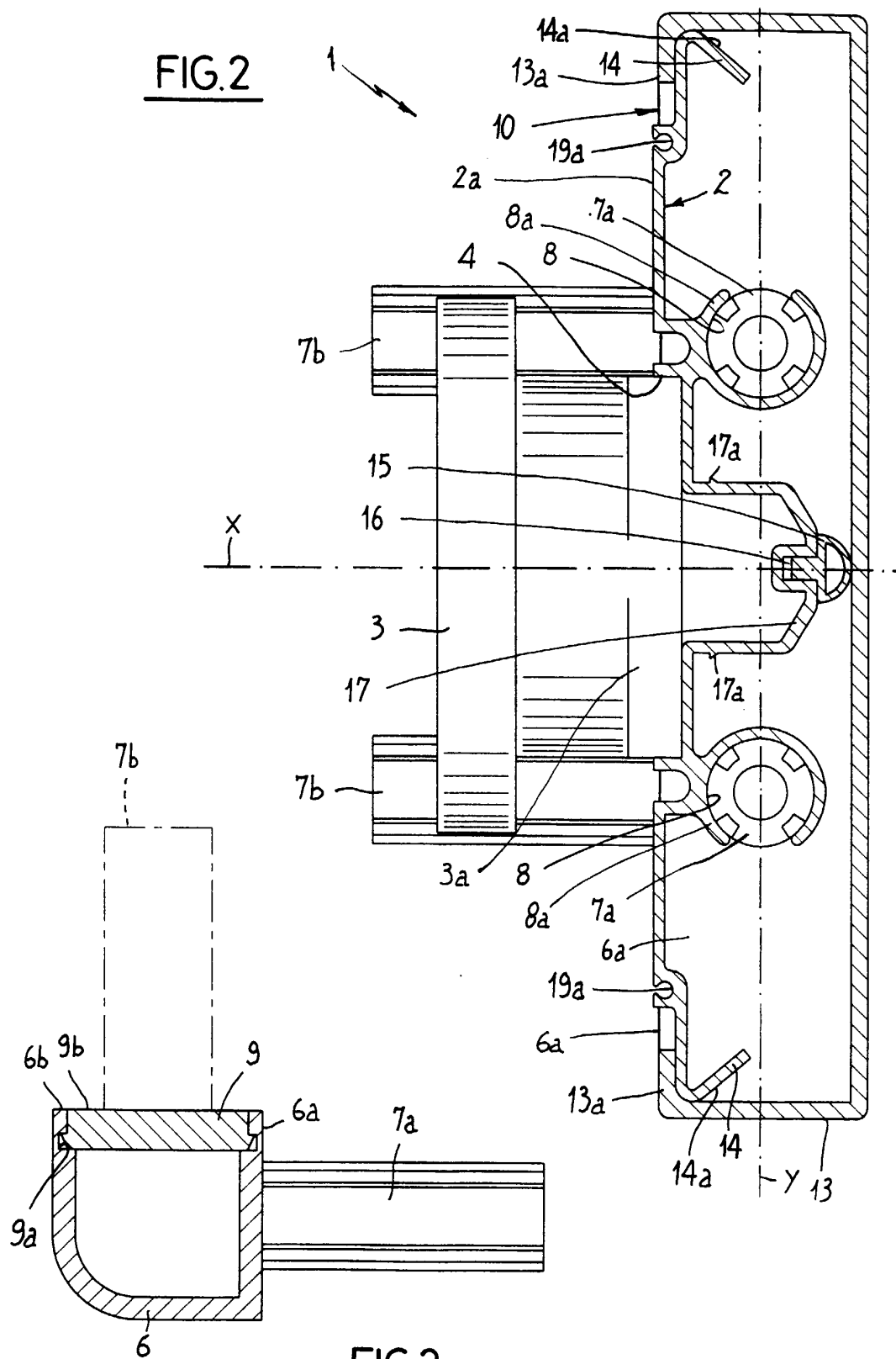


FIG.3

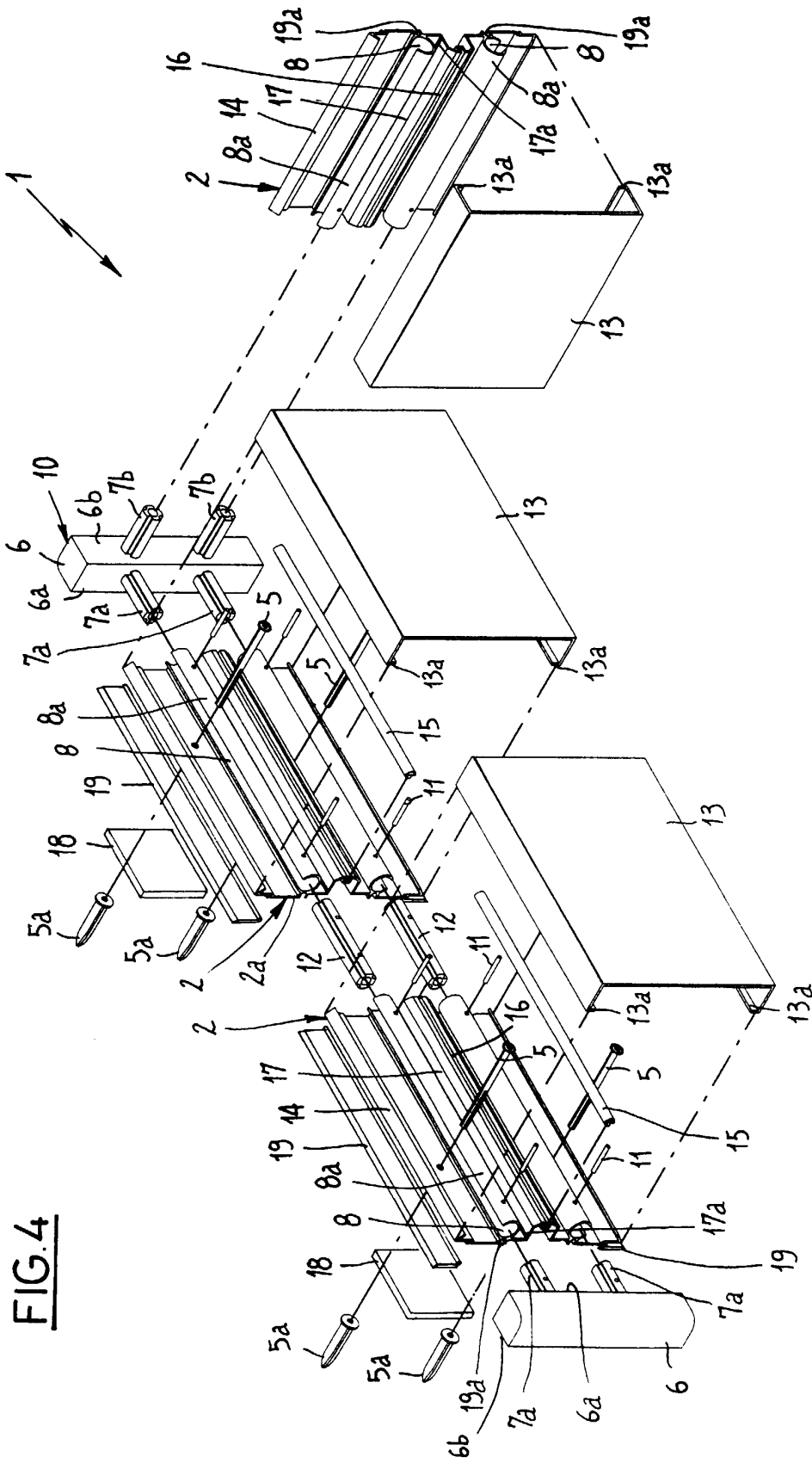


FIG. 4

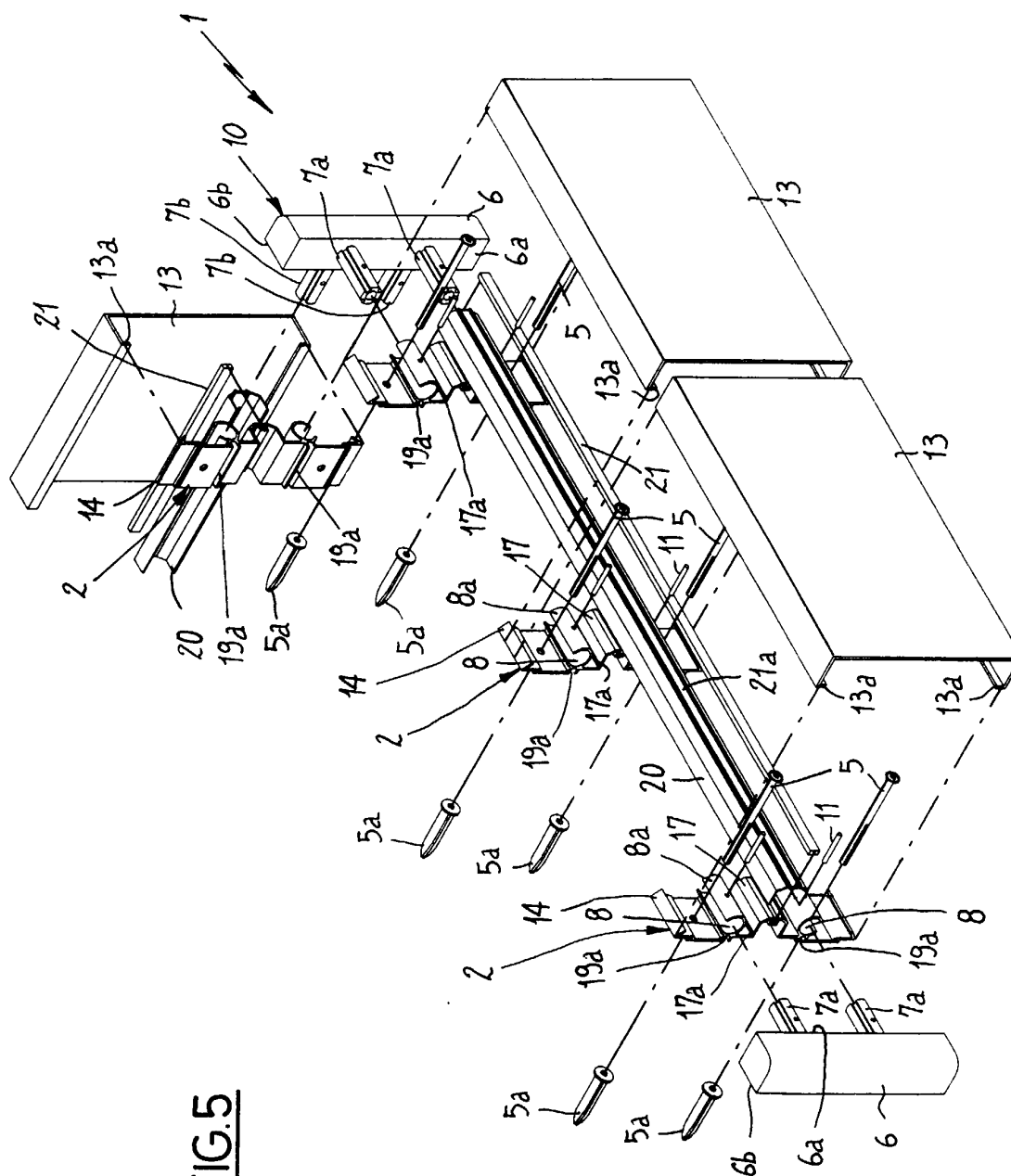


FIG. 5

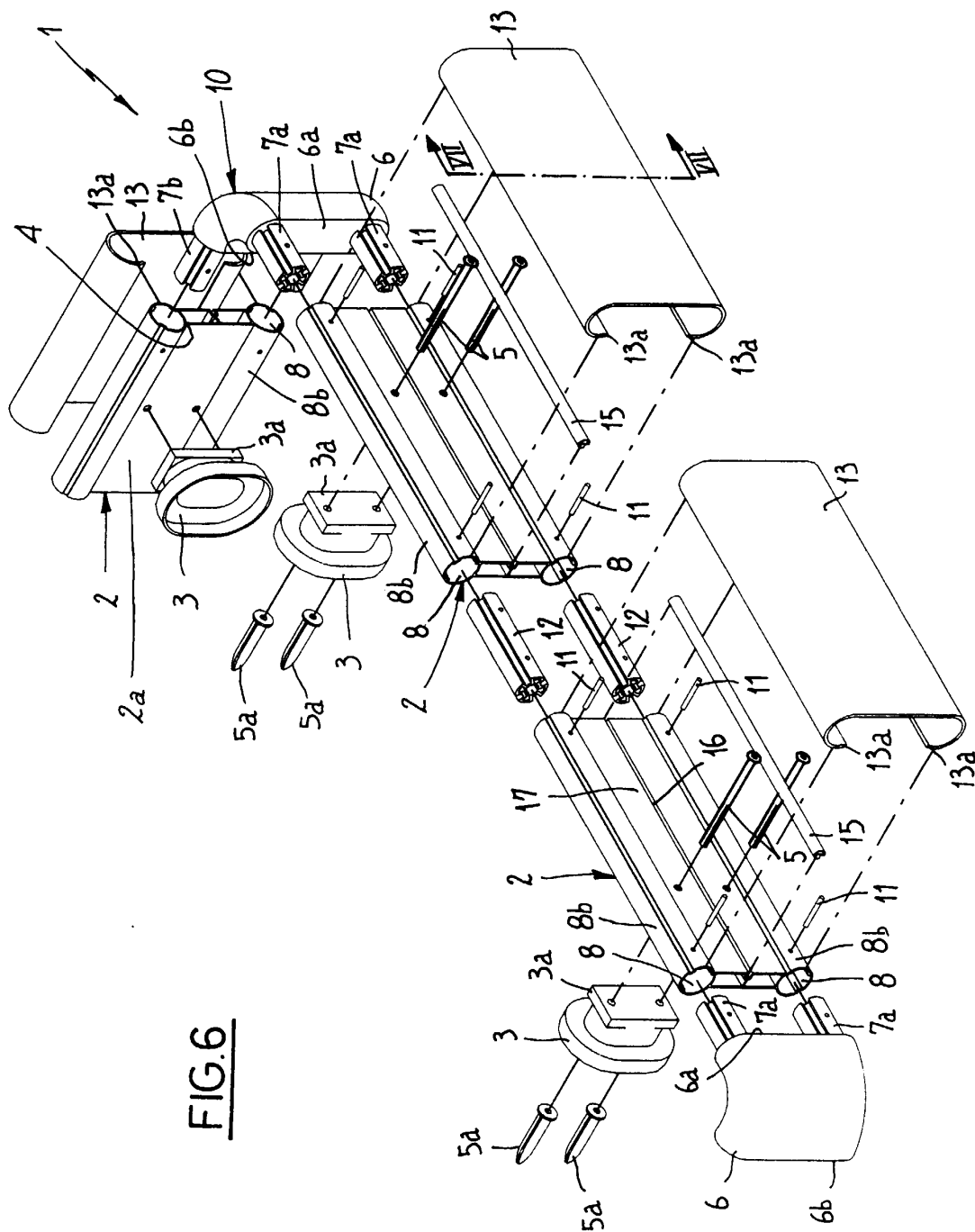
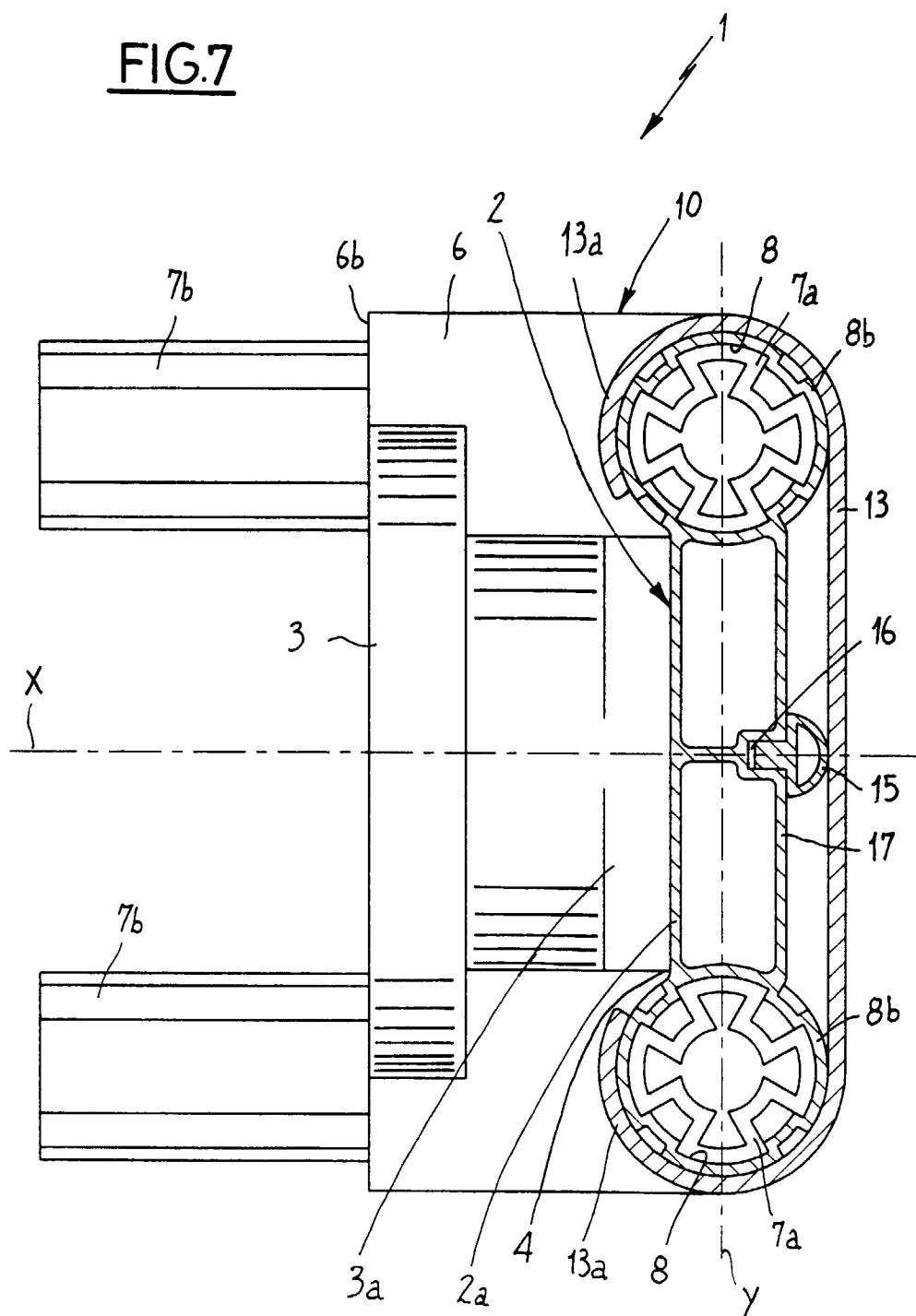


FIG. 6

FIG.7





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EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0185

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.7)
Y	US 5 469 682 A (KNIGHT THOMAS G) 28 November 1995 (1995-11-28) * column 2, line 40 - column 4, line 40; figures 1-4E *	1-4	E04F11/18 E04F19/02
A	---	6,8,9	
Y	US 5 273 258 A (BEDICS MICHAEL A) 28 December 1993 (1993-12-28) * column 2, line 42 - column 7, line 30; figures 1-7 *	1-4	
A	-----	6,8,9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E04F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		9 August 1999	Ayiter, J
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 99 83 0185

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