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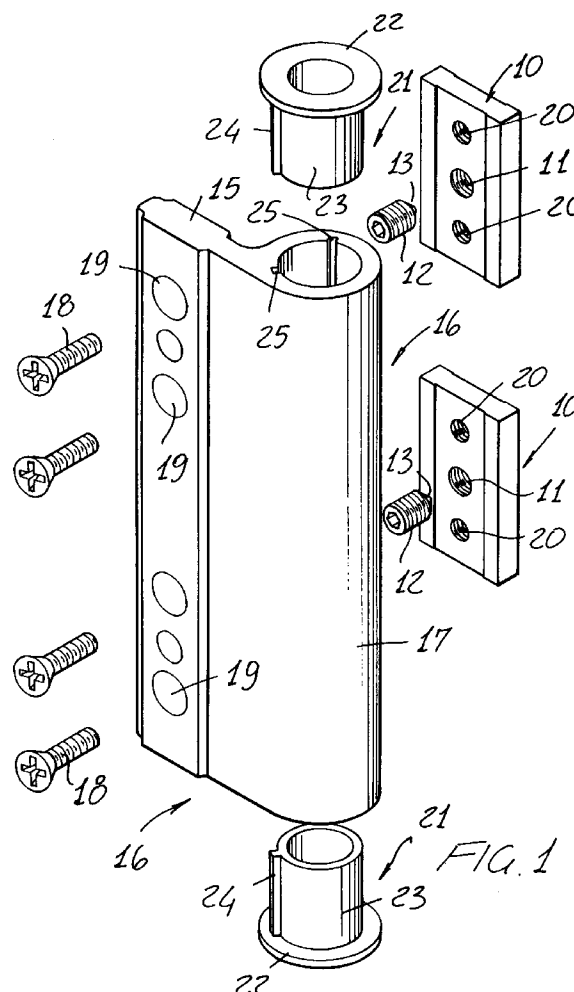
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(54) **Section member assembly particularly designed for making book and sliding main doors.**

(57) The present invention relates to a section member assembly, particularly designed for making book and sliding main doors, which comprises upright section members (1,2) and cross section members (3,4) for making fixed frames and wing frames.

The main feature of the invention is that the section member assembly further comprises hinge elements (16), including a block member (10) which can be engaged in a seat of the upright (1,2) and can be locked in its engaged position, by means of a threaded dowel (12) engaging in a threaded hole (11) of the block member (10) and bottoming on the bottom portion of the seat.

The block members comprise a pair of threaded seats (20), for engaging therein bolts (18), passing through the legs (15) of the hinge elements (16), extending from the cylindric body (17) housing the pivot pin.



BACKGROUND OF THE INVENTION

The present invention relates to a section member assembly, particularly designed for making book and sliding main doors.

As is known, great difficulties are encountered in making industrial closures starting from aluminium section members, mainly due to a lackness of a specific design of the section members for the specific type of use.

Moreover, prior art solutions do not provide the possibility of making main doors having large spans and heights, since they would not have a proper mechanical strength.

Another drawback is that prior section member assemblies for the above mentioned use are affected by great assembling problems, and, for the mounting procedure, there is required a lot of labour.

SUMMARY OF THE INVENTION

Accordingly, the main object of the present invention is to overcome the above mentioned problems, by providing a section member assembly, specifically designed for making book and sliding main doors, which assembly comprises section members specifically designed for allowing a quick and easy assembly, so as to also provide main doors with great spans and heights.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a section member assembly the section members of which allow to easily and quickly make industrial closures which can be specifically constructed both in a manually operated embodiment and in a motor operated embodiment and which further allow a lot of fittings to be applied thereto.

Another object of the present invention is to provide such a section member assembly the section members of which are provided with a very good mechanical and atmospheric corrosion strength thereby providing a main frame which is very reliable in operation.

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 section member assembly, specifically designed for making book and sliding main doors, comprising upright section members and cross section members, for making fixed frames and wing frames, characterized in that said section member assembly further comprises hinge elements including each a block member, which can be engaged in a seat of a said upright section member and locked therein, by a threaded dowel, engageable in a threaded hole of said block member and adapted to be abutted on the bottom of said seat, said block members comprising a pair of threaded seats for engaging

therein bolt elements passing through the leg of the hinge elements, extending from the cylindric body housing the pivot pin.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the invention will become more apparent from the following detailed disclosure of a preferred, though not exclusive, embodiment of a section member assembly, particularly designed for making books and sliding main doors, which is illustrated, by way of an indicative, but not limitative, example, in the accompanying drawings, where:

Figure 1 is an exploded perspective schematic view illustrating a hinge element, according to the present invention;

Figure 2 is a further exploded perspective view illustrating a comb-type of hinge;

Figure 3 is a top plan view showing a hinge arranged between two wing section members;

Figure 4 is a perspective view illustrating an angular connection block member;

Figure 5 is a cross-section view illustrating a connection between an upright section member and a cross-section member, as beveled at 45°;

Figure 6 is a schematic exploded perspective view illustrating the butt connection of a cross-section member perpendicularly to an upright section member;

Figure 7 is a schematic front view illustrating a book main door;

Figure 8 is a top plan view of the book main door in its open condition;

Figure 9 is a cross sectional view substantially taken along the line IX-IX of Figure 7;

Figure 10 is a further cross-sectional view substantially taken along the line X-X of Figure 7;

Figure 11 is a further cross-sectional view substantially taken along the line XI-XI of Figure 7.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the number references of the figures of the accompanying drawings, the section member assembly for making book and sliding main doors, according to the present invention, comprises fixed frame upright section members, indicated at the reference number 1, and wing upright section members, indicated at the reference number 2 in Figure 7; moreover, wing cross-section members are provided, indicated at the reference number 3, as well as middle cross section members indicated at the reference number 4.

Furthermore, in the embodiment shown in Figure 7, in which there is specifically illustrated an industrial type of main door, the book-wise closable wings

are provided with a door element, generally indicated at the reference number 7.

More specifically, the wings or parts of the main door are connected to one another by hinge elements, which are clearly shown in Figure 1, comprising a block element 10, which can be engaged in a seat provided in a related upright, 1 or 2, and being provided with a threaded hole 11 therein is engaged a threaded dowel 12 having a penetration point 13.

As the threaded dowel 12 is screw engaged in the threaded hole 11, the point portion 13 is caused to abut against the bottom of the seat and, moreover, the block element 10 is locked against the size or legs of said seat, thereby providing a very safe locking thereof, since the abutting of the point 13 against the bottom of the seat will prevent the block element 10 from sliding.

As shown, with the block element 10 there is engaged the leg 15 of a hinge element, generally indicated at the reference number 16, which leg extends from a cylindric body 17 in which is housed the pivot pin.

More specifically, the leg 15 can be affixed to the block element 10 by means of bolts, or screws, 18 passing through holes of the leg 15 and engaging in threaded seats or recesses 20 correspondingly formed on the block element: thus, an accurate locking is obtained.

Inside the hollow formed on the cylindric body 17, there are engaged anti-friction bush elements 21, each of which is provided with a flange 22 abutting on the axial end portion of the cylindric body, and with a cylindric mantle 23 engaging in the hollow of the cylindric body 17 and being provided with spoke elements 24 in turn engaging in grooves 25 correspondingly formed on the hollow portion of the cylindric body 17 in order to prevent the bush element from rotating.

Figure 2 illustrates a hinge of the so-called comb type, comprising the connection of several elements, indicated at the reference number 16, which are arranged in an alternating manner, so as to be connected with one and the other of the wings of the book-wise closable main door.

For clearness and simplicity the same reference numbers will be herein used.

Figure 4 illustrates an angle connection block, generally indicated at the reference number 30, which is formed by an extruded section member length and is provided with arms 30a and 30b which can be engaged in the corresponding hollow portions formed on the uprights and cross-members, indicated at the reference numbers 2 and 3, which must be connected to one another and, at the connection region, being cut at 45°.

Through the arms 30a and 30b there are provided threaded holes 32 formed through increased thickness regions of the lugs, in which there are engaged

screws 33, threaded through the related upright or cross-member, thereby providing a firm and safe locking.

With particular reference to Figure 6, for performing the connection of the middle cross-members, indicated at the reference number 4, there is provided and abutment on the middle cross-member and the firm and safe locking is provided by cross-screws 35, passing through the upright and self-screwing in cylindric seats 36 directly formed as a single body in the extruded element.

In order to assemble the main door, at the articulation regions between the door wings (see in particular Figure 9) there are provided gaskets made of EPDM, indicated at the reference number 50, which will prevent a person hand from being accidentally introduced.

With reference to Figure 10, furthermore, in order to provide the locking, there are preferably provided, inside the upright section members, but, possibly, even on the outside thereof, vertically extending rod 51 driven by a suitable handle and abutting in seats correspondingly formed on the fixed frame top cross-member 52 and on the ground.

Moreover, at the abutting edge of the book wings, there are provided guide rollers 55, engaging in a bottom rail, whereas, at the top, there is provided a truck element 56 which can slide in a top guide 57.

Thus, there is obtained a precise and safe guiding as well as a firm locking.

In this connection it should be pointed out that the fittings holding the bottom guide roller and top truck or carriage are connected to the upright section members by means which are identical to those used for affixing the hinge elements.

From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

In particular, the fact is to be pointed out that the hereinabove disclosed provisions allows to make main doors, both of a book and of a sliding type, which can be driven either manually or automatically, while providing very good safety properties, derived from a suitable sizing of the used section members.

Moreover, it should be pointed out that inside the several wing frames it will also be possible to apply glasses, plate-like elements, panels or any other suitable elements in order to close the surface of the wing frames.

The invention as disclosed is susceptible to several variations and modifications all of which will come within the scope of the inventive idea.

Moreover, all of the details can be replaced by other technically equivalent elements.

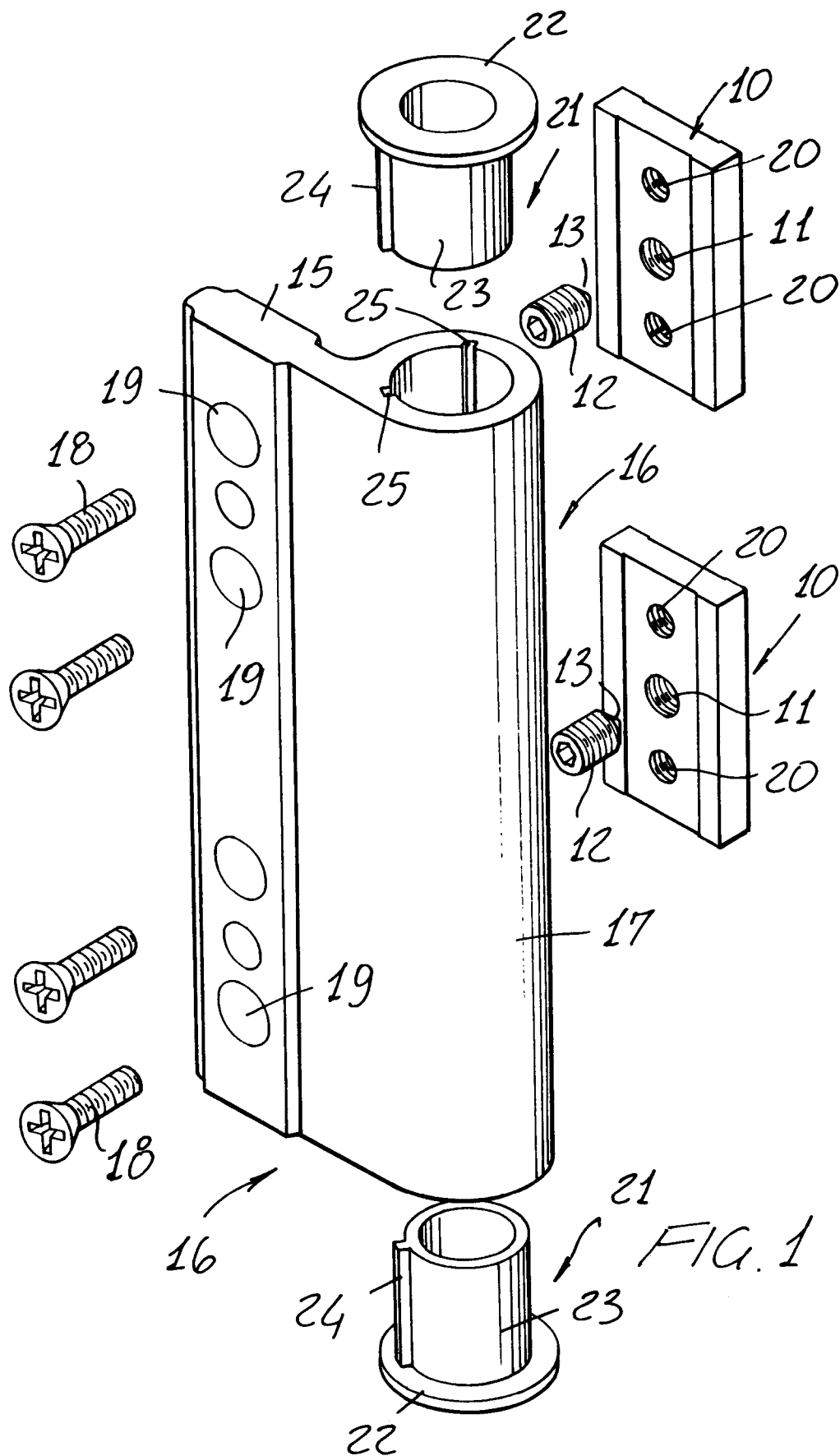
In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, according to the requirements.

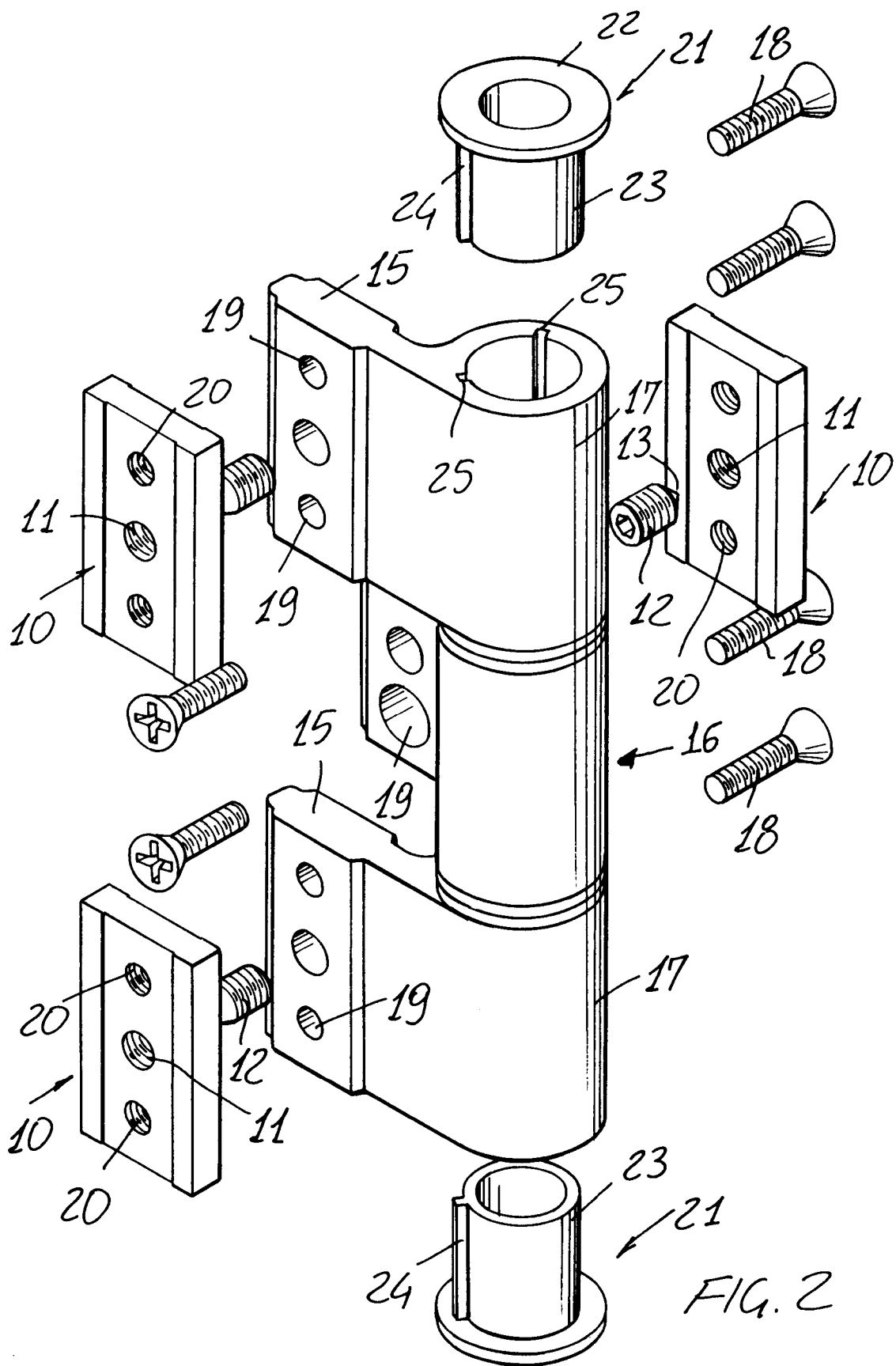
Claims

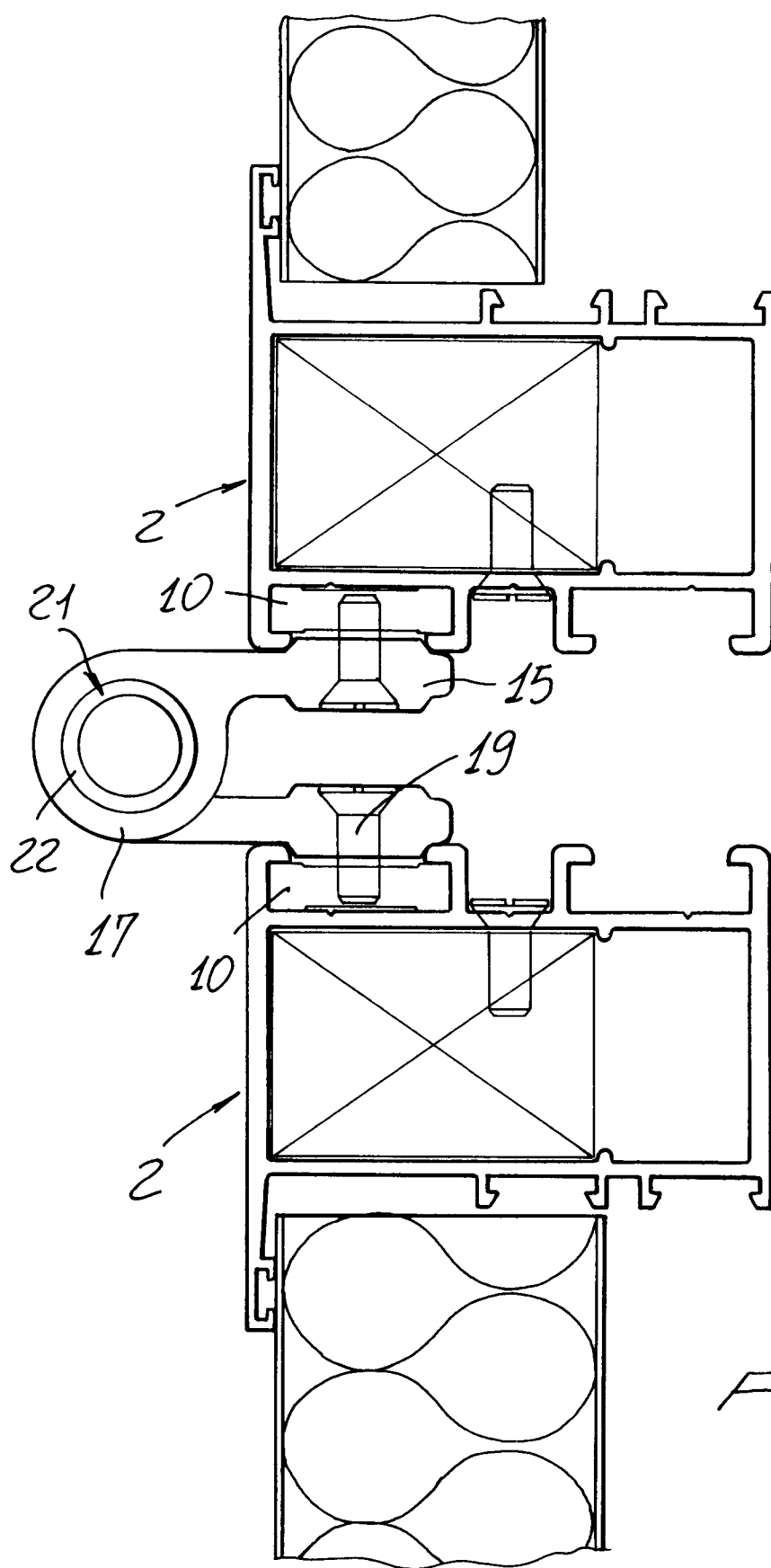
1. A section member assembly, specifically designed for making book and sliding main doors, comprising upright section members and cross-section members, for making fixed frames and wing frames, characterized in that said section member assembly further comprises hinge elements including each a block member, which can be engaged in a seat of a said upright section member and locked therein, by a threaded dowel, engageable in a threaded hole of a said block member and adapted to be abutted on the bottom of said seat, said block members comprising a pair of threaded seats for engaging therein bolt elements passing through the leg of the hinge elements, extending from the cylindric body housing the pivot pin. 5 10 15
2. A section member assembly, according to the preceding Claim, characterized in that said section member assembly comprises a point at the free end portion of said threaded dowel. 20
3. A section member assembly, according to the preceding Claims, characterized in that said cylindric body housing said pivot pin is provided with a cylindric hollow in which an anti-turning bush element can be engaged. 25 30
4. A section member assembly, according to one or more of the preceding claims, characterized in that said anti-turning bush element is provided with a flange adapted to be engaged at the end portion of the cylindric body, from said flange a cylindric mantle extending which is provided with spoke elements engageable in corresponding slots formed in the hollow of the cylindric body. 35
5. A section member assembly, according to one or more of the preceding claims, characterized in that said section member assembly further comprises angular connection blocks comprising extruded lengths, including mutually perpendicular arms which can be engaged in corresponding seats of a related upright or cross-member, said arms being provided, through increased thickness region thereof, with threaded holes therein there are engaged screws for connecting said upright and cross-member. 40 45 50
6. A section member assembly, according to one or more of the preceding claims, characterized in that said section member assembly further comprises means for abutting and connecting intermediate cross-members, said means comprising self-threading screws which can be engaged in holes of said cross-member and threaded in en- 55

gaging seat provided longitudinally of said cross-member body.

7. A section member assembly, according to one or more of the preceding claims, characterized in that the wing frames, mutually pivoted to one another, for making a book main door are provided with EPDM gaskets, at their mutual contacting region.
8. A section member assembly, according to one or more of the preceding claims, characterized in that said section member assembly further comprises, on said wing frames, a plurality of locking vertically extending rods which are slidably housed with respect to the upright and being engaged in seats respectively formed on the ground and on a top fixed frame cross member.
9. A section member assembly, according to one or more of the preceding claims, characterized in that said section member assembly further comprises, on an abutment edge portion of said book main door, a bottom guide roller and a truck which is slidably guided in a top rail, said roller and truck being connected to said upright by the same connection means as used for the hinge elements.







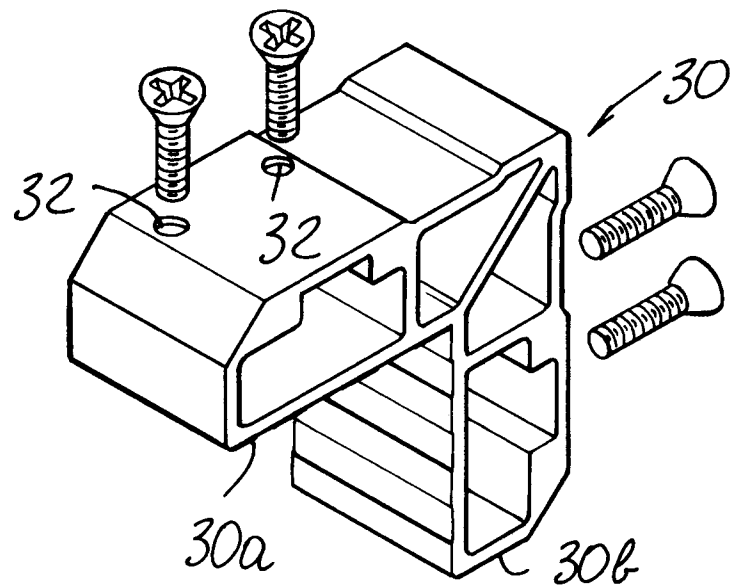


FIG. 4

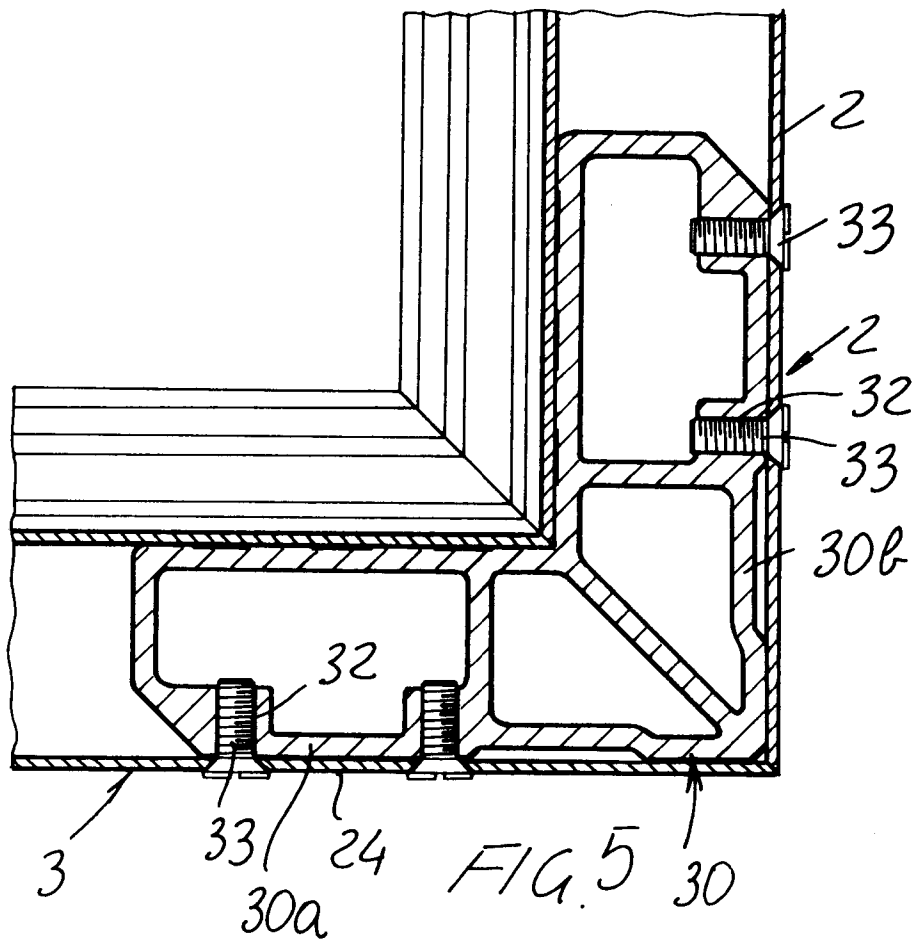
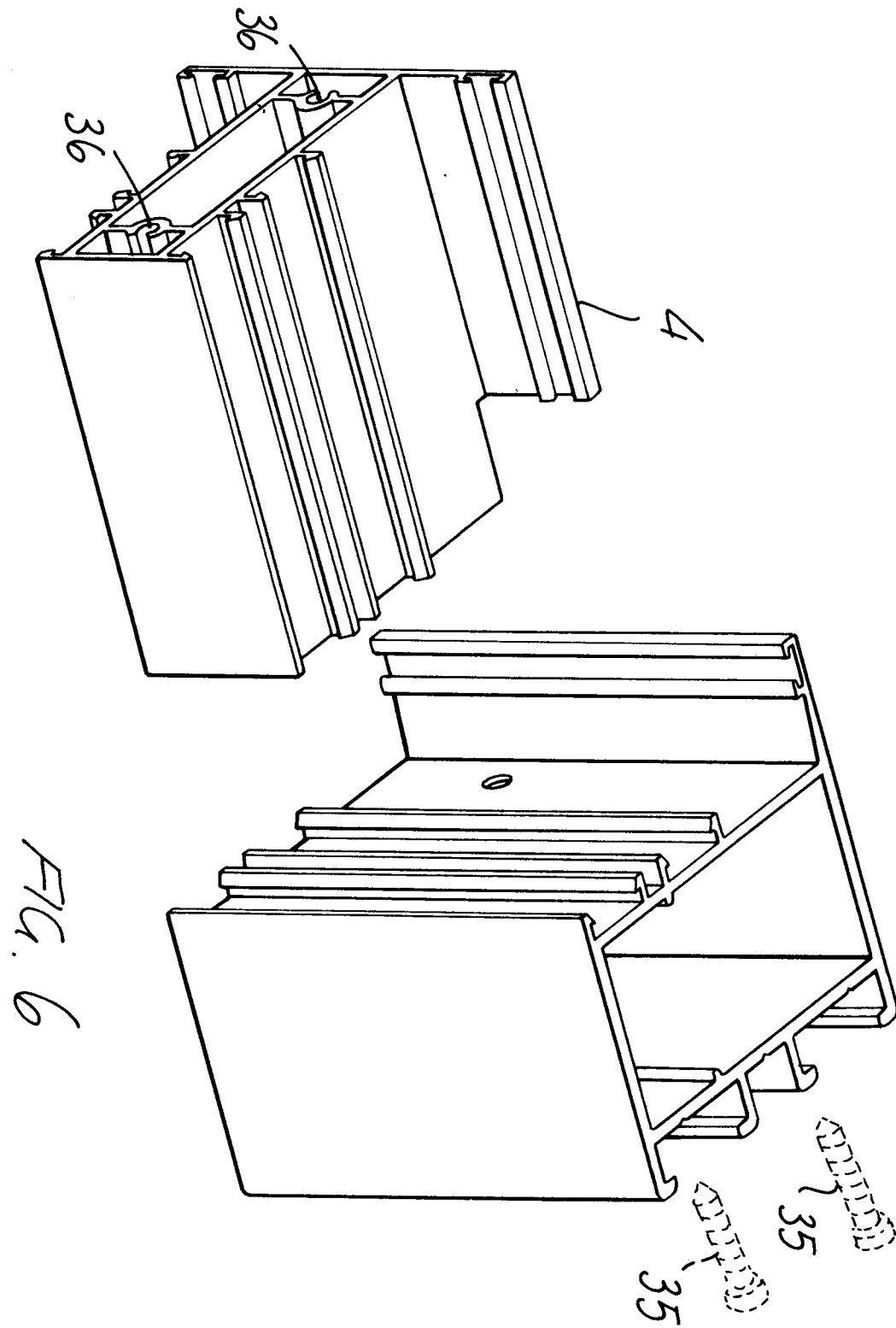


FIG. 5



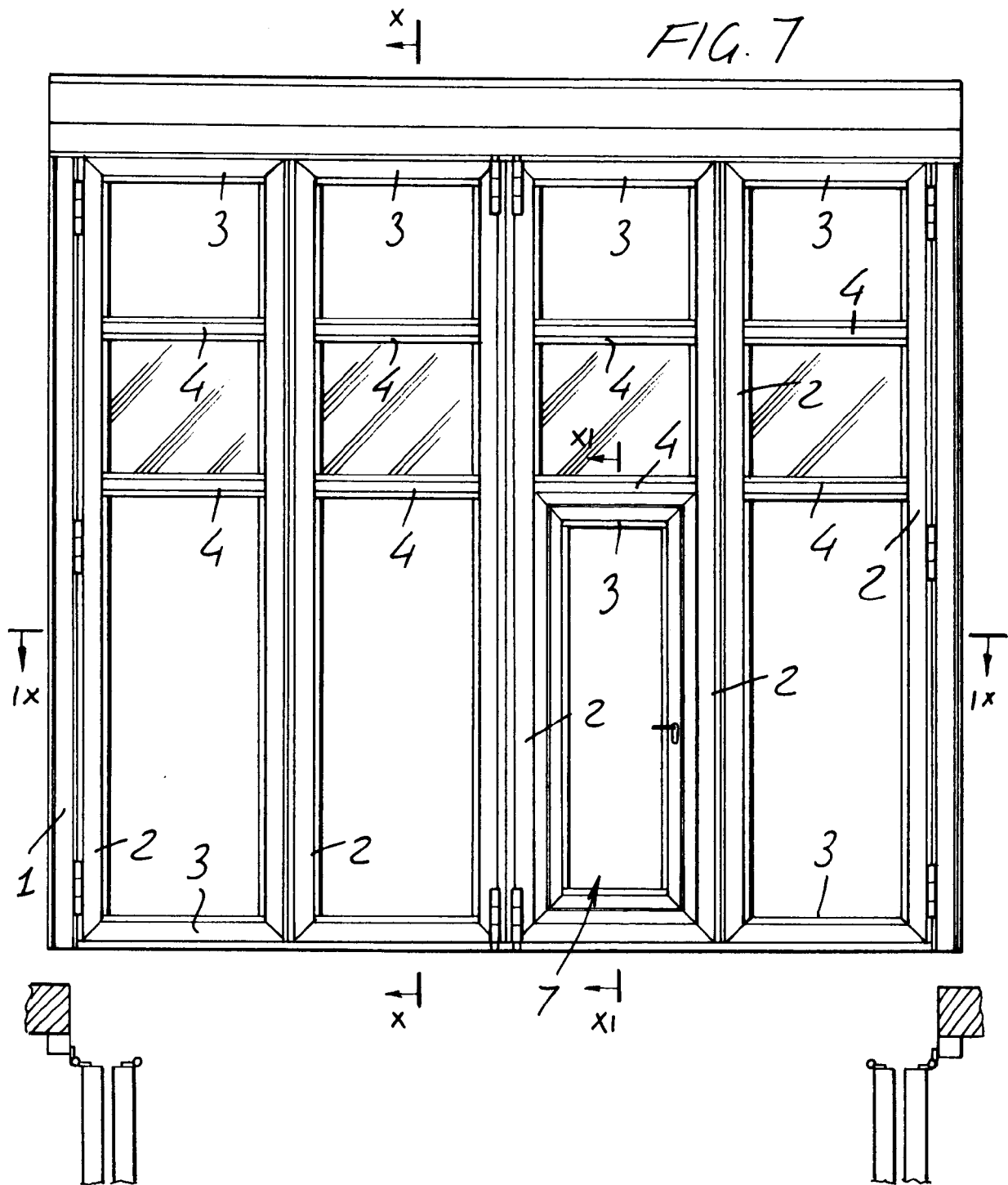


FIG. 8

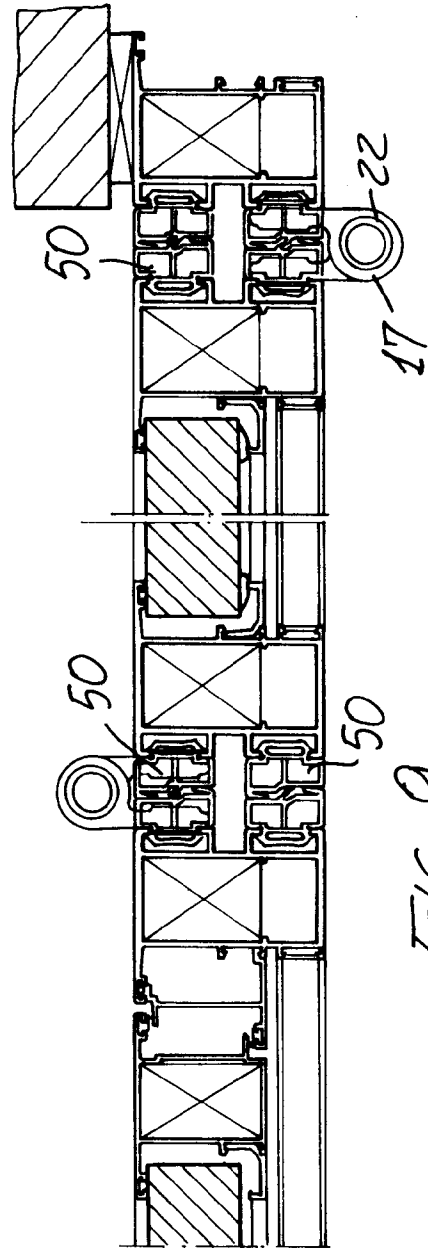
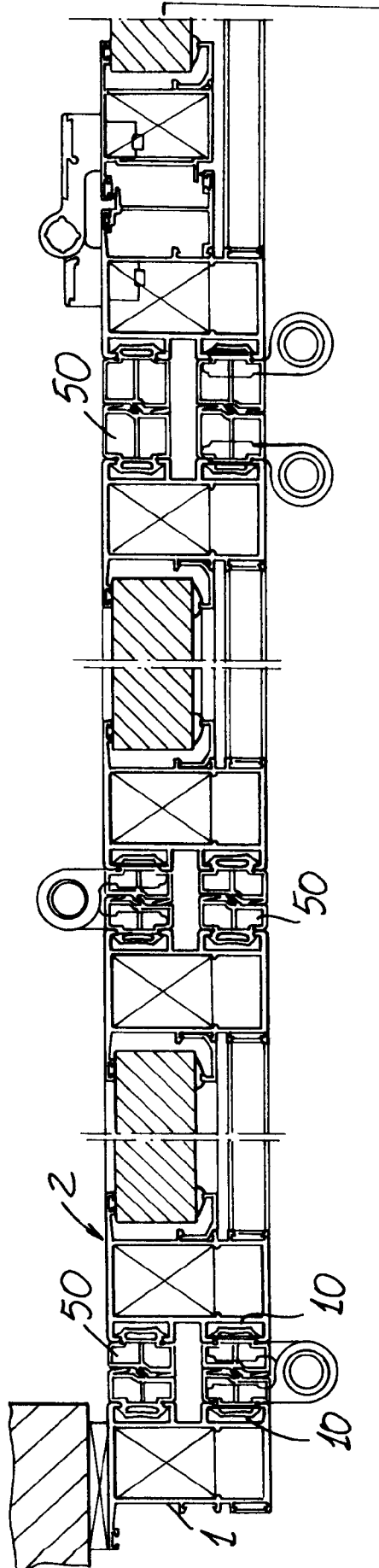
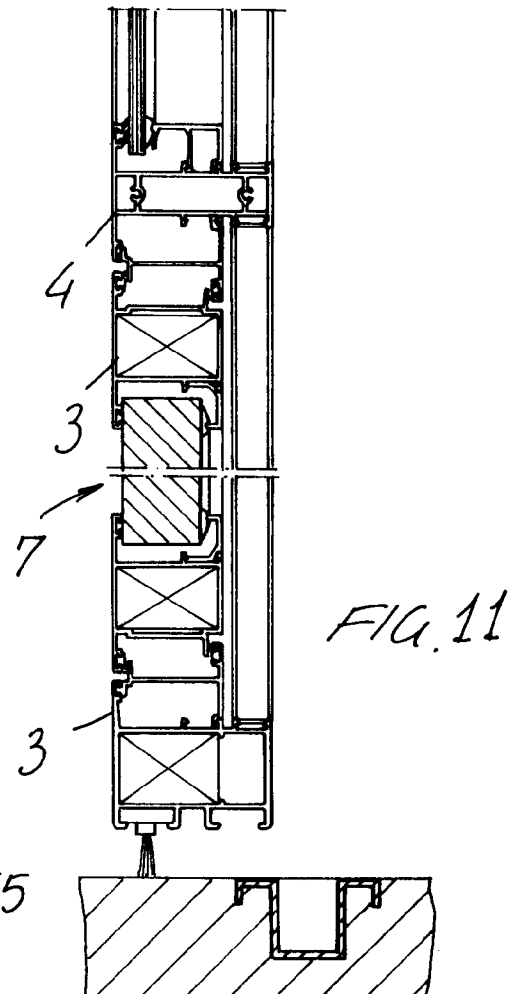
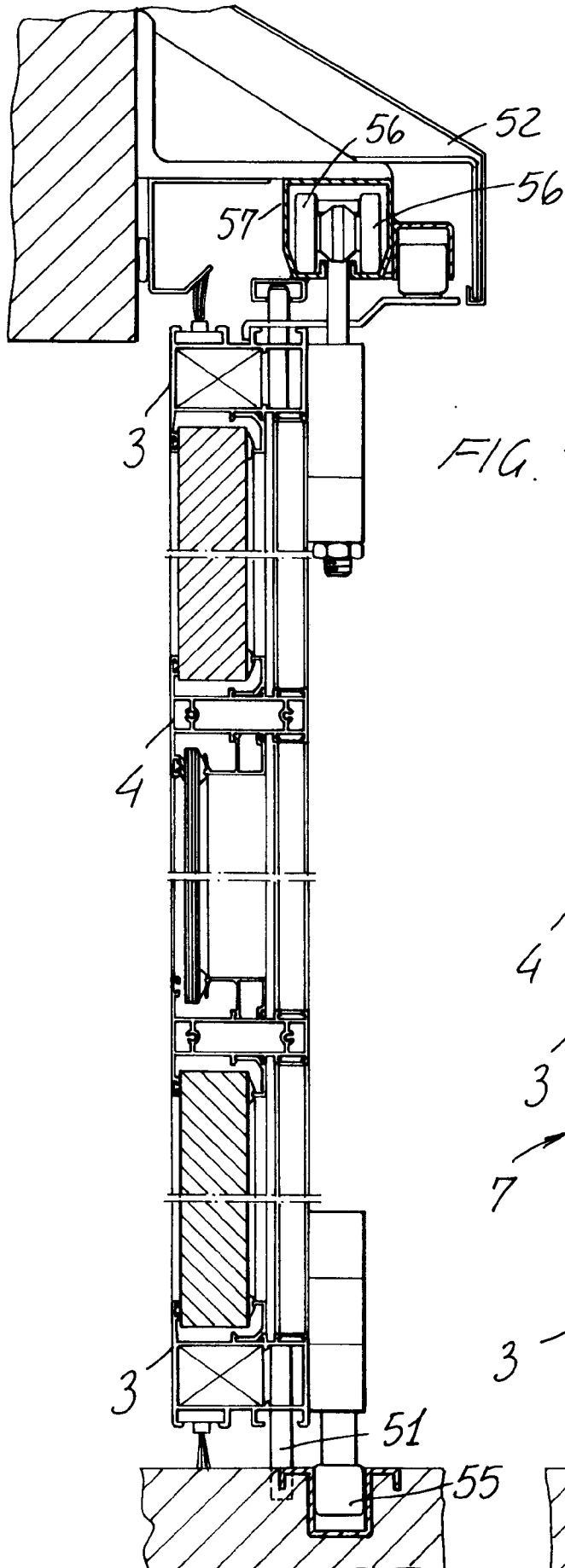


FIG. 9





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0098

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.5)
X	DE-A-35 25 717 (FA. EDWIN BIASI)	1,2	E05D5/02
Y	* page 7, line L - page 9; figures 1-4 *	3,5,6,8,9	E06B3/48
	---		E06B3/96
Y	GB-A-2 156 898 (WORCESTER PARSONS LIMITED)	3	E05D5/14
A	* page 2, line 118 - line 127 *	4	E05D13/00
	* page 3, line 15 - line 21; figures 1-3,23 *		

Y	US-A-3 383 799 (ANDERSON)	5	
	* column 2, line 24 - line 60; figures 2,7 *		

Y	US-A-3 881 287 (BIEBUYCK)	6	
	* column 5, line 53 - line 58; figures 1,4,5 *		

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	* page 7, last paragraph - page 8, paragraph 1; figure 2 *		

Y	FR-A-2 268 970 (TECHNAL INTERNATIONAL S.A.)	9	
	* page 13, line 16 - line 27 *		TECHNICAL FIELDS SEARCHED (Int.Cl.5)
	* page 13, line 35 - page 14, line 5; figures 14-16 *		E05D
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A	DE-A-28 29 912 (WALTER KEYERLEBER GMBH & CO KG STAHLBAU)	1,7	
	* page 16, line 16 - line 23 *		
	* page 18, line 1-5; figures 1,2 *		

A	GB-A-2 161 195 (BRITAL LTD)	6	
	* page 1, line 105 - line 106; figure 1 *		

A	DE-A-40 38 669 (SCHNEIDER)	7	
	* column 2, line 17 - line 22 *		
	* column 2, line 43 - line 46; figure 3 *		

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		21 June 1994	Van Kessel, J
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		I : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category		E : earlier patent document, but published on, or after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0098

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.5)
A	WO-A-82 01735 (KISO KEMI A/S) * page 1, paragraph 1 -paragraph 2 * -----	7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		21 June 1994	Van Kessel, J
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 I : 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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