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54 A set of metal sections and relevant accessories for constructing door and window support frames.

57 The metal sections in question, that form the fixed frame, the movable frame and the frame-work surrounding the doors and windows achieved therewith, have a specially shaped base profile provided with particular projections (9) and longitudinal projecting parts (7) designed to couple by restraint one similar section to another, and to permit the insertion of anchoring and/or manoeuvring accessories (41,43) that can be fixed to the sections without subjecting them to any milling or drilling operation, thereby providing a structure that is particularly simple, robust, easy and fast to install.

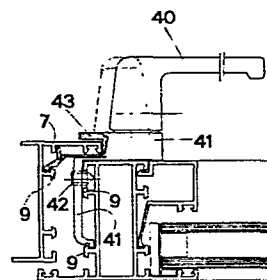


fig.9

A set of metal sections and relevant accessories for constructing door and window support frames

The invention relates to a set of metal sections and relevant accessories for constructing door and window support frames and, more precisely, has as its subject the special shape of the base profile of the metal sections
5 in question and the particular projections and projecting parts provided thereon, by means of which it is possible to assemble the metal sections one to the other and to insert suitably prior prepared anchoring and/or manoeuvring accessories in order to form any support frame
10 or structure for single or multiple windows and/or doors, as well as for windows of the jutting and bascule type, etcetera.

The object of the invention is to render exceptionally
15 fast and robust the fitting together of the metal sections and relevant accessories in question, with use being made of an extremely reduced number of elements, each of which suitable for the formation of various types of structures for doors and/or windows, and of a conformation such
20 as to almost fully dispense with the need for the provision in the metal sections of holes, slots or grooves for fastening one section to the other and for inserting the relevant prior prepared accessories.

25 A further object of the invention is to make available metal sections of a conformation particularly simple and such as to allow, with certain minor variations to the base support of some sections, the construction of fixed and movable frames that have perfectly flat inside and
30 outside surfaces, and of fixed and movable frames which, through the interposition of suitable cores of heat insulating material, thermally insulate the inside atmos-

atmosphere from the outside atmosphere.

The set of metal sections and relevant accessories in question is particularly suitable for the construction of any door or window support frame and, contemporaneously, it satisfies both the fundamental exigencies of solidity, inalterability and imperviousness to atmospheric agents, and any particular requirement for the thermal insulation and flatness of the inside and outside surface.

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The said objects and others too are attained by the set of metal sections and relevant accessories according to the invention which, from a general point of view, is characterized by the fact the sections forming the fixed frame, the movable frame and the frame-work surrounding the doors and windows achieved therewith, comprise wellnigh one and the same base profile constituted by a support, in sectional form substantially rectangular in shape, that defines a closed or partially open chamber having, in the region of at least one of the smaller sides thereof, a flat limb extending in continuation of the said smaller side from at least one part thereof and terminating, almost in the region of its own free extremity, in a pair of essentially "C" shaped borders provided for the insertion of sealing elements and, on at least one of the larger sides thereof, having a pair of "T" tracks that define, between one another and each of them in conjunction with "L" shaped projections, turned towards the inside of the base profile, present in the region of at least one of the smaller sides or projecting parts realized on the said flat limbs, three spaces for the coupling by restraint of similar sections and the housing of sealing elements; the said "L" shaped projections and the said projecting parts being made at a point corresponding exactly to the extremity of the said "T" tracks, "L" shaped projections and

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projecting parts.

A second characteristic of the set of metal sections and relevant accessories in question lies in the fact that
5 for one or more of the said sections, the base profile forms, in the region of one of the smaller sides thereof, a small chamber, communicating and staggered with respect to the said closed chamber, provided with a flat limb furnished in proximity of its free extremity with a projection,
10 ion, perpendicular thereto, that terminates in a pair of essentially "C" shaped borders lying in the same plane as the said smaller side of the closed chamber and the said "L" shaped projections adjacent thereto; the said sections being envisaged for the construction of doors and
15 windows having both the outside and the inside surface perfectly flat.

A further characteristic of the set of metal sections and relevant accessories in question lies in the fact that
20 one or more of the said sections are made out of two elements, of which the one subjected to the inside atmosphere has, in the region of one smaller side of the said support, a pair of limbs provided with projections and contours intended, in conjunction with the said smaller side,
25 to house and restrain one or more/cores of heat insulating material, of almost quadrangular shape, each so shaped as to form, on the side opposite the said support, a longitudinal cavity, provided with grooves and protrusions, intended to accept and hold fast a complementary projection
30 ion made on the other element subjected to the outside atmosphere and provided with at least one of the said flat limbs and "L" shaped projections; one or more of the said elements subjected to the outside atmosphere being so shaped as to form a small chamber provided with at least one
35 flat limb terminating in a projection provided with a

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pair of "C" shaped borders, for the construction of doors and windows with flat inside and outside surfaces; the said sections constituted by an element subjected to the inside atmosphere and an element subjected to the outside atmosphere, spaced transversely through one or more heat insulating cores, being envisaged for achieving thermally insulated doors and windows.

Further characteristics and advantages of the invention will become more apparent from the detailed description that follows of one preferred, but not sole, form of embodiment for the set of metal sections and relevant accessories in question, illustrated purely as an unlimited example on the accompanying drawings, in which:

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Figure 1 shows some of the cross sections of the metal sections in question;

Figure 2 shows, in cross sectional form, one of the metal sections used in the construction of door and window frames with flat surfaces;

Figure 3 shows, in cross sectional form, some of the metal sections and one heat insulating core used in the construction of thermally insulated door and window frames;

Figure 4 shows, in a diagrammatic view, a double window and double French windows;

Figure 5 shows, sectionalized along the line "AA", the French windows depicted in the preceding figure;

Figure 6 shows, sectionalized along the line "BB", the window depicted in Figure 4;

Figure 7 shows, sectionalized along the line "CC", the window depicted in Figure 4;

Figure 8 shows, in sectional form, a cremone handle;

Figure 9 shows, in sectional form, a handle for a jutting window;

Figure 10 shows, in sectional form, a hinge;

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Figure 11 shows, in sectional form, a compass for jutting windows;

Figure 12 shows, in sectional form, one detail of the compass for bottom hinged windows;

5 Figure 13 shows, in a perspective view, a hinge for jutting windows;

Figure 14 shows, in sectional form, a latching device for tip-up doors.

10 With reference to the aforementioned figures and, in particular, to Figures 1, 2 and 3, at 1a has been shown a metal section constituted by a base profile that comprises a support 4, in sectional form substantially rectangular in shape, that defines a closed chamber 5 having,
15 in continuation on opposite sides on both the smaller sides, a flat limb 6 provided with a projecting part 7 and terminating in a pair of essentially "C" shaped borders 8. Both of the larger sides of the said support 4 are provided with a pair of "T" tracks 9 and, in continuation on
20 opposite sides to the limbs 6 of the smaller sides, with "L" shaped projections 10.

The said projecting parts 7, "T" tracks 9 and "L" shaped projections 10 correspond exactly one with the other and
25 form spaces designed to accept and restrain other similar sections, to house sealing elements and to restrain or have inserted therein anchoring and/or manoeuvring accessories.

30 In Figure 1, shown in dashes for the metal section 1a is a variant constituted by the presence of two symmetrical and opposite flat limbs 6 in the region of one of the smaller sides. The said variant creates a section shown at 1b.

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At 1c has been shown a section similar to the one mentioned previously but having, in continuation of one and the same smaller side of the support 4, a pair of flat limbs 6, and on the other smaller side, two symmetrical and opposite "L" shaped projections 10.

A section similar to those mentioned previously has been shown at 1d but this has one of the larger sides of the support 4 open and, in the region of the extremities of the said opening, provided with a pair of flat and horizontal limbs 11 that both terminate in angularly turned truncations 12.

The said sections can naturally be made with the support 4 defining a closed chamber 5 dimensioned differently, as depicted by way of an example at 1e, so as to allow the use of frames, both fixed and movable, dimensioned to suit the requirements, without augmenting the number of sections fitted one to the other, this being to the advantage of the robustness and resistance of the door or window frame concerned.

At 1f has been shown a complementary glass fastening section for double panes, in sectional form substantially quadrangular in shape, open on one side, the open extremities of which are each provided with a border, 26 and 27, respectively, for fixing by restraint the said section to the previously described sections. The said section 1f has, in the region of one extremity of the side opposite the said opening, a pair of "C" shaped borders 8 provided for the insertion of glass fastening sealing gaskets. A conformation differing slightly from the section 1f, designed to serve to fasten the glass in single pane windows, has been shown with dashes in the said figure.

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In Figure 2 has been shown a section, 2a, in all respects similar to the section 1a but, in the region of one of the smaller sides thereof, provided with a small chamber 13, communicating and staggered with respect to the closed chamber 5, provided with a flat limb 14 similar to the one described previously but having, in the region of the extremity thereof, a projection 15 that terminates in a pair of "C" shaped borders 8 that lie on the same plane as the said smaller side of the chamber 5 and as the "L" shaped projections 10 adjacent thereto. The said section 2a, when fixed together with other similar ones to the previously described sections, makes it possible to construct frames with flat inside and outside surfaces, as shown in Figure 6.

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In Figure 3 has been shown a section 3a substantially similar to section 1a but consisting of two elements, one of which, shown at 16, is subjected the inside atmosphere, and the other, shown at 17, is subjected to the outside atmosphere. The said element 16 is provided with a closed chamber 18, of a reduced size compared to the similar chamber 5, having in the region of one of the smaller sides thereof, a pair of limbs 19 provided with projections and contours 20 designed, in conjunction with the said smaller side to house and restrain one or more longitudinal cores 21 of heat insulating material. The said cores 21 (see Figure 3) are in sectional form almost quadrangular in shape and the conformation of each is such as to form, on one side thereof, a longitudinal cavity 22, provided with grooves and protrusions 23, designed to house a complementary projection 24 with which the said element 17 is provided. The conformation of the latter can naturally be such as to present two flat limbs 6, as shown at 17a in Figure 3.

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Two sections, shown at 3b and 3c, respectively, consisting of two elements, as is the case with the section 3a, and similar to the previously described sections 1c and 1e, have their elements subjected to the outside atmosphere, 17b and 17c, respectively, provided with a small chamber, 25b and 25c, respectively, the purpose of which is the same as that of the small chamber 13 of the section 2a, namely, to construct thermally insulated door and window frames in which the inside and outside surfaces are flat.

As can be seen from Figures 5, 6 and 7, it is obvious that the fitting together of the sections 1a, 1b, 1c, 1d, 1e and 1f provides frames, both movable and fixed, for ordinary type doors and windows. By fitting the section 2a to the previously mentioned sections, the same frames are formed, but with flat surfaces, whilst similarly to the foregoing, the use of the sections 3a, 3b and 3c provides thermally insulated frames of either the normal type or with flat inside and outside surfaces. All the said sections are characterized by an extremely robust support structure for single or multiple windows or doors, and for windows of the bascule, jutting and bottom hinged type, etcetera.

In the aforementioned figures, and in particular in Figure 5 wherein is shown a section along the line "AA" of the French windows depicted in Figure 4, the fixing by restraint, one to the other, of the sections 1e, 1d and 1f, using for this solely the said "L" shaped projections and the "T" tracks 9, can be seen. In the "C" shaped borders 8 are housed the sealing gaskets 28, and in the region of the seating for the glass are housed the relevant fixing gaskets 29. The rabbet for the said double French windows is guaranteed by an elastic element 30, of

elongated shape, inserted in the space defined by the projecting parts 7 and the "T" track 9 of the section 1d in contact with a gasket 31 housed in the space defined by the "L" shaped projection 10 and the "T" track 9 of the
5 section 1e.

Figure 6 shows a section of the window depicted in Figure 4, along the line "BB", for which use has been made of the sections 1a and 1f together with the section 2a to create,
10 in this way, a door or window frame having, apart from the point where the hinge 32 is inserted, perfectly flat outside and inside surfaces. The rabbet between the fixed frame (section 1a) and the movable frame (section 2a) is likewise guaranteed by an elastic element 30 and a gasket
15 31.

In Figure 7 has been shown a section along the line "CC" of the window depicted in Figure 4, for which use has been made of sections that thermally insulate the inside atmosphere from the outside atmosphere and, moreover, the said
20 sections constitute the outside surface of the flat frame. Use has been made, in particular, of the sections 3a, constituted by the elements 16 and 17, of another section 3a, constituted by the elements 16 and 17, of two cores 21 and
25 of a glass fastening section 1f. Besides the usual gaskets 28, 29 and 30 and the elastic element 31, a pin 33, for fixing the section 3a to the brick wall, housed in the space defined by the pair of "T" tracks 9, and two sealing elements 34 with which to fill the remaining two spaces in
30 order to guarantee the imperviousness of the fixed frame to atmospheric agents, can be seen in the said figure.

Figures 5, 6 and 7 are purely illustrative examples of some of the infinite possibilities of assembling the afore-
35 mentioned sections to one another.

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In Figures 8 to 14 have been shown, by way of an example, some of the accessories for the construction of the door and window frames in question, so shaped as to be fixed to the said sections using exclusively the "T" tracks 9 and the corresponding projecting parts 7 and "L" shaped projections 10. In particular, Figure 8 depicts a cremone handle comprising a grip 35 engaged rotatably with a base body 36 that houses internally a rack for the reciprocal movement of the two teeth 37. The said teeth 37, located in a slot 38 machined in the region of a flat limb 6 (for example, of a section 1a), are positioned in the inside of the space defined by the projecting part 7 and the "T" track 9, and they engage with a pair of rods 39 inserted in a sliding fashion between the said projecting part 7 and the other "T" track 9, through notches that cannot be seen in the figure.

In Figure 9 a handle for jutting windows has been shown, and this is constituted by a grip 40 rotatably engaged eccentrically in a base 41 mounted (for example, on a section 1c) in contrast with one of the said "T" tracks 9, and fixed by means of a grub screw 42 in the region of the remaining track. The section opposite the one bearing the said handle (type 1b for example) has mounted astride the flat limb 6 thereof, facing the said base 41, an element 43 for locating the eccentricity of the grip 40 (shown with dashes in the figure in question), the said element 43 being restrained in between the said flat limb 6, the relevant projecting part 7 and the corresponding "T" track 9.

In Figure 10 has been shown a hinge 32 whose two portions 44, when closed, are inserted in the space existing in between the flat limb 6 of a section (type 3a for example) constituting the movable frame and the support 4 of another

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section constituting the fixed frame (another type 3a for example), and are fixed in contrast between the projecting part 7 and the relevant "T" track 9, respectively, of the first section and astride the corresponding "T" track 9 of the second section by means of grub screws 42. The hinge 32 in question can, naturally, be of the single, double (or "comb") type or else of the type for the third element of a triple door or window.

10 In Figure 11 has been shown a compass for jutting windows, comprising a pair of square ends 45 inserted in contrast in between the said pairs of "T" tracks 9 provided on the two opposite sections that constitute the fixed frame and the movable frame (two type 1c sections for example), fixed
15 thereto by means of grub screws 42, the respective extremities of these engaging rotatably with a rod 46.

One of the said square ends 45 has been shown in Figure 12 coupled and fixed to a flat element 47, complementary thereto, inserted in a sliding fashion in between the said pair
20 of "T" tracks 9 in such a way as to allow the square end 45 and the rod 46 pivoted thereto to slide vertically in order to construct bottom hinged windows.

25 In Figure 13, furthermore, has been shown a hinge for jutting windows, comprising a pin 48 mounted in contrast in between the "L" shaped projection 10 and the corresponding "T" track 9 of a type 1c section, and forming the upper cross member of the movable frame, fixed thereto by means
30 of grub screws 42. The said pin 48 is housed in an oblique guide 49 machined in a plate 50 inserted, in a way whereby it is able to slide, between the pair of "T" tracks 9 and the relevant projecting part 7 and the "L" shaped projection 10 of a section that defines the fixed frame.
35 The said plate is held in position by a locking element 51,

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able to slide similarly, which can, however, be fixed to one of the "T" tracks 9 by means of the usual grub screw 42. With the said conformation it is possible to form a hinge for jutting windows that can be removed from its upper position in order to allow, for example, the glass to be cleaned on the outside, which is something it is normally not possible to do through just the lower opening permitted by the compass.

10 Finally, in Figure 14 has been shown a latching device of what is commonly called the "sprung" type, used for tip-up doors and windows, constituted by a body 52 mounted astride the flat limb 6 of a section (type 1a for example) that constitutes the upper cross member of a movable frame and
15 terminates, inside the space defined by the said section with the corresponding section opposite thereto that forms the fixed frame, in a protrusion 53 in contrast with a spiral spring 54. The said protrusion 53 is inserted in the space defined by the "L" shaped projection 10 and the
20 relevant "T" track 9 of the section that constitutes the fixed frame. The aforementioned body 52 is maintained integral with the section that constitutes the movable frame, and is guided in the vertical movement of opening and closing the protrusion 53 by a plate 55 restrained in
25 between the pair of "T" tracks 9 of the said section, the projecting part 7 and the pair of "C" shaped borders 8 of the adjacent flat member 6.

It can be immediately seen from the figures to which reference has been made, that for the construction of door
30 and window frames with the metal sections in question, no other complementary or additional sections are required, with the exclusion of gutters that can be fixed externally with ordinary screws, or shims inserted to define the seat
35 on which the panes of glass rest or to position the frame

against the brick wall.

Though the foregoing description has obviously been given purely as an example, reference having only been made to
5 a given number of metal sections and accessories with which the construction of certain support structures is possible, the provision is naturally to be foreseen of other similar sections, derived logically from those described herein, and of accessories, designed and studied similarly to those
10 to which prior reference has been made, to be fitted to the said sections, all of which fall within the framework of protection as outlined in the following claims.

Claims:

1. A set of metal sections and relevant accessories for constructing door and window support frames, characterized by the fact that the sections forming the fixed frame, the movable frame and the frame-work surrounding the doors and windows achieved therewith, comprise wellnigh one and the same base profile constituted by a support (4), in sectional form substantially rectangular in shape, that defines a closed or partially open chamber (5) having, in the region of at least one of the smaller sides thereof, a flat limb (6) extending in continuation of the said smaller side from at least one part thereof and terminating, almost in the region of its own free extremity, in a pair of essentially "C" shaped borders (8) provided for the insertion of sealing elements and, on at least one of the larger sides thereof, having a pair of "T" tracks (9) that define, between one another and each of them in conjunction with "L" shaped projections (10), turned towards the inside of the base profile, present in the region of at least one of the smaller sides or projecting parts (7) realized on the said flat limbs (6), three spaces for the coupling by restraint of similar sections and the housing of sealing elements; the said "L" shaped projections (10) and the said projecting parts (7) being made at a point corresponding exactly to the extremity of the said "T" tracks (9); one or more manoeuvring and/or anchoring accessories being provided for inserting and fixing them between the said pair of "T" tracks (9), the said "L" shaped projections (10) and the said projecting parts (7).
2. A set of metal sections and relevant accessories according to Claim 1, characterized by the fact that one or more of the said sections has the base profile forming, in the region of one of the smaller sides thereof, a small

chamber (13), communicating and staggered with respect to the said closed chamber (5), provided with a flat limb (14) furnished in proximity of its free extremity with a projection (15), perpendicular thereto, that terminates in a pair of essentially "C" shaped borders (8) lying in the same plane as the said smaller side of the closed chamber (5) and the said "L" shaped projections (10) adjacent thereto; the said sections being envisaged for the construction of doors and windows having both the outside and the inside surface perfectly flat.

3. A set of metal sections and relevant accessories according to Claims 1 and 2, characterized by the fact that one or more of the said sections are made out of two elements, of which the one (16) subjected to the inside atmosphere has, in the region of one smaller side of the said support (4), a pair of limbs (19) provided with projections and contours (20) intended, in conjunction with the said smaller side, to house and restrain one or more longitudinal cores (21) of heat sealing material, of almost quadrangular shape, each so shaped as to form, on the side opposite the said support (4), a longitudinal cavity (22), provided with grooves and protrusions (23), intended to accept and hold fast a complementary projection (24) made on the other element (17) subjected to the outside atmosphere and provided with at least one of the said flat limbs (6) and "L" shaped projections (10); one or more of the said elements (17) subjected to the outside atmosphere being so shaped as to form a small chamber (25b and 25c) provided with at least one flat limb (6) terminating in a projection provided with a pair of "C" shaped borders (8), for the construction of doors and windows with flat inside and outside surfaces; the said sections constituted by an element (16) subjected to the inside atmosphere, and an element (17) subjected to the outside atmosphere, spaced

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transversely through one or more cores (21) of heat insulating material, being envisaged for achieving thermally insulated doors and windows.

5 4. A set of metal sections and relevant accessories according to Claims 1, 2 and 3, characterized by the fact of comprising complementary glass fixing sections (1f), in sectional form substantially of quadrangular shape open on one side, the cooperating extremities of which are each
10 provided with borders (26 and 27) for slot-in fixing to the said sections constituting the fixed and movable frame of the doors and windows, and in the region of at least one of the extremities of the side opposite this having a pair of essentially "C" shaped borders (8) provided for
15 the insertion of sealing elements.

5. A set of metal sections and relevant accessories according to Claims 1, 2 and 3, wherein one of the said accessories is constituted by a cremone handle of the type
20 that comprises a grip (35) rotatably engaged with a base body (36), fixed by means of common screws in the region of the support (4) and of one flat limb (6) adjacent thereto of one of the metal sections, housing the operating mechanism equipped with a pair of teeth (37) that pass
25 through the said section by means of a slot (38), characterized by the fact that the said teeth (37) engage, in the region of suitable notches, with the two extremities of a pair of rods (39) housed in a way whereby they can slide between the said projecting part (7) realized on the said
30 flat limb (6) and one of the said "T" tracks (9).

6. A set of metal sections and relevant accessories according to Claims 1, 2 and 3, wherein one of the said accessories is constituted by a handle for jutting windows,
35 consisting of a grip (40) rotatable and eccentric with res-

pect to a base (41) mounted in contrast on one of the said "T" tracks (9) and fixed with a grub screw (42) in the region of the other "T" track (9) of one of the said sections constituting the movable frame; a grip eccentricity locator member (43) being provided mounted astride the corresponding flat limb (6) of the section, opposite the previous one, constituting the fixed frame, and on this restrained in the region of the projecting part (7) present on the flat limb (6) and of the relevant "T" track (9).

10

7. A set of metal sections and relevant accessories according to Claims 1, 2 and 3, wherein one of the said accessories is constituted by a hinge (32), the two portions of which are mounted in contrast between the said projecting part (7) and the corresponding "T" track (9) and between the said "L" shaped projection (10) and the corresponding "T" track (9) of the pair of sections that face one another and constitute the fixed frame and the movable frame, respectively, fixed thereto by means of grub screws (42).

20

8. A set of metal sections and relevant accessories according to Claims 1, 2 and 3, wherein one of the said accessories is constituted by a compass for jutting windows, and comprises a pair of square ends (45), inserted in contrast on the pair of "T" tracks (9) present on two of the said facing sections, one of which constitutes the fixed frame and the other the movable frame, fixed thereto by means of grub screws (42); on the said square ends (45) there being connected, in the region of their respective extremities, through a pair of pins, a rod (46) rotatable around each pin; at least one of the said square ends (45) being fixed to a flat member (47), complementary thereto, inserted in a way whereby it can slide between the said pair of "T" tracks (9) in order to create bottom hinged windows.

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9. A set of metal sections and relevant accessories according to Claims 1, 2 and 3, wherein one of the said accessories is constituted by a hinge for jutting windows, and comprises a pin (48) mounted in contrast between the
5 said "L" shaped projection (10) and the corresponding "T" track (9) and fixed by means of grub screws (42) to the section that forms the upper cross member of the movable frame, and a plate (50) that constitutes an oblique guide (49) for the said pin, inserted in a way whereby it can
10 slide between the pair of "T" tracks (9) present on the section, opposite the previous one, that forms the fixed frame; the said sliding plate (50) being kept in position by a locking element (51) fixed in a removable fashion to one of the said "T" tracks (9).

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10. A set of metal sections and relevant accessories according to Claims 1, 2 and 3, wherein one of the said accessories is constituted by a latching device for tip-up doors and comprises a body (52) mounted astride the flat
20 limb (6) of the section constituting the upper cross member of the removable frame that terminates, inside the space created by the said section with the corresponding facing section that constitutes the cross member of the fixed frame, in a protrusion (53), in contrast with a com-
25 mon spiral spring (54) inserted in the space defined by the "L" shaped projection (10) and by the corresponding "T" track (9) of the said section relevant to the fixed frame; a plate (55) being provided for fixing the said latching device to the section constituting the movable
30 frame, restrained between the corresponding pair of "T" tracks (9) and the projecting part (7) and the pair of essentially "C" shaped borders (8) present on the adjacent flat limb.

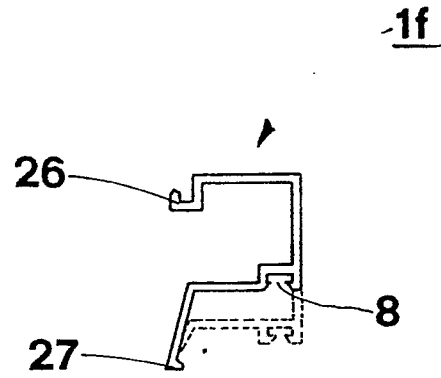
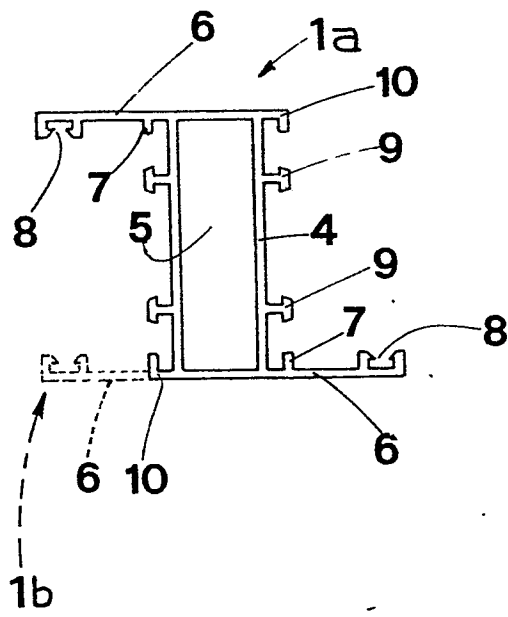


FIG1

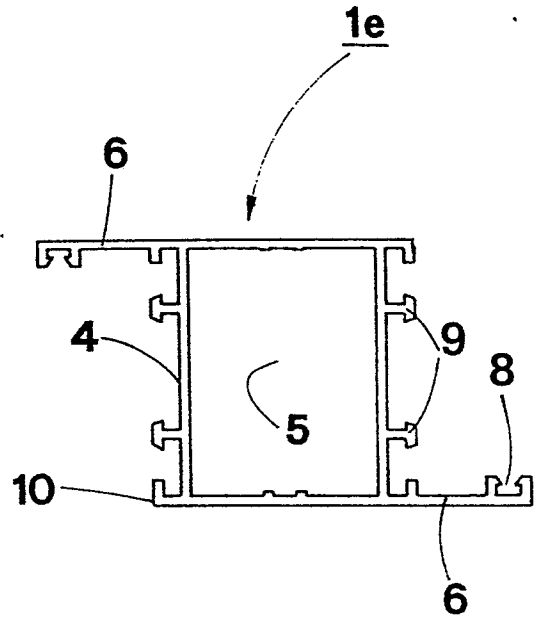
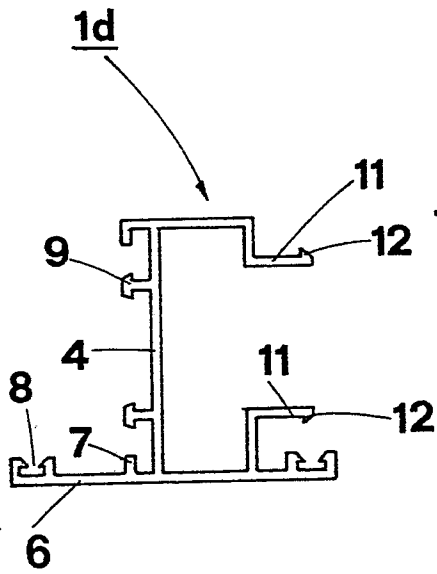
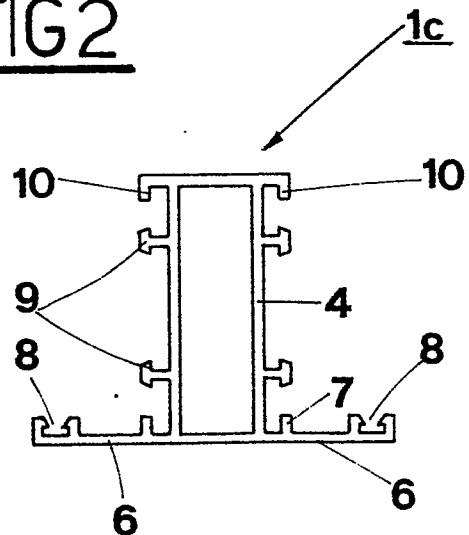
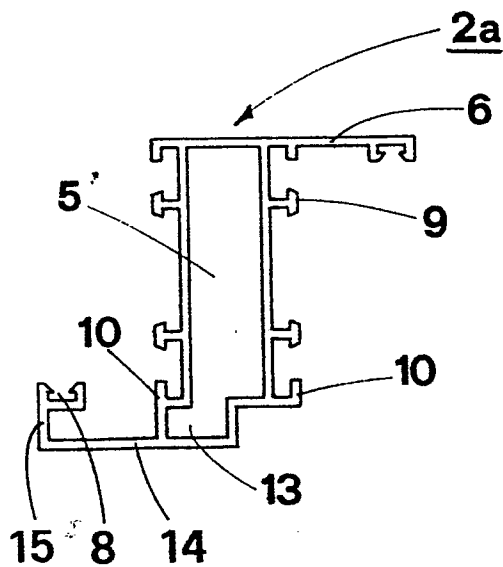


FIG2



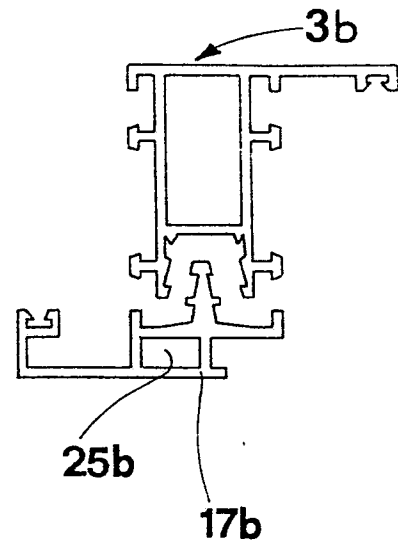
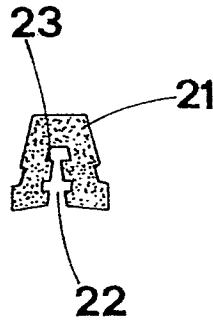
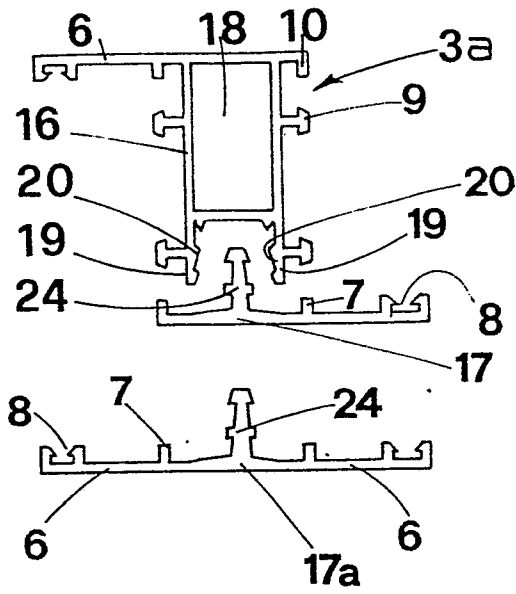


FIG3

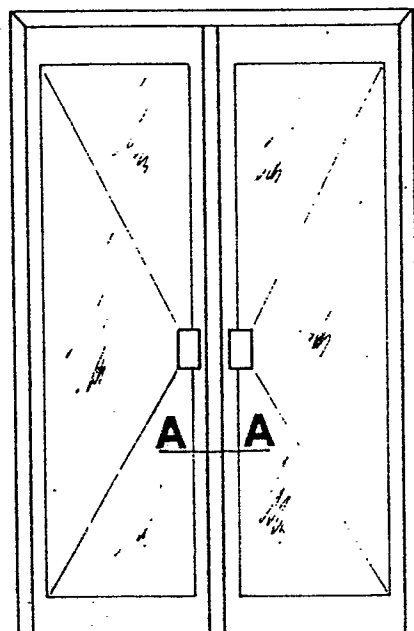
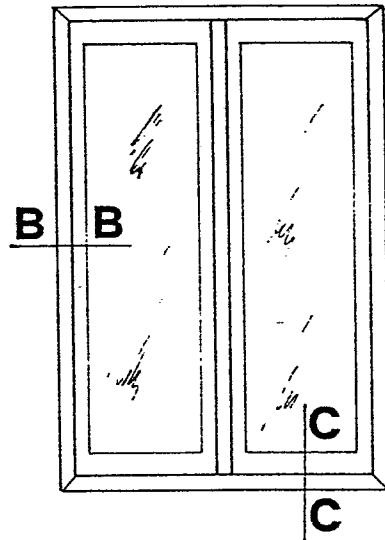
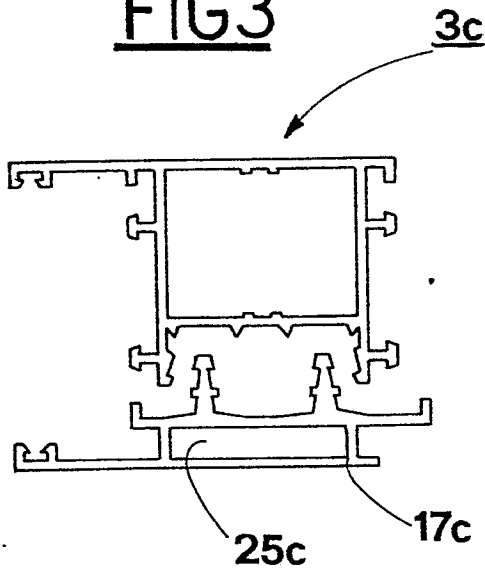


FIG4

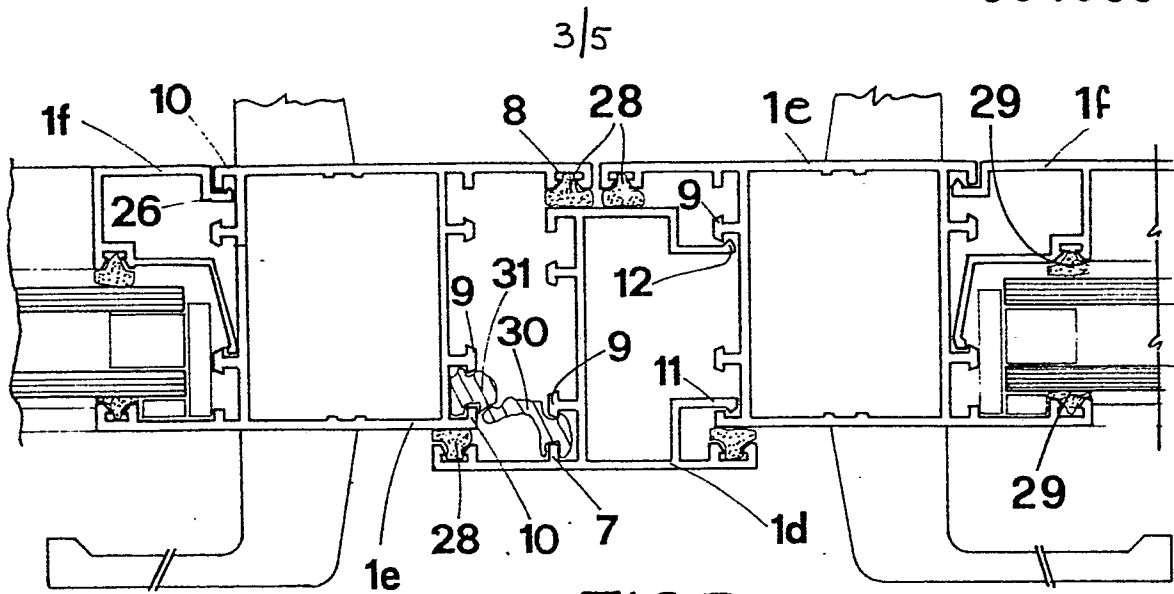


FIG 5

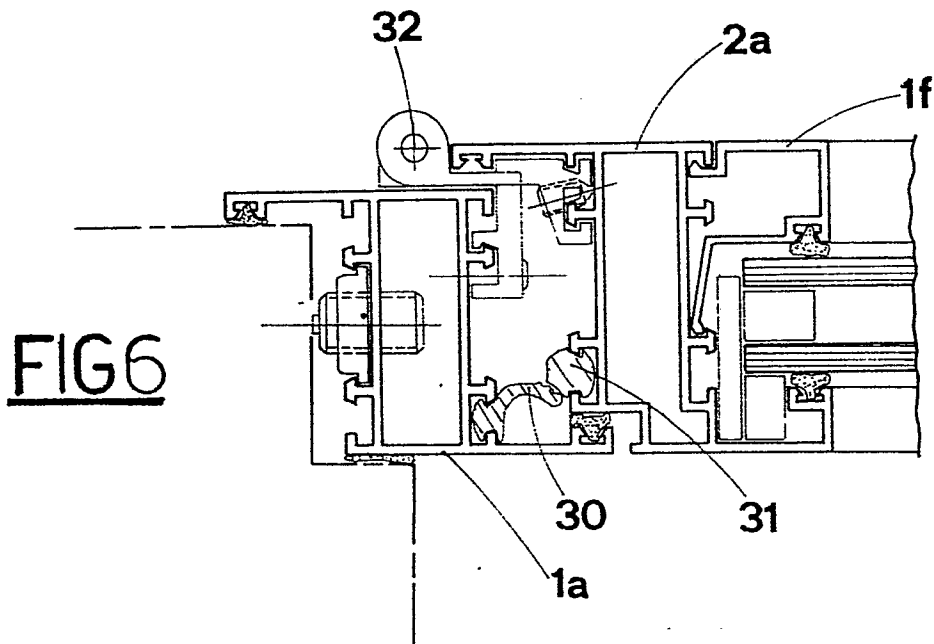


FIG 6

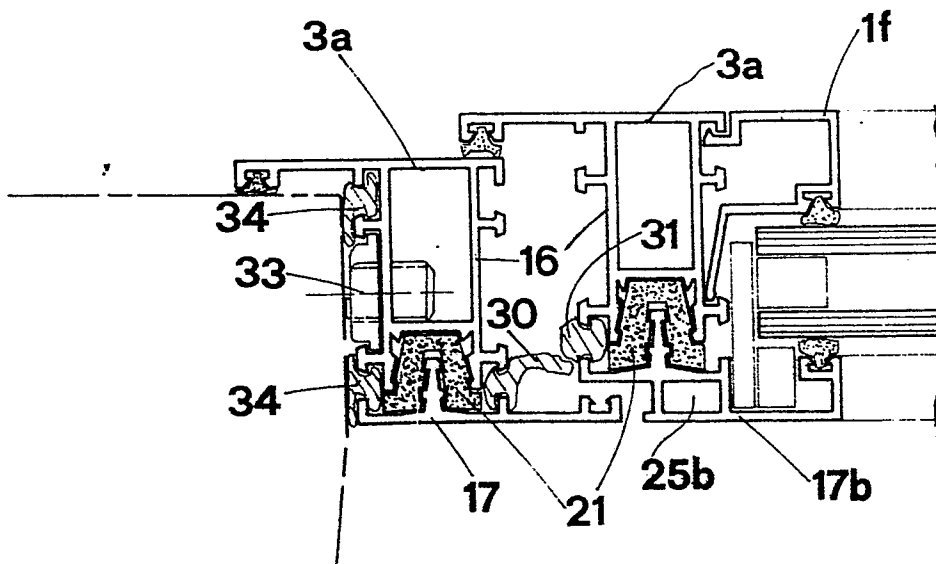


FIG 7

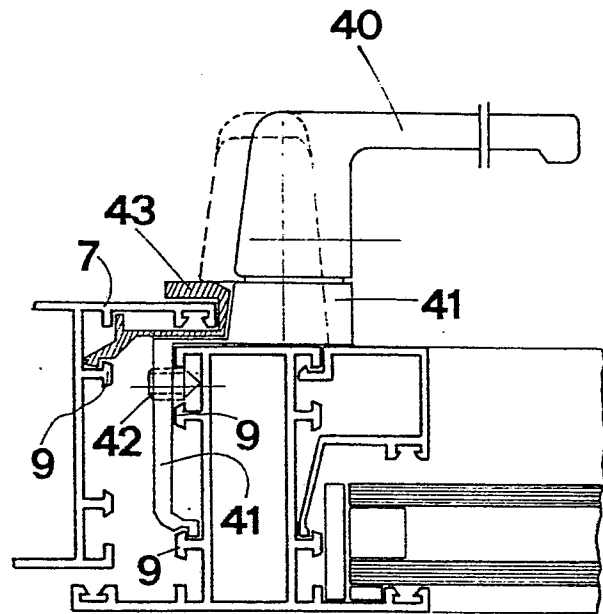
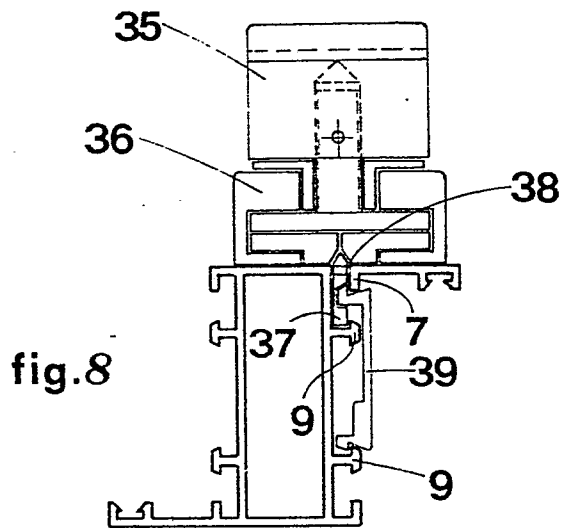


fig. 9

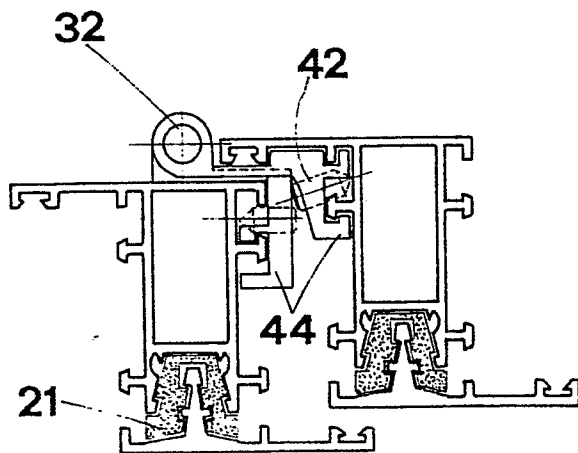


fig. 10

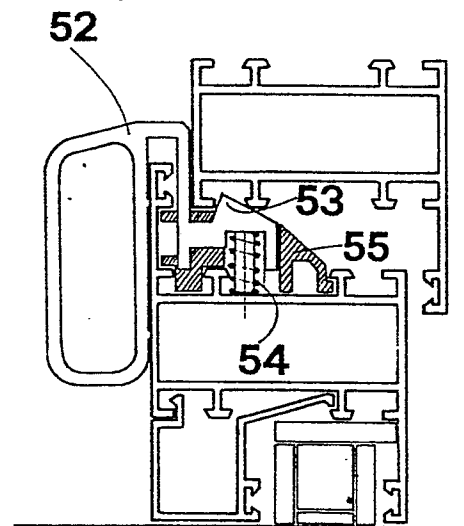
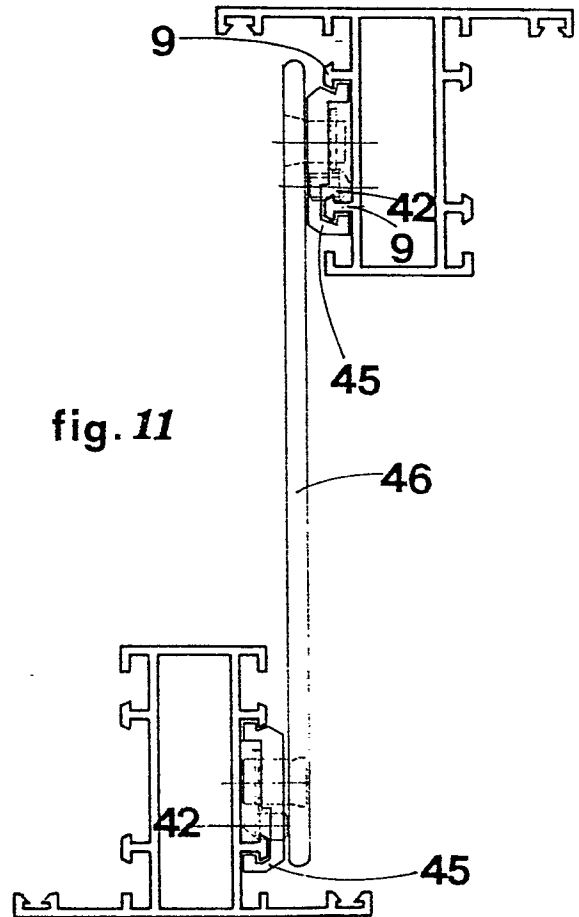
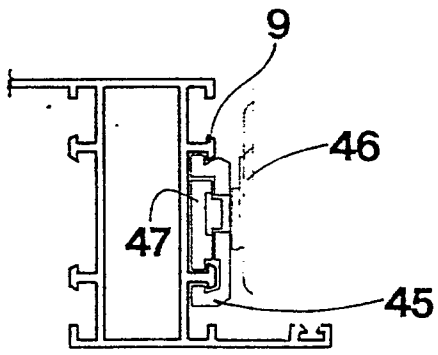
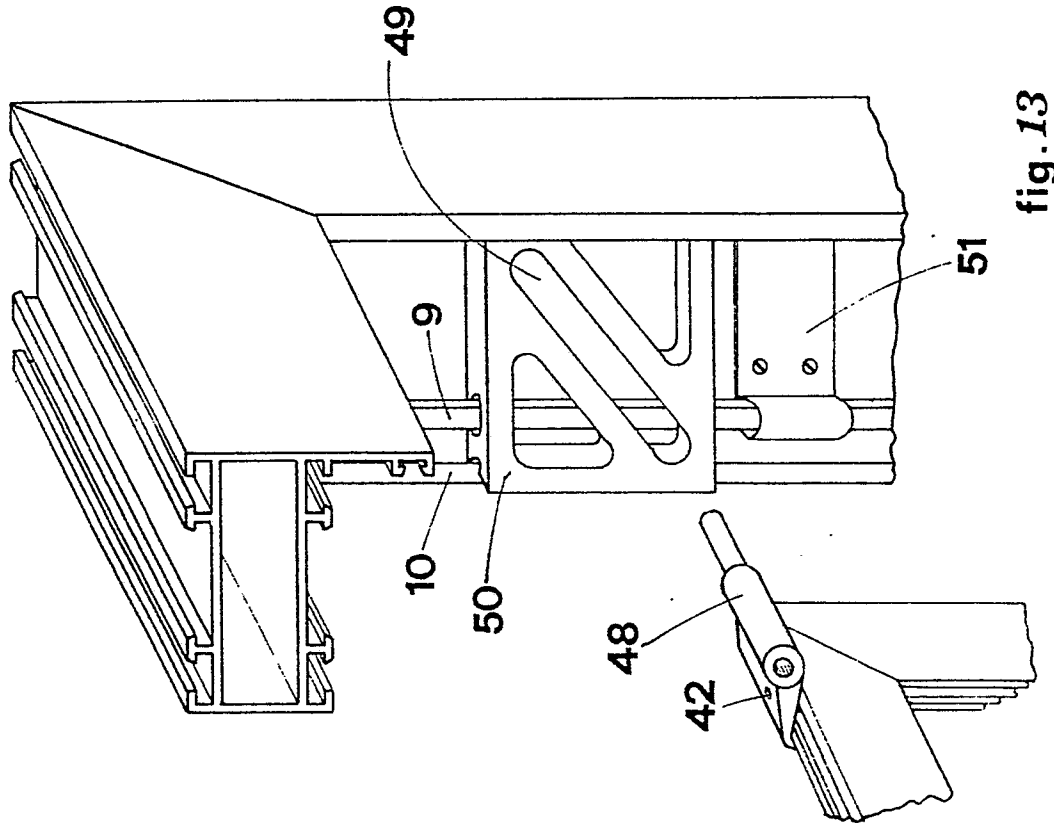


fig. 14





DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<p><u>FR - A - 1 573 068</u> (ERBSLOH)</p> <p>* Page 1, column 1, paragraph 1; figure 1 *</p> <p>--</p> <p><u>DE - A - 2 414 720</u> (UHL)</p> <p>* Page 5, paragraph 3; page 6, paragraphs 1-3; figures 2-4 *</p> <p>--</p> <p><u>DE - A - 2 810 630</u> (HARTMANN)</p> <p>* Page 10, paragraph 6; page 11, paragraph 1; figure 5 *</p> <p>--</p> <p><u>DE - A - 2 803 453</u> (BILSTEIN)</p> <p>* Page 7, paragraphs 2,3; page 8, paragraph 1-3; page 9, paragraphs 1,3; figures 1-4 *</p> <p>--</p> <p><u>DE - A - 2 750 351</u> (STRAUB)</p> <p>* Page 11, paragraph 12; page 12, paragraph 1-5; page 13, paragraph 3,4; figures 1,2,5,6,7 *</p> <p>--</p> <p><u>DE - A - 2 129 779</u> (ENGELHARDT)</p> <p>* Page 9, paragraph 3; page 10, paragraphs 1,2; figure 3 *</p> <p>--</p> <p><u>DE - A - 2 624 278</u> (SYCO)</p> <p>* Page 7, paragraph 1; figure 2 *</p> <p>--</p>	<p>1,2,4</p> <p>1,3</p> <p>1,3</p> <p>1,4,5</p> <p>1,4</p> <p>1,4</p> <p>1,5</p>	<p>E 06 B 3/12 3/26</p> <p>TECHNICAL FIELDS SEARCHED (Int. Cl.³)</p> <p>E 06 B E 05 C E 05 D</p> <p>CATEGORY OF CITED DOCUMENTS</p> <p>X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons</p> <p>&: member of the same patent family, corresponding document</p>
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of completion of the search	Examiner	
The Hague	24-12-1981	DEPOORTER	



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>BE - A - 706 043 (MORES)</u> * Page 4, paragraphs 7-9; page 5, paragraphs 1-3,5; page 6, paragraphs 1,2; page 7, paragraph 2; figures 1,3 * --	1,5	
	<u>CH - A - 546 878 (HARTMANN)</u> * Column 1, lines 27-40; column 2, lines 1-4; figure * --	1,7	
	<u>FR - A - 2 436 244 (SCHUCO)</u> * Page 3, lines 3-8, 33-40; page 4, lines 1-20; figures 4,6 * --	1,7	TECHNICAL FIELDS SEARCHED (Int. Cl.)
	<u>DE - A - 2 004 559 (WALLISCH)</u> * Page 3, paragraph 3; figure * --	3	
	<u>DE - A - 2 724 377 (TECHNOFORM)</u> * Page 8, paragraph 1; figures 1,2 * --	3	
	<u>DE - A - 2 121 961 (SCHONINGER)</u> * Page 11, paragraph 2; page 12, paragraph 1; page 13, paragraphs 5-7; figures 1-7 * --	5,7	
	<u>US - A - 2 913 778 (ALEXANDER)</u> * Column 2, lines 46-72; column 3, lines 1-17, 29-75; column 4, lines 1-51; figures 1,2, 4-7 * ----	8,9	