

EUROPEAN PATENT APPLICATION

Application number: **90830080.9**

Int. Cl.⁵: **E06B 3/54**

Date of filing: **01.03.90**

The title of the invention has been amended
(Guidelines for Examination in the EPO, A-III,
7.3).

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Priority: **13.06.89 IT 2085989**

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Date of publication of application:
19.12.90 Bulletin 90/51

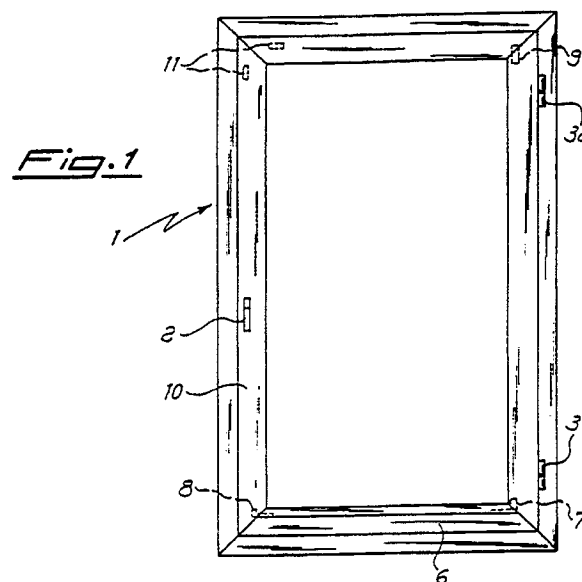
Designated Contracting States:
AT BE CH DE DK ES FR GB GR LI LU NL SE

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Adjustable glazing assembly.

The invention relates to an improved window in general, particularly of the enbloc type with assembly brackets, wherein the insertion of a glass pane is made easier in that it is provided only one removable glass-stop element (6) snap insertable in at least two spacers or clips (7, 8) previously mounted at least on both ends of one of the horizontal profiles (10). The said clips have grooves (17) in them for the insertion of the glass-stop element, and mutually perpendicular surfaces for supporting and guiding the glass pane. A third clip or spacer (9) is provided at the inner end of the other horizontal profile, in correspondence of the corner at the hinge side (3, 3a), whilst on the opposite side is provided at least one adjusting device (11) with a screw adjustable plate element, suitable to abut against one edge of the glass pane in order to position it properly.



SIMPLIFIED GLASS INSERTION IMPROVED WINDOW WITH POSSIBILITY OF ADJUSTMENT

The present invention relates to a simplified glass insertion improved window, adjustable and usable as a window in general and in particular as a one- or two- door enbloc openable window, having a profile of any kind of material, as long as it is not welded, particularly made of aluminium or plastic material, provided with assembling brackets.

It is known that some difficulties arise when inserting glass panes in the existing window frames, difficulties which can be often overcome only by providing as many as four movable or glass- stop elements, that is to say one for each side of the window, which involves an increase in labour costs for the assembly, besides the inconvenience of having to provide such a high amount of single pieces. It is true that sometimes there are provided glass insertion windows, wherein a glass pane may be inserted before the installation of the window, during the assembly stage; in this case too, however, and perhaps to a greater extent since no spacers or supports for holding and guiding the glass are provided, the window frame will tend to change its position in time, namely to go out of place, usually by revolving about an ideal horizontal axis which lies across the lower hinge of the window itself. This may involve considerable malfunction inconveniences caused by faulty closing and, when the window consists of two doors, by misalignment thereof.

It is also known that conventional windows should usually be assembled individually, often by different hands, that is the dummy frames are walled up first, and then the assembly of the real window is effected. The transport too takes place at different times, with remarkable increase in the costs which makes really problematic, from a financial point of view, the supplying of windows by factories located at a certain distance from the window installation yard.

Object of the present invention is therefore a window which does not have the above mentioned inconveniences, since its profile consists of three fixed parts and only one part movable as a glass-stop element, insertable by means of a simple movement as of "bayonet joint" whereby, besides a saving of labour and of assembly time, there are less pieces in circulation requiring less manufacturing. Furthermore, one or two simple devices mounted inside the window adjust the position of the glass pane and therefore of the window itself both in the assembly step and during the operation thereof by the user himself, without the intervention of skilled workers being necessary, whereby there are also avoided possible breakings of the glass due to the difference of thermal expansions. It

should be stressed that all this is provided in an enbloc unit which comprises both the dummy wall frame and the real window, which allows to effect only one transport from the factory to the assembly yard.

A further advantage lies in the fact that the movable glass-stop element can be applied in an extremely easy way, whereby the user himself may insert the glass - if need be - by a simple maneuver that will be hereinafter described, completing then the window installation by snap-inserting the only glass-stop element.

The window according to the present invention comprises a dummy wall frame, a dummy window frame and a real window consisting of a quadrangular frame having unwelded profiles, characterized in that it has only one horizontal side whose inside facing profile portion is movable and forms a glass-stop element adapted to snap fit into at least two grooved spacers or clips that have been previously mounted into the profile at least in correspondence of the two ends of that side, provided with glass guide and support surfaces, on the opposite side there being provided another glass-guiding spacer at the corner nearby the hinge and, at the other end, at least one screw adjustment having a surface suitable to come in contact with the glass edge.

In the hereinafter illustrated embodiment the glass-stop element will be provided on the lower side of the window and the clip farthest from the hinge will not usually be in contact with the glass. Moreover, in a preferred embodiment, the screw adjusting devices two, located opposite each other in the upper corner zone of the window, farthest from the hinge.

These and other aims, advantages and characteristic features of the window according to the present invention will be evident to the persons skilled in the art from the following detailed description of one preferred embodiment thereof, described by mere way of non-limiting example with reference to the annexed drawings in which:

Fig. 1 shows a schematic front view of a single-door window according to the present invention;

Fig. 2 shows a partially sectioned view of an adjusting device to be used in the window according to the invention;

Fig. 3 shows a cutaway elevation view of the lower part of the window in correspondence of the spacer or "clip" which supports the glass;

Figs. 4a, 4b and 4c show three different views of the spacer of Fig. 3;

Figs. 5a, 5b, 5c show three different views

of the spacer holding the glass-stop element on the lower side, at the opposite end of the side of Figs. 4a-4c;

Fig. 6a, 6b, 6c show three different views of the spacer holding the glass-stop element on the upper side, at the opposite end of the adjusting device of Fig. 2; and

Fig. 7 shows a schematic front view of the upper outer angle formed by the window frame, in correspondence of two adjusting devices.

Referring now to Fig. 1, there is shown a window according to the present invention, simply consisting of a single door 1 with closing handle 2, mounted by means of hinges 3, 3a on a dummy window frame secured in its turn on a dummy wall frame 5 (visible in Fig. 3).

In Fig. 1 can be seen, represented in dotted line, the slits made in profile 10 of door 1 for the insertion of the spacers or clips, also called supports, as well as of the glass adjusting devices provided for by the present invention. In particular, as it is preferable, the movable part 6 of the glass-stop element has been provided on the lower side of profile 10, even though it cannot be completely excluded that the upper horizontal side of profile 10 be removable and re-insertable as glass-stop element 6. In the illustrated embodiment the section of profile 10 at the lower horizontal side thereof is shaped as represented in Fig. 3, where the part 6 facing the inside of the window and having the function of a glass-stop element can be seen, not integrally formed with the remaining part of the profile and being provided with protruding inner elements 16 suitable to pressure fit into the corresponding cavities 17 made in a multiplicity of small blocks 7, 8 and other intermediate blocks, if any, having horizontal grooves suitable to receive and hold the said elements 16 as will be better explained hereinafter. All around profile 10, between the latter and the glass pane 20, there are provided preferably resilient seals, inner 21 and outer 21a, respectively. In the cross-section representation of Fig. 3 the profile has been shown as if it were made of aluminium, but it could as well be of another material such as plastic or even wood.

With reference to Fig. 1, the window according to the invention consists therefore of a one-piece element comprising two dummy frames (the one embedded in the wall being not visible) and an actual window 1 the profile 10 of which is shaped so as to have an inwardly removable horizontal side, as previously said, and to house at least three spacers or supports 7, 8, and 9 having different functions which will be better specified hereinafter, and located in correspondence of the two lower corners and the upper inner one, namely in the proximity to hinge 3a, as well as at least one adjusting device 11 located at the upper inner

corner of the window.

With reference to Fig. 2, there is schematically shown a device 11 comprising a supporting and housing block 11a, across which runs a threaded shank 12 passing through a likewise threaded hole of block 11a. On the outer side of shank 12 there is provided a simple or a cross notch, directly made either in the shank itself or in one of the heads thereof and intended for its actuation from outside by means of a suitable tool. At its opposite side, facing the inside of the window, shank 12 carries a small plate 13 having any profile, preferably a round one, linked thereto e.g. by means of a self-tapping screw 12a, a washer 13a being placed therebetween, thanks to which, and thanks to some clearance between the head of screw 12a and the small plate 13, the latter is not fixedly linked to the threaded shank 12 but can fit, by modifying its inclination, with the edge of the glass pane 20 against which it is meant to exert a certain push for the proper positioning thereof. Device 11 can be conveniently inserted on the inside of profile 10 by means of the provision for a pushbutton 14 being resiliently pushed out of block 11a through a hole 15a by the action of a spring 15. By making block 11a slide with pressed pushbutton and compressed spring due to the contact with an inner rib, the positioning and locking of the said block will be obtained when pushbutton 14 releases in correspondence of a hole conveniently made in the said rib, in the proximity to the pathway of threaded shank 12.

As shown in Fig. 1, and more clearly still in Fig. 7, the adjusting devices 11 are preferably two, set at 90° with respect to each other so as to act upon two contiguous sides of glass 20. In Fig. 7 is also shown more clearly the way in which the said block is positioned and locked by means of pushbutton 14.

With reference to Figs. 4a, 4b and 4c there are shown three versions of a side view of a clip spacer or support 7, as already shown in cross-section in Fig. 3, namely the support of the glass pane 20 located on the corner diagonally opposite the one of the adjusting device. This support element has therefore a fundamental importance. In Fig. 4a is shown a side view taken along arrow A of Fig. 3; in Fig. 4b is shown another side view of the same element, taken along a direction orthogonal to the previous one, and specifically the direction of arrow B of Fig. 4a, whilst in Fig. 4c is shown a plan view from above of the element itself. Element 7 is step-like shaped, with two different glass supporting plane surfaces 18, 18a and hooking elements 19, 19a for the coupling to profile inner parts (not shown), as well as grooved parts 17 for the coupling with the protruding elements 16 of the glass-stop element 6, as already seen in Fig. 3.

Fig. 4b shows that the said grooves 17 are preferably provided on both sides of element 7 so that it can thus be indifferently used for the right or left door of a double window, without having to provide differentiated clips in this regard. The clip type spacer or support is made of plastic material; more particularly, the part provided with grooves 17 should be so resilient as to enable the pressure insertion of elements 16 which, as it appears from Fig. 3, have an enlarged free end capable of forcing its way into grooves 17, thanks to the pressure exerted from outside; the end part of grooves 17 has a larger section than the entry part thereof, and is therefore suitable to house the said enlarged free ends without any problem. The uncoupling takes place on the contrary by exerting a tractive force from outside which will cause the entry slits of grooves 7 to widen until allowing the enlarged ends of elements 16 to pass. Under normal duty conditions the resiliency of elements 7 is such as to ensure a firm link between the glass-stop element 6 and the clip type support 7.

The glass-stop element 6, however, is not held by the support element 7 of the glass pane 20 only, but by at least another clip type spacer 8 located on the lower outer corner of the window, that is to say at the opposite end of the glass-stop element 6 with respect to support 7.

Figs. 5a, 5b and 5c show an embodiment of the said clip type spacer 8 provided with only one groove 17, as only the lower protruding element 16 of the glass-stop element 6 is intended to fit therein, whilst the upper one will remain free above the horizontal plane surface 22 thereby defined. In fact, the said plane surface 22 will be at a lower level than that of plane surface 18a, which corresponds, on the contrary, to the lower plane surface 18 of element 7. Spacer 8, in fact, as will be better apparent hereinafter, is not for supporting the glass pane, except temporarily during the assembly thereof, but only for holding the glass-stop element in its place.

With reference to Figs. 6a, 6b and 6c, there is shown an embodiment of a spacer or upper support 9 of glass 20. It simply consists of a small block of plastic material, having a smooth surface 26 for supporting the glass laterally, in the proximity to the upper inner corner thereof, besides two hooking elements 25, 27, fitting with suitably shaped parts located inside profile 10, on faces orthogonal to each other.

Finally, Fig. 7 is a detailed, though schematic representation of a corner or link area between two orthogonal sides of profile 10, lying at the upper outer corner of the window, where adjusting devices 11 usually are, this time being two in number and acting upon adjacent sides, perpendicular to each other, of glass pane 20. The assembly brack-

ets 30 and 30a, relevant to the window frame profile 10 and to the dummy frame 4, respectively, are also shown.

As concerns the glass assembly and adjustment, the function of the window according to the present invention is as follows. The glass pane 20 is inserted inside the frame defined by profile 10 starting from the inner side, namely the one adjacent to hinges 3, 3a, the lower side of sheet 20 resting on the plane surface 22 of spacer 8 and on the lower step 18 of support 7, the glass-stop element 6 being kept aside. As soon as the glass pane has been set parallel to the window frame plane surface, it will be driven towards the inner or hinge side until it comes in contact with the vertical shoulder of the support element 7, comprised between steps 18 and 18a, after which it will be raised upwards until its lower inner end rests on the upper step 18a. Then, after pushing it further towards the window inner side to make it rest on shoulder 18b of element 7, the glass pane is arranged in its proper final position by acting upon the screw adjustments 11, and its upper inner edge will touch the guide spacer 9. At this stage the glass pane 20 is supported and/or guided on at least three zones, namely the small plates 13 of the adjusting devices, the support (and glass-stop holding) element 7 and the upper supporting spacer 9. The lower spacer 8 will be normally unloaded, with the only function, besides that of temporary support during the glass assembly, of snap holding the glass-stop element, like the intermediate clips if any - that can be provided on the same window frame side. The contact with glass occurs thus on three sides only, with considerable advantages as far as the consequences of thermal expansions are concerned.

From the foregoing it clearly appears that during the whole window 'life' the user himself could effect by hand, by means of a simple screwdriver, the adjustments of the glass which might be needed, making up in this way for possible yieldings of the window frame that may give rise e.g., in the case of double door windows, to misalignments of the doors themselves and therefore to faulty closings of the window. This adjustment may take place thanks to little shiftings of the barycenter of glass pane 20, which is heavier than the window frame, especially when the latter is made of plastics or aluminium.

Finally, it should be appreciated that the glass insertion may take place both in the factory and in the building site according to convenience criteria established each time by the window supplier himself who, by preparing as from the beginning the spacers and clips supporting the glass and the pressure insertable glass-stop elements, expressly requires, in any case, that a given assembly line of

glass sheets or panes should be followed, even when the assembly is carried out by other people such as the glazier or the user himself. At any rate, once the glass has been mounted, the window will be an enbloc unit between frame and curtain walls. Thus, it is also possible to carry on trade with foreign countries without the intervention of skilled workmen. It will suffice, in fact, to follow the assembly steps reading on the instructions sheet put at the customer's disposal, whereby the final cost of the window according to the present invention is actually lower than that of the traditional ones, though assuring a longer guarantee and the possibility of adjustment at any time.

Additions and/or changes - if any - may be made by those skilled in the art to the hereinabove described and illustrated embodiment of the window according to the present invention without departing from the scope of the invention itself. More specifically, there may be changed, with respect to what is shown in the Figures, the aluminium structural shapes as well as the plastic or wood sections forming the sides of the real window or the dummy frames, and particularly the glass-stop element, as long as the herein claimed main features of the invention are observed.

Claims

1. An improved window of the enbloc type with assembly brackets (30, 30a) comprising a dummy wall frame (5), a dummy window frame (4) and a real window (1) consisting of a quadrangular frame with unwelded profile (10), characterized by the fact of having only one horizontal side whose inwardly directed profile portion is movable and forms a glass-stop element (6) suitable to snap fit into at least two grooved spacers or clips (7, 8) previously mounted on the profile (10) at least in correspondence of both ends of that side, and having glass guiding and supporting surfaces (18, 18a; 22), on the opposite side there being provided another guiding spacer (9) of glass pane (20) at the corner nearby the hinge (3, 3a) and, at the other end, at least one screw type adjusting device (11) having a surface (13) suitable to come in contact with the edge of the glass pane (20).

2. A window according to claim 1, characterized in that the said side provided with glass-stop element (6) is the lower one, and the outer clip (8), namely farthest from the lower hinge (3) is not usually in contact with the glass (20), having a horizontal surface (22) at a lower level with respect to a surface (18a) of the opposite spacer (7) on which the glass pane (20) usually rests in use, at a length of the inner end of its lower edge.

3. A window according to claim 2, character-

ized in that the said clip type spacer (7) is step-like shaped, the lowest of said steps (18) being at the same level as the said surface (22) of spacer (8), and the said surface (18a) corresponds to an upper step.

4. A window according to claim 2, characterized in that the said clip type element (7) is provided, at least on the inward facing side of the window itself, with elastic grooves (17) for sealingly housing corresponding elements (16) protruding from the said glass-stop element (6), grooves (17) of the same type being provided also on the said element (8) at the opposite end of the same window side (1).

5. A window according to claims 3, 4 characterized in that the said grooves (17) have a reduced entry section compared to the bottom section, and the said protruding elements (16) have an enlarged end greater than the entry section of the said grooves (17) and suitable to be housed on the bottom thereof, the passage of the said elements (16) being made possible by the elastic deformation of the said grooves (17) as a consequence of the pressure exerted from outside.

6. A window according to claim 1, characterized in that the said spacers (7, 8 and 9) have all means (19, 19a; 23, 23a; 27) by which they are secured inside the profile (10), interacting with correspondingly shaped parts of the profile itself.

7. A window according to claim 1, characterized in that each of the said screw type adjusting devices (11) has a threaded shank (12) screwable on a supporting small block (11a), one end of which is accessible and actuatable from outside, whilst the other end carries a small plate (13) suitable to come in contact with the adjacent edge of the glass pane (20).

8. A window according to claim 7, characterized in that the said plate (13) is mounted on the said threaded shank (12) with a certain clearance, allowing to modify the inclination thereof in order to fit the inclination of the said glass pane (20).

9. A window according to claims 7, 8, characterized in that it comprises means (14, 15) for snap locking the said support block (11a) inside profile (10), consisting of a pushbutton (14) resiliently pushed outwardly by a spring (15) housed in a hole (15a) provided for in the said block (11a).

10. A window according to either claims 7-9, characterized by the fact of comprising two adjusting devices (11) assembled, in contrast to each other, one on the horizontal and the other on the vertical window sides concurrent to the outer upper corner of the window itself, in the proximity to the said corner.

11. A window according to claim 2, characterized by the fact of comprising, between the said clip type spacers (7, 8) at least one intermediate

element provided with grooves (17) too, for the removable insertion therein of the said glass-stop element (16).

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Fig. 1

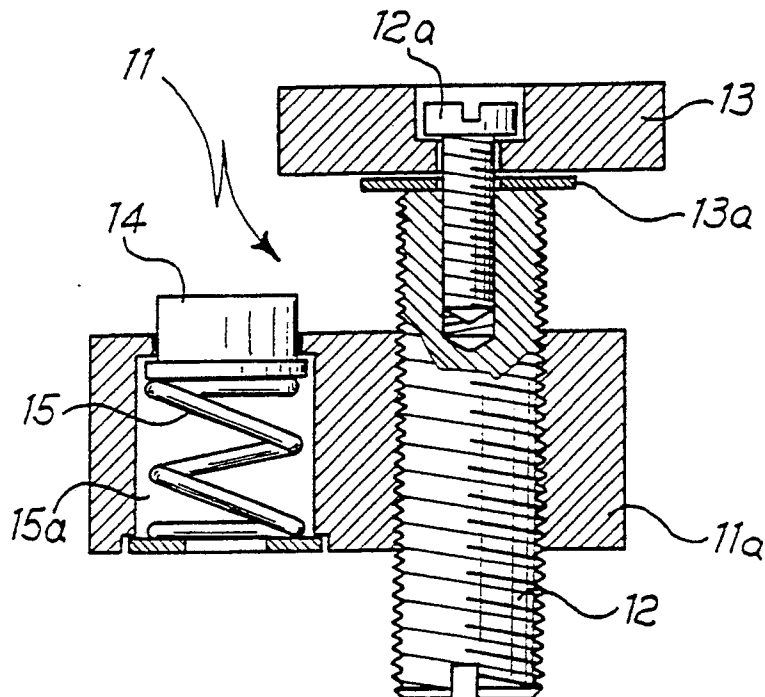
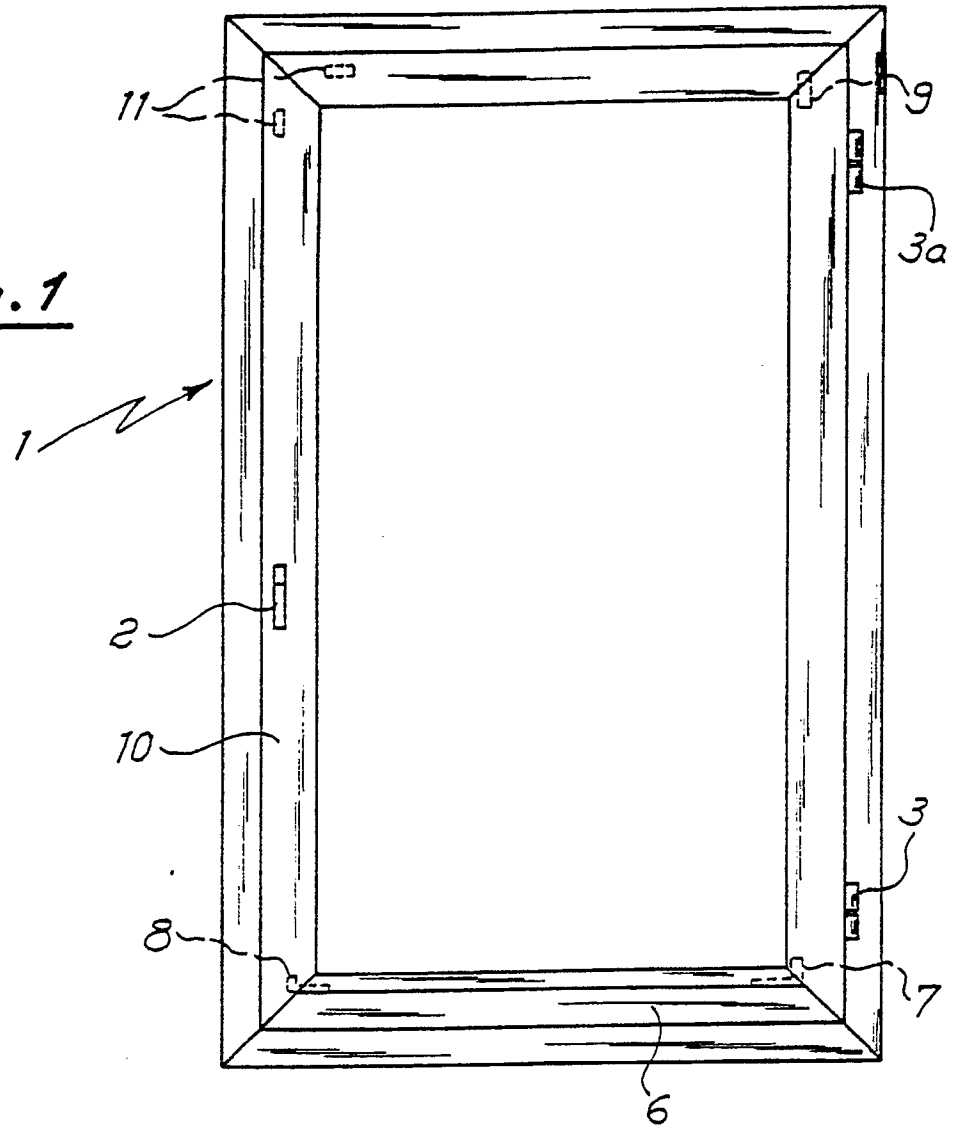


Fig. 2

Fig. 3

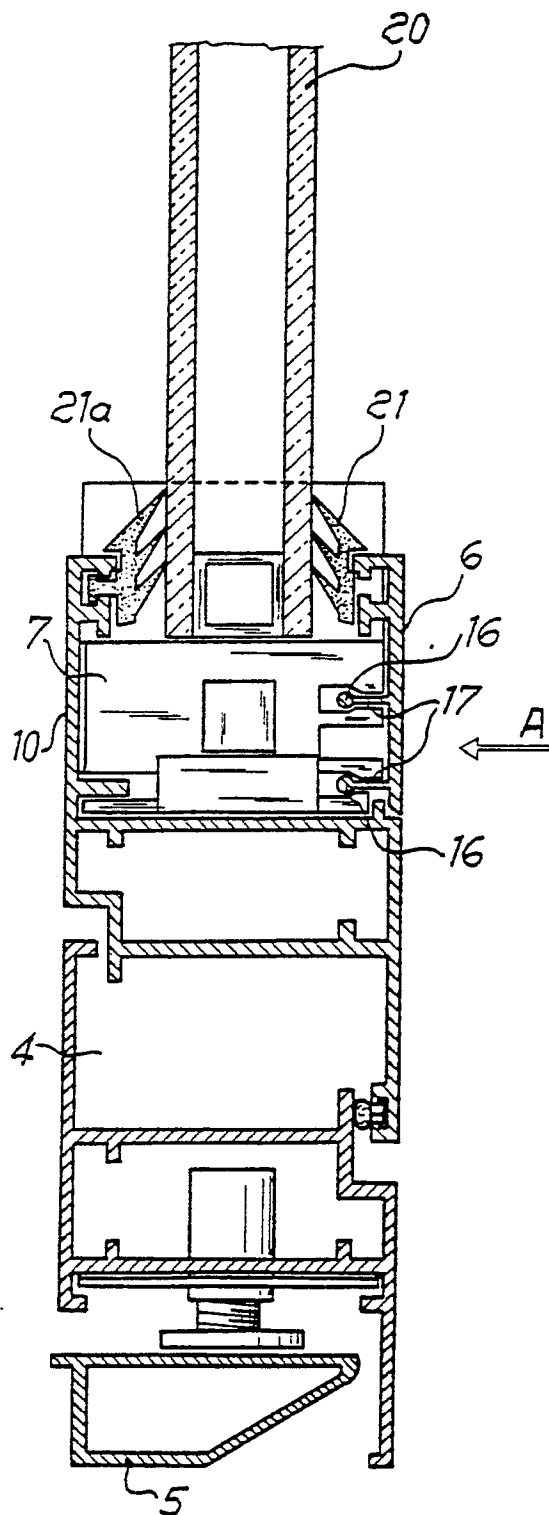


Fig. 4a

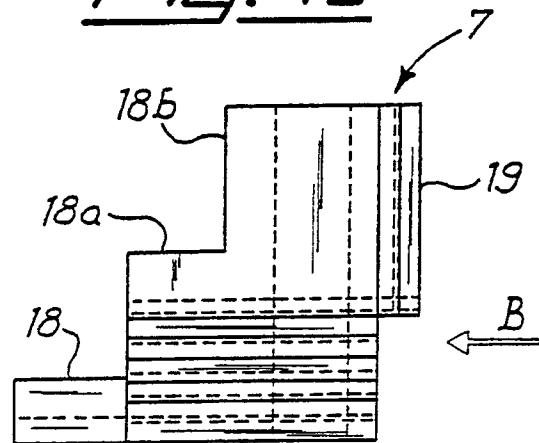


Fig. 46

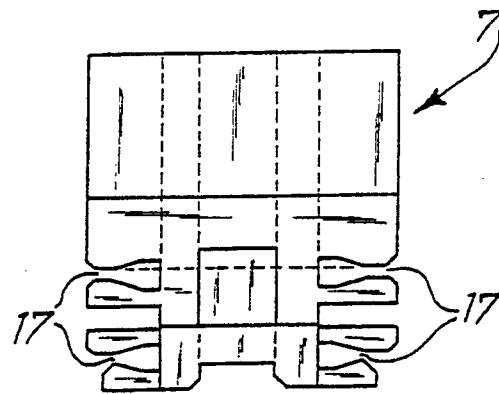


Fig. 4c

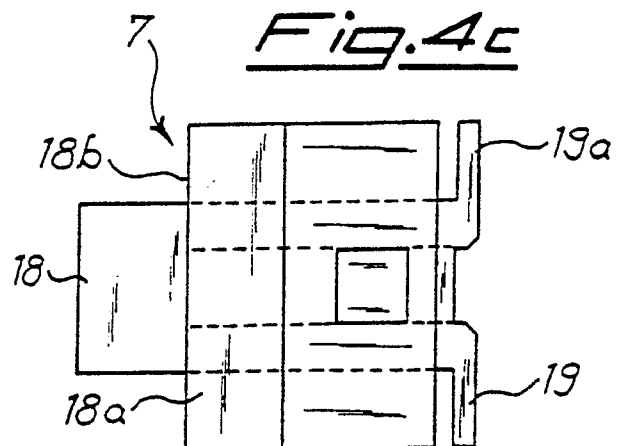


Fig. 5a

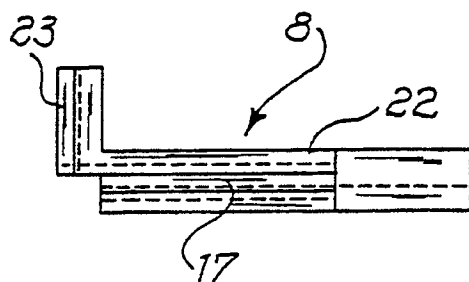


Fig. 6a

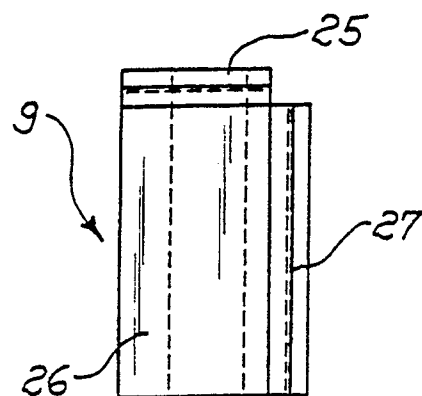


Fig. 5b

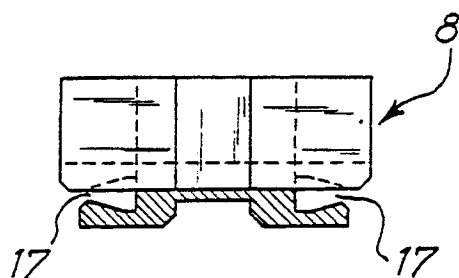


Fig. 6b

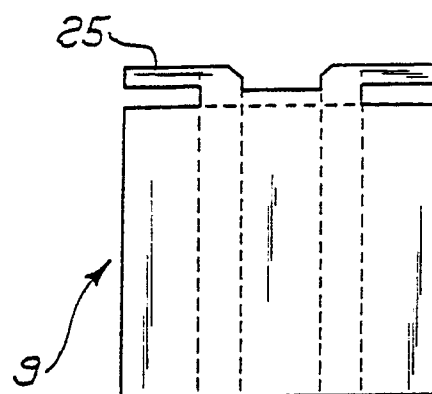


Fig. 5c

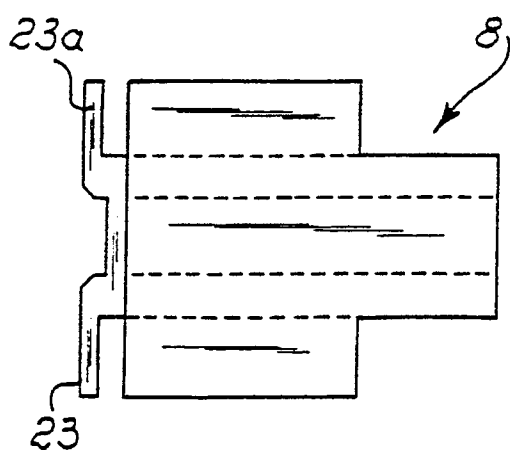


Fig. 6c

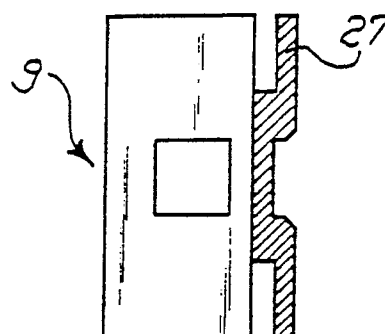
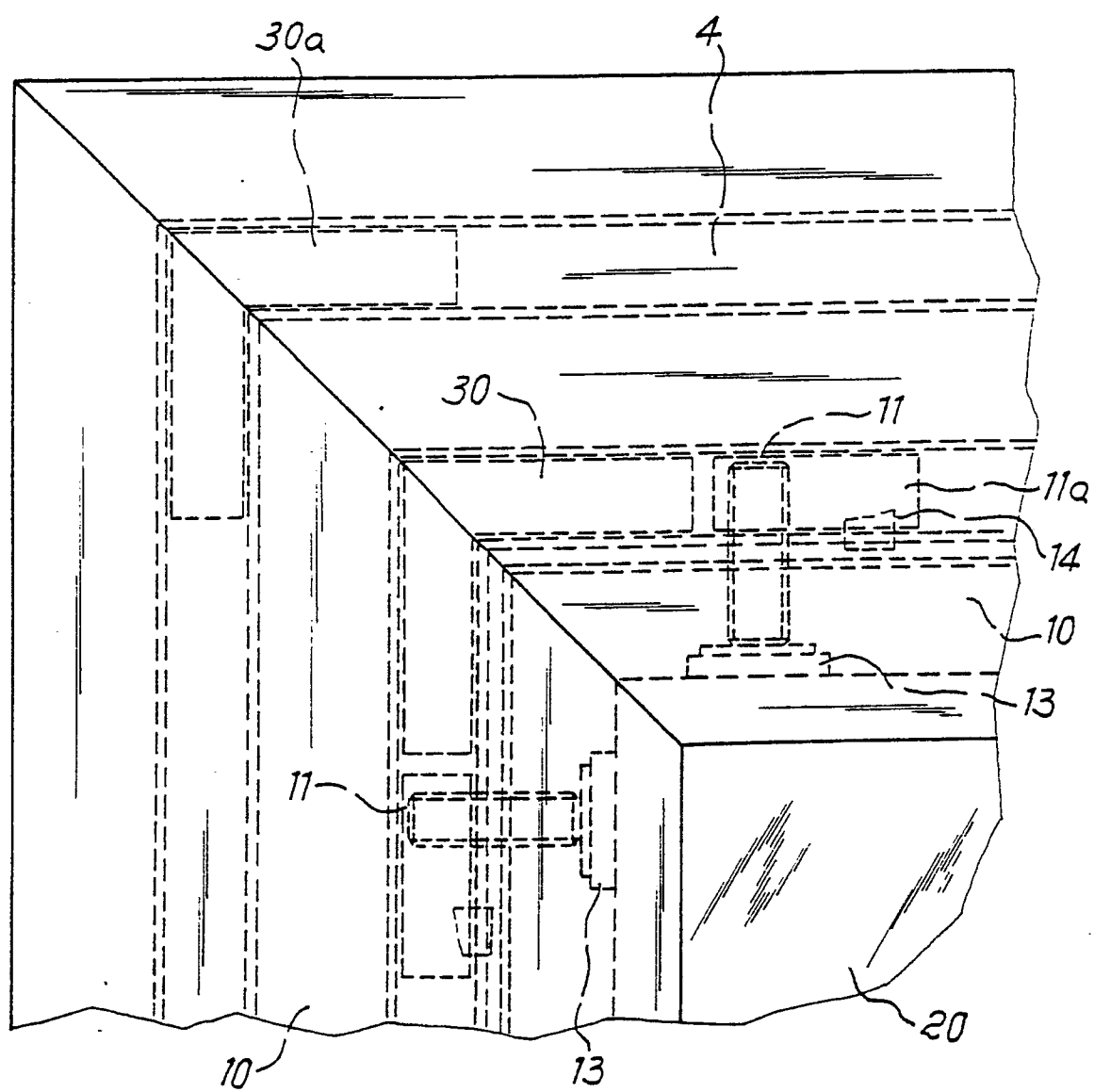


Fig. 7





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 83 0080

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	NL-A-8402280 (SVEDEX) * page 3, lines 9 - 22 * * page 4, lines 4 - 8 * * page 6, line 18 - page 8, line 32 * * figures 1, 2, 5 * ---	1, 2	E06B3/54
A	FR-A-1052121 (ZELEM MOENS) * page 1, column 2, paragraph 6 - page 2, column 1, line 4 * * figures 1-5 * ---	1, 2	
A	CH-A-535891 (MATHYS) * column 1, line 8 - column 2, line 13 * * figures 2-4 * ---	1, 2, 5	
A	FR-A-2459352 (TECHNAL INTERNATIONAL) * page 3, line 21 - page 5, line 5 * * figures 1-3 * ---	1, 7, 8, 10	
A	EP-A-315936 (NIEMANN) * column 6, lines 9 - 13 * * figure 5 * ---	6	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	US-A-3375030 (THOMPSON) * column 2, lines 46 - 61 * * figures 2, 4 * -----	9	E06B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 SEPTEMBER 1990	Examiner DEPOORTER F.
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 F : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document	