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(54) A section member assembly for making continuous facades of civil buildings and the like.

(57) The present invention relates to a section member assembly for making continuous facades of civil buildings and the like, characterized in that said assembly comprises upright section members (1) and cross section members (10), having a box-like body (2,11) including, on its outwardly directed face, a lug (3,12), with a seat (5,13) for engaging therein at least a spacer section member (20), of a rigid polyamide, which is held in position by a pressing element (30), affixed by a bolt (32), passing through the spacer section member (20) and adapted to be engaged in the mentioned seat (5,13).

Moreover there is provided a finishing section member (40) which can be connected to the pressing element (30).

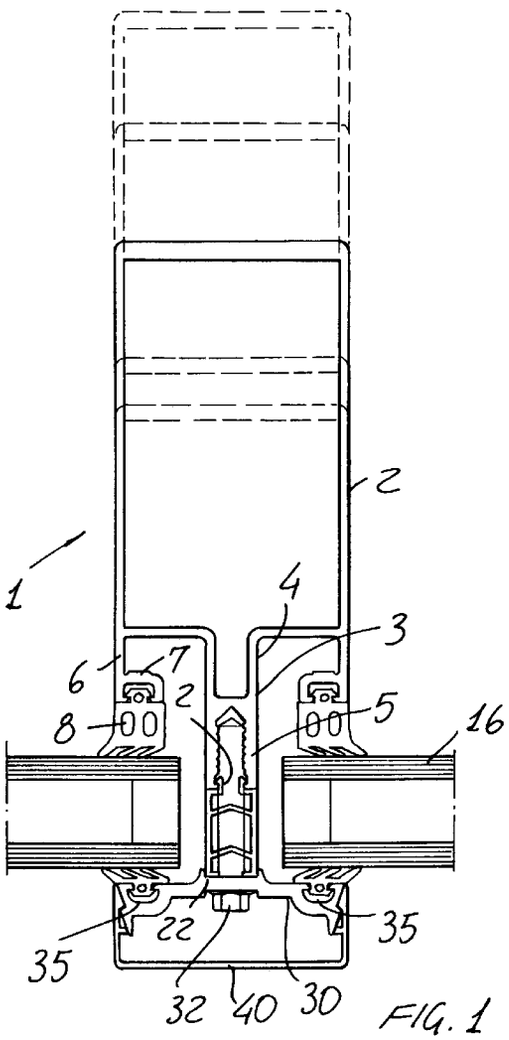

FIG. 1

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BACKGROUND OF THE INVENTION

The present invention relates to a section member assembly, for making continuous facades of civil buildings and the like.

As is known, a problem which is encountered in making the so-called continuous facades in civil buildings and the like, is that of properly fitting the section members, depending on the different thicknesses of the glass plates or panels, which are installed for covering the facade.

In fact, at present, it is necessary to use differentiated approaches, depending on the different types of elements, so that there are built very complex constructions which have not the required mechanical strength characteristics.

Another problem is that, in the corner regions, it is necessary to provide several different types of section members which can be specifically designed depending on the application needs, without the possibility of having section members adapted to be easily fitted to different contingent requirements.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a section member assembly, for making continuous facades of civil buildings and the like, which affords the possibility, starting from a very reduced number of component elements, to fit all of the different assembling conditions, while always assuring a good continuity, both from a construction standpoint and from a mechanical strength standpoint.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a section member assembly which can be easily fitted to all of the assembling conditions, without the need of using specifically designed elements while providing a perfect tightness at any regions of the formed facade.

Another object of the present invention is to provide such a section member assembly which is very reliable and safe in operation, can be easily obtained starting from easily available elements and materials and which, furthermore, is very competitive from a mere economic stand-point.

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, for making continuous facades in civil buildings and the like, characterized in that said section member assembly comprises upright section members and cross section members, having a box-like body including, on its outwardly directed face, a lug with a seat for engaging therein at least a spacer section member, made of a rigid polyamide, and being held in position by a pressing element, affixed by a bolt, passing through the spacer section member and adapted to be engaged in said seat, a finishing section member being moreover provided which can be coupled to said pressing element.

BRIEF DESCRIPTION OF THE DRAWINGS

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

Figure 1 is a cross-sectional view illustrating an upright section member;

Figure 2 is a further cross-sectional view illustrating a cross section member;

Figures 3, 4, 5, 6 and 7 illustrate the cross section member respectively from a front end portion; by a perspective view from a side and from the other side and in elevation, as well as the connection and boring of the cross section member itself;

Figures 8, 9, 10 and 11 illustrate the slider respectively by a perspective view, a front view, a cross sectional view substantially taken along the line X-X of Figure 11, and by a rear view;

Figures 12, 13 and 14 illustrate, respectively, by a perspective, a front view and a top plan view the connection bridge element;

Figure 15 is and exploded view illustrating the application of the bridging element for connecting the cross member;

Figure 16 is an elevation view illustrating the application of the bridging element;

Figure 17 is a perspective view illustrating the application of a vulcanized corner gasket;

Figures 18 to 32 illustrate the cross-section views of the uprights and cross members made in different size, both for the upright and for the cross member;

Figure 33 illustrates the application of a projecting wing on the upright;

Figure 34 illustrates schematically, by an elevation view, a facade with angle uprights arranged at 90°;

Figure 35 is a cross-sectional view substantially taken along the line XXXV-XXXV of Figure 34;

Figure 36 illustrates an upright affixed to a wall;

Figure 37 illustrates a cross-sectional view, substantially taken along the line XXXVI-XXXVI of Figure 36;

Figure 38 illustrates a facade, with an inner angle upright arranged at 90°;

Figure 39 is a further cross-sectional view, substantially taken along the line XXXIX-XXXIX of Figure 38;

Figure 40 schematically illustrates a facade with

a variable angle upright;

Figure 41 is a further cross-sectional view, substantially taken along the line XLI-XLI of Fig. 40;

Figure 42 illustrates a facade with an expansion joint;

Figure 43 illustrates a further cross-sectional view substantially taken along the line XLIII-XLIII of Figure 42;

Figure 44 schematically illustrates a facade with a fixed concave angle of 135°;

Figure 45 illustrates a further cross-sectional view substantially taken along the line XLV-XLV of Figure 44;

Figure 46 illustrates schematically a facade with a fixed convex angle of 135°;

Figure 47 illustrates a further cross-sectional view substantially taken along the line XLVII-XLVII of Figure 46;

Figure 48 illustrates a facade with a variable concave angle;

Figure 49 illustrates a cross-sectional view substantially taken along the line XLIX-XLIV of Figure 48;

Figure 50 illustrates a facade with a slanted cross member;

Figure 51 illustrates a further cross-sectional view substantially taken along the line LI-LI of Figure 50;

Figure 52 illustrates a facade with a variable slanting cross member; and

Figure 53 illustrates a cross-sectional view substantially taken along the line LIII-LIII of Figure 52.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With particular reference to the number references of the above mentioned Figures of the drawings and, more specifically to Figure 1, the section member assembly, for making continuous facades, in civil buildings and the like, according to the present invention, comprises an upright section member, generally indicated at the reference number 1, which includes a box-like body 2 which can be made in different sizes.

On the face of the box-like body 2 directed outwardly there is provided a lug 3, defining a projecting portion 4 ending with a seat 5.

Adjoining the projecting portion 4, on the extension of the box-like body sides, there are provided legs 6 ending in C-shape seats 7, adapted to receive corresponding gaskets 8 for sealing the panels and glass plates.

The construction further comprises cross-section members, indicated at the reference number 10 and shown in Figure 2, which are provided with a box-like body 11 having variable size, depending on the several different assembling types.

On the face of the box-like body 10 facing outwardly, there is provided a lug 12, comprising a seat 13 adjoining further seats 14, of C-shape, for receiving therein gaskets 15 which are provided for tightly holding the glass plates or panels generally indicated at the reference number 16.

A main feature of the present invention is that in the seats 5 and 13, both of the uprights and cross-members, there can be engaged spacer section members 20, made of a rigid polyamide.

More specifically, the section members 20 are provided with a respective connection end portion 21 engaging in the seat 13 whereas, at the other end thereof, there is provided a plug-in seat 22, therein can be plugged in or engaged end portions of possible other spacer section members 20, applied in order to increase the distance depending on the thickness of the plates 22.

The spacer section members 20 are held in their desired positions by means of a pressing element, indicated at the reference number 30, which is provided, at the middle portion thereof, with a guide seat 31 engaging with the end portion of the spacer elements 20, and allowing a throughgoing bolt 32 to be engaged therethrough, so as to connect the pressing elements to the seat 5 or 13, while passing through the spacer elements or section members 20.

At the side end portions of the pressing element 30 there are provided seats 35 for gaskets coupled with the other face of the plate 16.

Moreover, the pressing element 30 is provided on its outside with connection seats 37 therein can be snap engaged a covering section member, indicated at 40, which can have any desired configuration and can be of any desired type.

Figures 18 to 32 illustrate different connection types, between the covering section member and the spacer section member, allowing the pressing element to be easily applied for connecting the several plates.

Moreover, it is further possible to provide spacer compensating elements, indicated at the reference number 41, engaged in the C-shape seats of the upright section member, or of the cross-section member, if different thickness plates must be applied; the compensating spacer elements 41 will allow to perfectly balance the efforts, so as to provide a perfectly continuous outer facade.

Moreover, as is shown in Figures 30 to 32, the covering section member can have different outer shapes, while holding its connection function.

Figures 3 to 7 illustrate a butt connection configuration which is made on the cross section member in order to allow the latter to be easily connected with the upright section member.

This machining provides to form a cut-out 50, of the bracket type, and a pair of holes 51, allowing to

affix a slider element 60, shown in Figures 8 to 11, including a plate-like body 61, provided with holes 62 for the connection to the upright section member, and being provided with further seats 63 for engaging therein the lugs 64 of a bridging element 65 which is engaged within the cross section member.

The connection of the cross section member is performed by screws, engaging in the holes 51 and screwing channels 66 provided on the slider body 60.

In order to provide tightness against a possible penetration of athmospheric agents, as is better shown in Figure 17, there is provided a suitable angle vulcanized gasket, indicated at the reference number 70, which is provided with a portion 71 engaging in the seat of the upright section member and a bracket portion 72 connected to the portion 71 which, on the other hand, is engaged in the corresponding seat provided on the cross-section member.

As is clearly shown in Figure 33, there is provided the connection of a projecting wing, providing to use a fixed frame section member for the opening as a projecting wing, indicated at 75, which is affixed to the upright section member through the pressing element, which is used for properly holding the plate.

The section member 75 will provide an abutment for a movable wing section member 26, recovering the shape.

Figures 34 and 35 illustrates an angle up right section member, at 90°, provided with a body, indicated at the reference number 80, which is provided, on two adjoining faces thereof, with the same lugs as provided on the section member, thereby they have been indicated at the same reference numbers.

Moreover, there is provided an angle covering section member 81, which is held in its proper position by the pressing elements, at the angle or corner region, in the same manner as the plates 16.

Figure 36 illustrates a wall connection of the upright, also generally indicated at the reference number 1, where there is provided a finishing section member 85 connecting to the body of the upright section member, as well as an outer finishing section member 86 which is connected, from a side, to the wall and, from the other side, is held by the pressing element usually utilized for the clamp-ing of the plates.

Between the wall and the section member there is moreover provided a thermal buffering element 87.

In the case of a 90° concave angle upright section member, there is used an upright section member of the type shown in Figure 1, and accordingly indicated at the reference number 1, and to the latter there are connected connecting section members, indicated at the reference number 90, which engage with the opposite faces of the upright 1, through a slanted bracket surface 91, which allows to provide the same type of connection.

In this case, there is provided a pressing element 92, which has its end portions mutually arranged at 90° or with a bracket configuration, so as to allow the plates 16 which are orthogonally arranged to be easily connected.

Figures 40 and 41 illustrate variable angle upright section members, indicated at the reference numbers 100 and 101, which are provided, at their inner corner, respectively, with a female seat 102 and a male plug element 103, which can be rotatably engaged in the seat 102, so as to allow the section members to be easily arranged according to the desired angle.

The engaging seats for the pressing element are arranged laterally of the bodies of the upright section members 100 and 101 and, moreover, there is provided a covering element 104 which constitutes the closure element between the two adjoining section members.

Figures 42 and 43 illustrate a horizontal expansion joint, obtained by means of two half uprights 110 and 111, which are provided with labyrinth elements 112, which can slide with respect to one another, so as to fit the different thermal expansions.

Figures 44 and 45 illustrate a fixed concave angle of 135°, obtained by means of a concave cross member 120 which is provided, likewise the other cross-members, with plug-in elements, for connecting the pressing element, indicated at the reference number 121, which is made of a small plate provided, in its middle portion, with a bending angle; the covering section member is moreover provided with a weakened intermediate line 123 for allowing it to be easily bent for the fitting thereof.

Figures 46 and 47 illustrate a fixed convex angle of 135° and, in this case, there is provided a convex configuration cross member 130, of the above disclosed type; likewise there is provided a covering section member 131 of convex configuration.

Figures 48 and 49 illustrate a concave variable angle for the cross member, of the same type shown in Figure 45, with the modification that there are used cross-members connected by a covering inner element 41 for the proper fitting; the pressing element and covering section member are of the type shown in Figure 45 and have been indicated at the same reference number.

Figure 51 illustrates a slanted cross member, in which said cross member has a typical configuration, the sole difference being that of the covering section, indicated at the reference number 150, which is provided with a slanted corner 151, so as to facilitate the drainage of water.

Likewise, in the case of a convex cross member of variable inclination, there are provided cross section members 160 and 161 which are respectively provided with male connection elements 152 engaging in corresponding female seats 163 provided on the other cross member, so as to allow the two cross members to be mutually turned.

The covering is made by a finishing and covering

element, indicated at the reference number 164, and the outer covering is obtained by cover-ing section members, of the type shown in Figure 51, for the slanted cross member, and being of the type shown in Figure 2 for the horizontal cross member.

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, by a reduced number of elements, there has been afforded the possibility of performing a lot of different types of continuous facades.

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 the contingent size and shapes can be any depending on requirements.

Claims

1. A section member assembly, for making continuous facades in civil buildings and the like, **characterized in that** said section member assembly comprises upright section members and cross section members, having a box-like body including, on its outwardly directed face, a lug with a seat for engaging therein at least a spacer section member, made of a rigid poly-amide, and being held in position by a pressing element, affixed by a bolt, passing through the spacer section member and adapted to be engaged in said seat, a finishing section member being moreover provided which can be coupled to said pressing element.

2. A section member assembly, according to the preceding claim, **characterized in that** the upright section member has the lugs thereof including a projection extending from a middle portion of the face of the box-like body and the seat thereof on an extension of said projection, laterally of said projection there being moreover provided legs ending with a C-shaped seat.

3. A section member assembly, according to the preceding claims, **characterized in that** said cross section member is provided, adjoining said lugs, with C-shaped seats for housing therein gaskets for holding glass plates and the like.

4. A section member assembly, according to one or more of the preceding claims, **characterized in that** said spacer section member is provided with a plug-in end portion, for engaging in said seat and, on the opposite portion, with a plug-in seat, for engaging with another spacer section member.

5. A section member assembly, according to one or more of the preceding claims, **characterized in that** said pressing section member is provided, at the center part thereof, with a guide cut-out which can be coupled with said spacer section member, for engaging with a throughgoing bolt, said pressing section member being provided with side seats for gaskets which can be coupled with said glass plates and a plug-in seat, for coupling with finishing or covering section members.

6. A section member assembly, according to one or more of the preceding claims, **characterized in that** the cross section members for coupling to said upright section members are provided with butt portions formed by a bracket cut-out and holes, for receiving therethrough connection screws.

7. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises a slide body, having holes through its middle portion and adapted to be affixed to said upright section members, with said slide being coupled the projections or lugs of a bridge element which can be engaged in the cross section member, there being moreover provided connecting screws which connect said cross section member to screwing channels provided on the slide body.

8. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises a vulcanized gasket, of angular shape, including a portion, which can be engaged with the seat of said upright section member and a further portion which can be engaged on the seat provided on the cross section member.

9. A section member assembly, according to one or more of the preceding claims, **characterized in that** said finishing section members have any desired shape, in particular a crowned shape.

10. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises compensating spacer section members, which can be engaged in the C-shaped seats of said upright section member, for coupling with different size glass plates.

11. A section member assembly, according to one or more of the preceding claims, **characterized in**

that said assembly further comprises an angular upright section member, having a box-like body and including, on two mutually perpendicular faces thereof said lug, there being moreover provided an angular covering element which is held by said pressing section member respectively connected to said lugs.

12. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises a section member for coupling to a wall said upright section member and a further spacer section member which can be connected to said wall and held in a set position by means of said pressing section member.

13. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises, for the concave angular upright, an upright section member to which there are connected fitting section members having slanted connection faces in order to provide seats for holding said glass plates as mutually orthogonally arranged, said pressing section member having an angular or bracket configuration with the seats for the gaskets arranged with an orthogonal arrangement.

14. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises variable angle upright section members, having a box like body respectively provided with a female plug-in seat and a male plug-in element, which can be connected to one another according to a preset angular relationship; there being moreover provided a covering element to be held by said pressing section members.

15. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises a horizontal expansion upright, comprising two half-upright section members, which are mutually connected by a labyrinth path adapted to allow a mutual sliding thereof.

16. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises a concave cross-section member provided with a pair of lugs which are mutually arranged according to a set angle and connecting a pressing element pro vided, at an intermediate portion thereof, with a bending line in order to assume a set angle, said finishing section member being also provided with a weakened middle line for the bending thereof.

17. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises a convex cross-section member provided with mutually angled lugs for connecting with an angled pressing element thereon there is provided and angled covering section member.

18. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises concave cross-section members which are mutually arranged with a set angular relationship and are connected in the inside thereof by an inner covering section member.

19. A section member assembly, according to one or more of the preceding claims, **characterized in that** said assembly further comprises a slanted cross-section member provided with a lug to which can be connected a pressing element thereon can be snap-engaged a finishing section member provided, on the top edge portion thereof, with a slanted corner for allowing water to be drained therefrom.

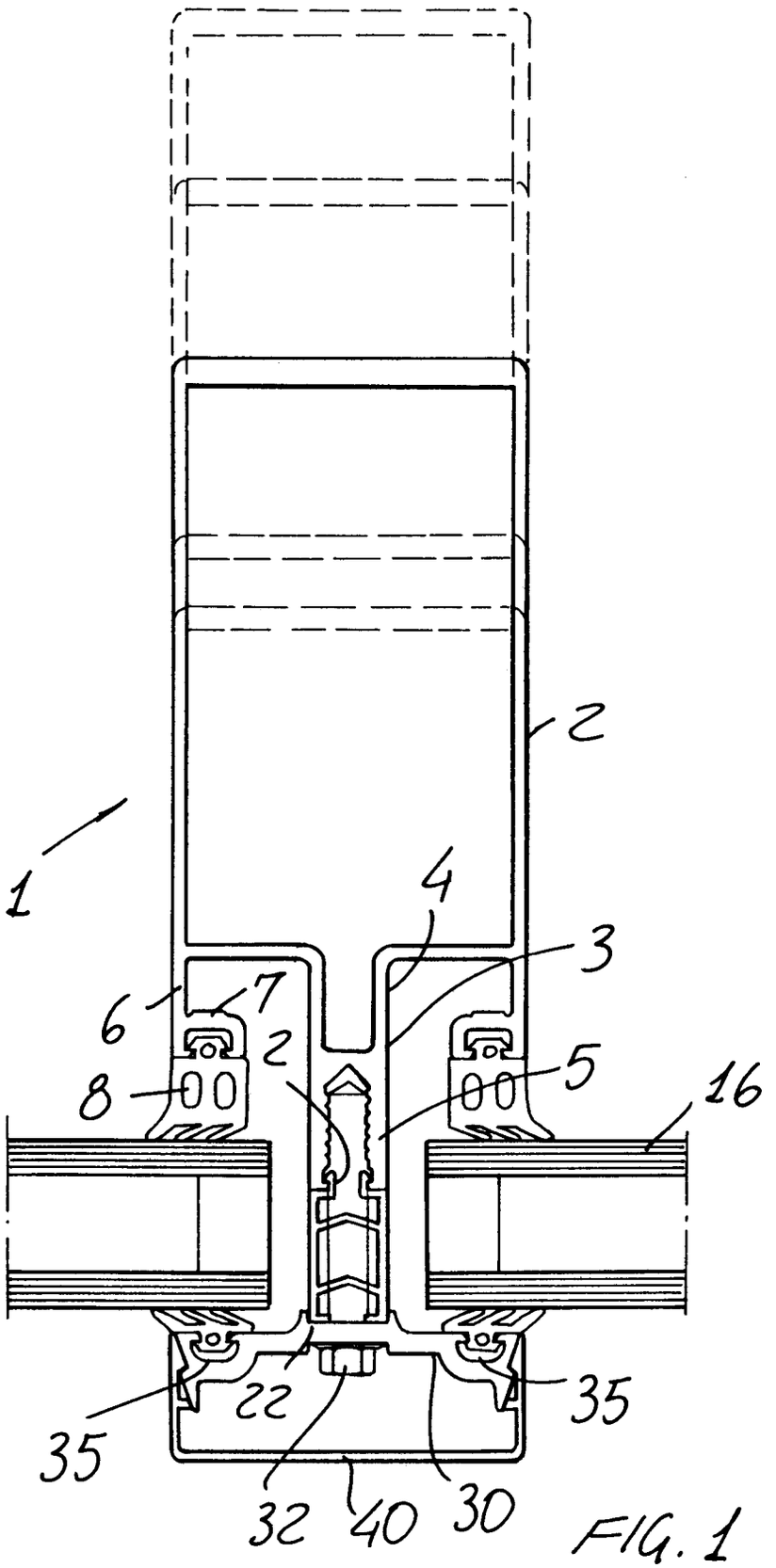


FIG. 1

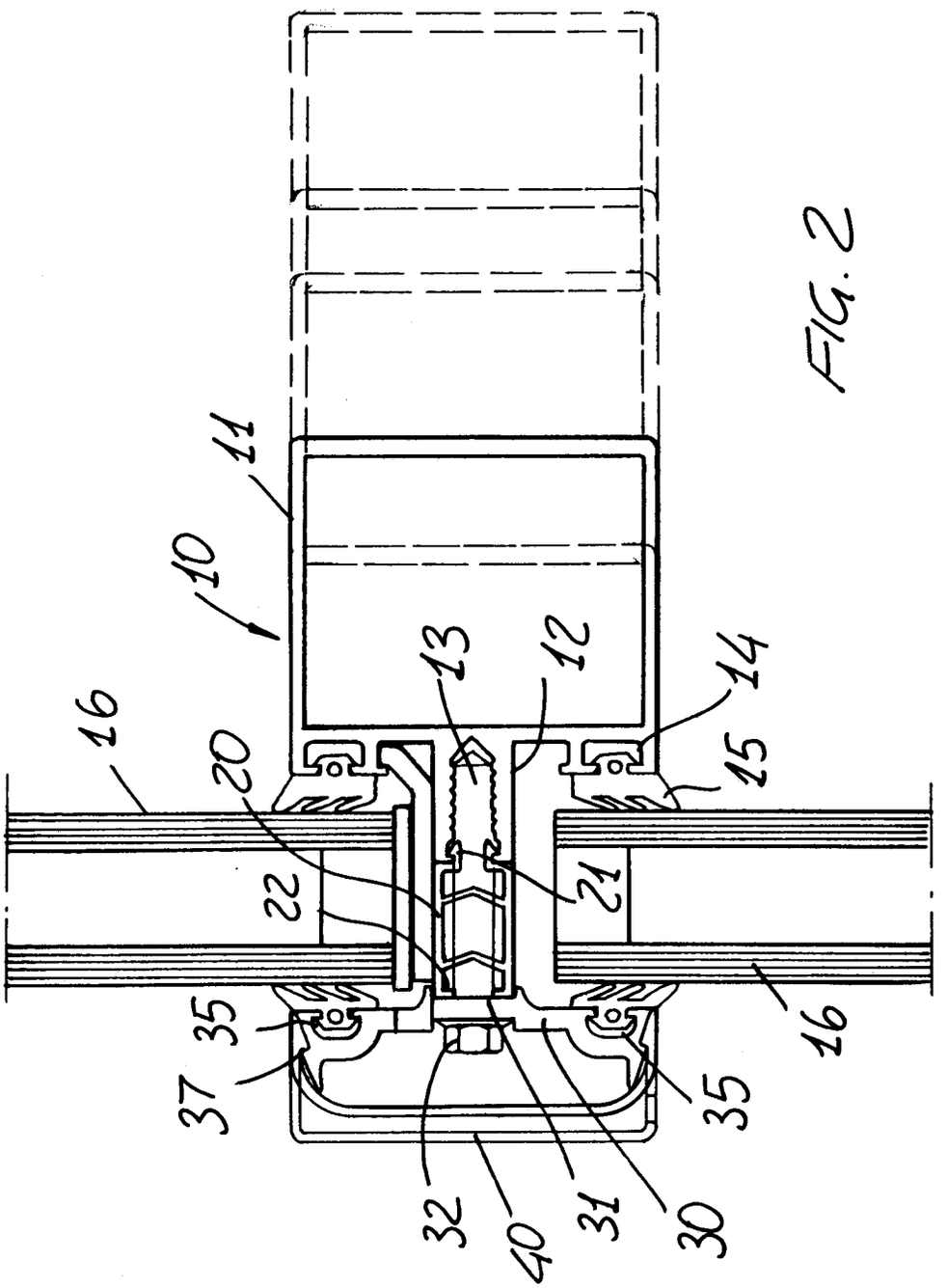


FIG. 2

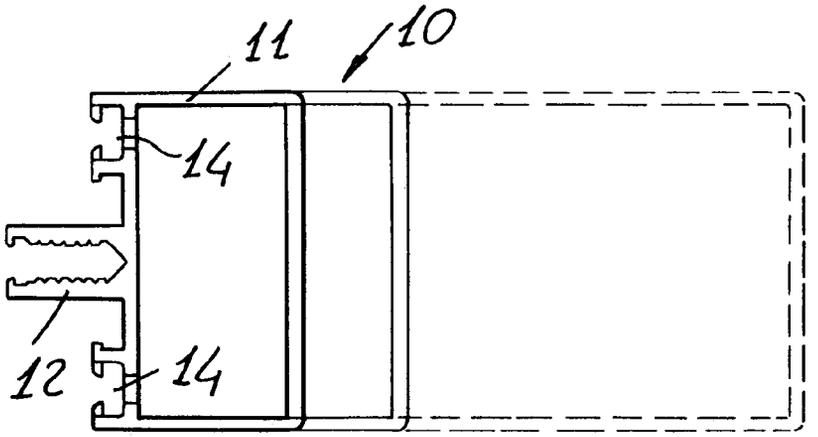


FIG. 3

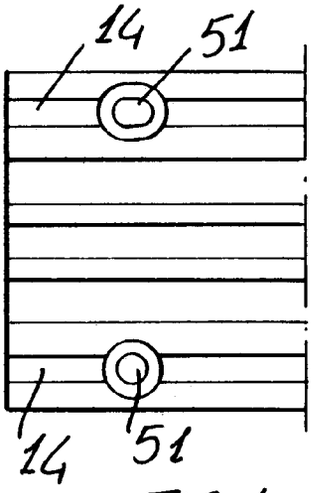


FIG. 4

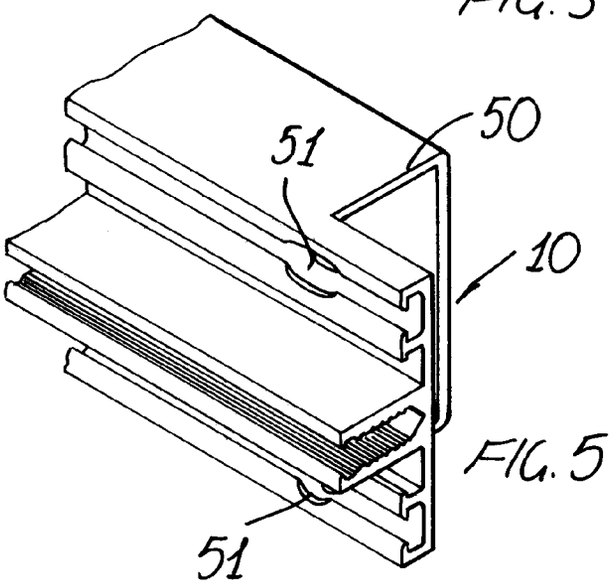


FIG. 5

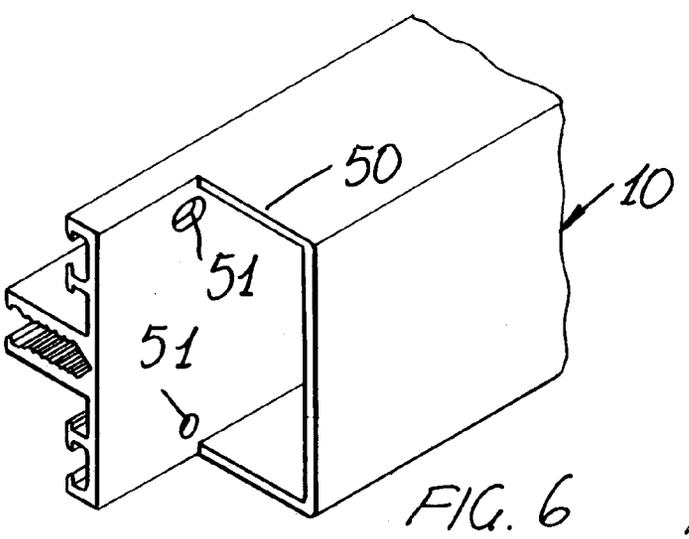


FIG. 6

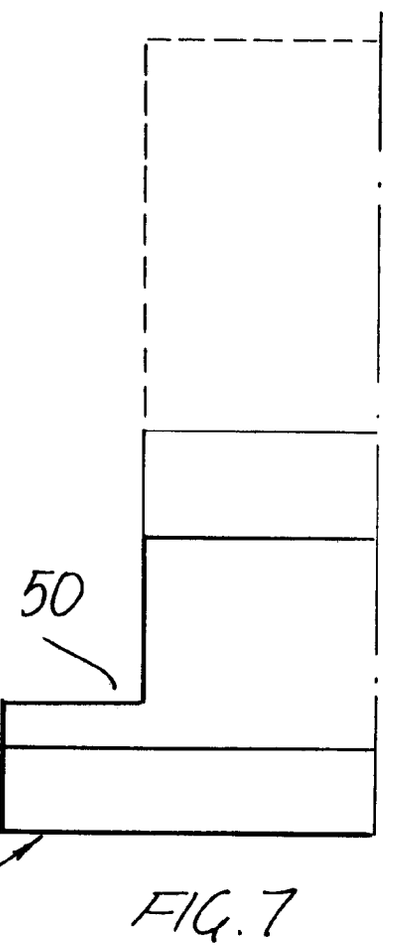


FIG. 7

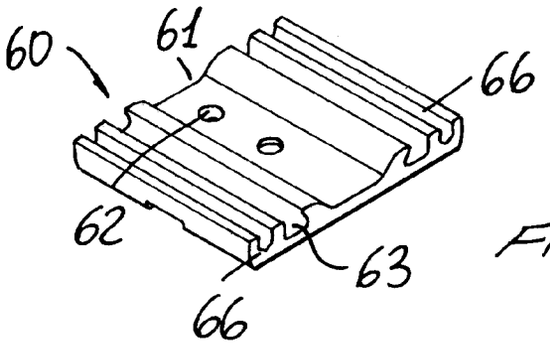


FIG. 8

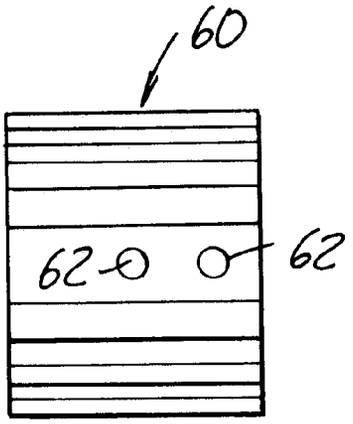
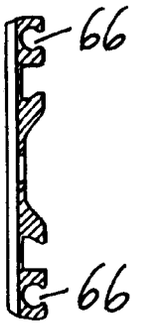


FIG. 9



60 FIG. 10

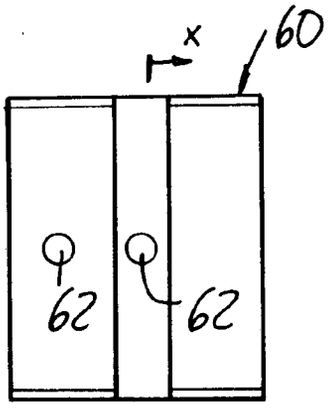


FIG. 11

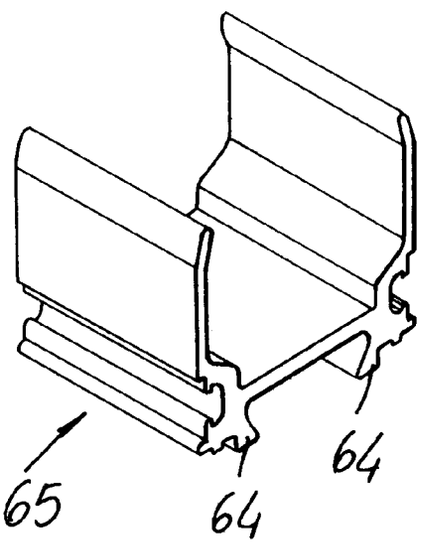


FIG. 12

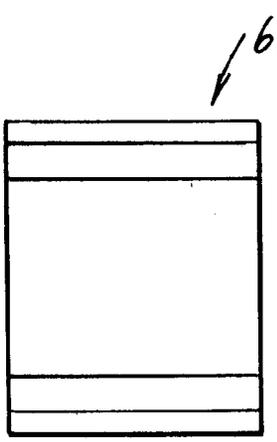


FIG. 13

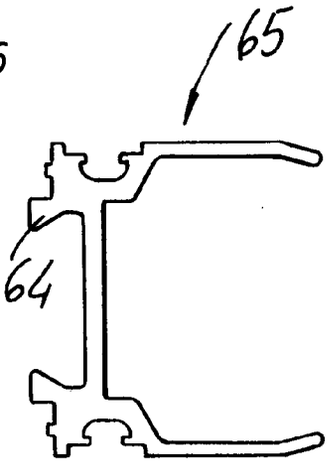
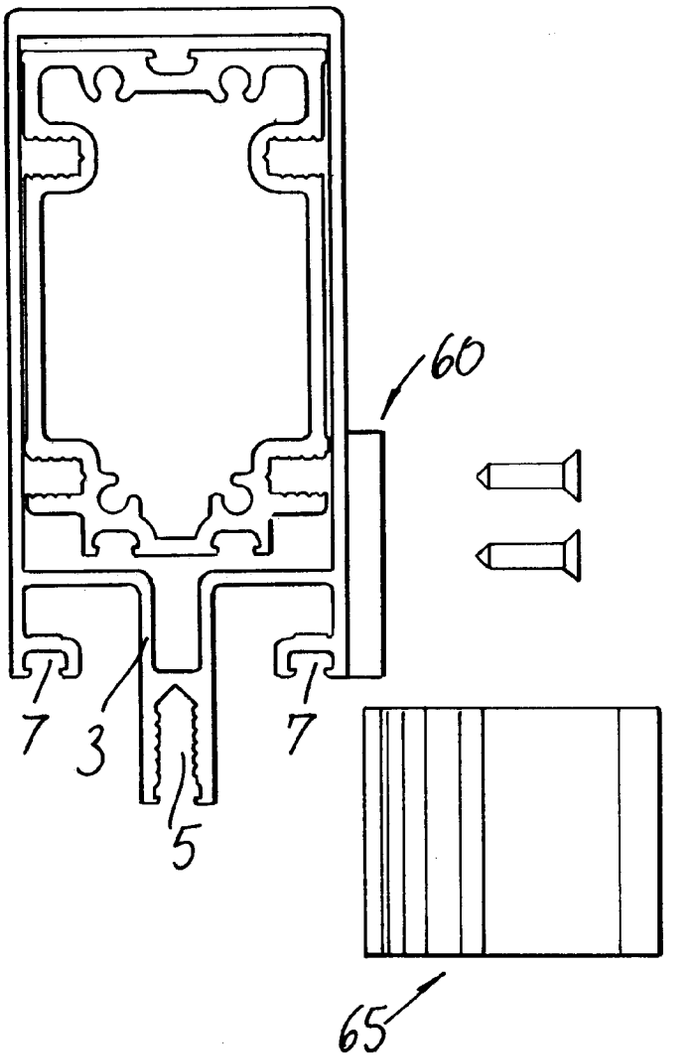


FIG. 14



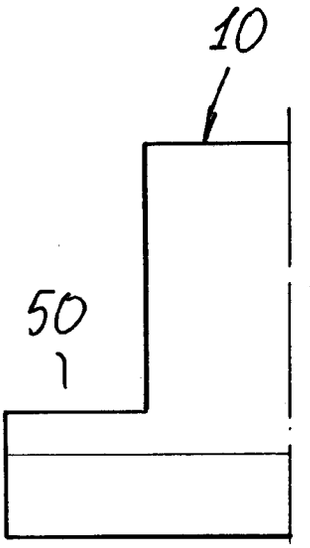
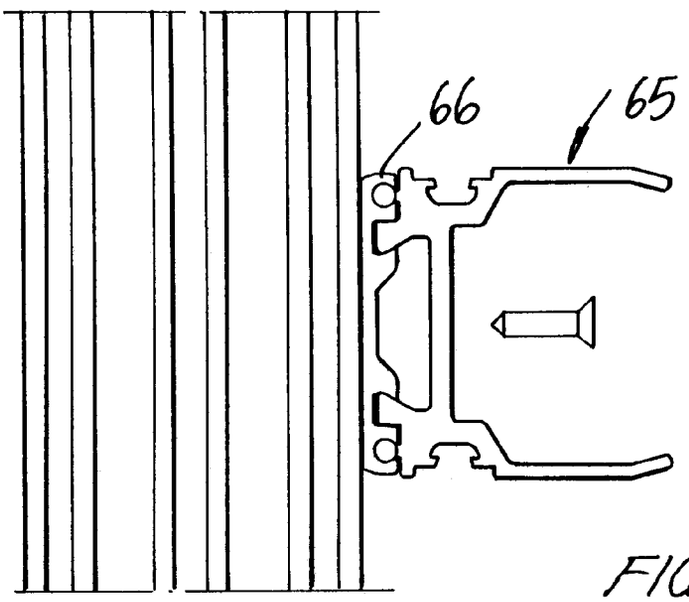


FIG. 15



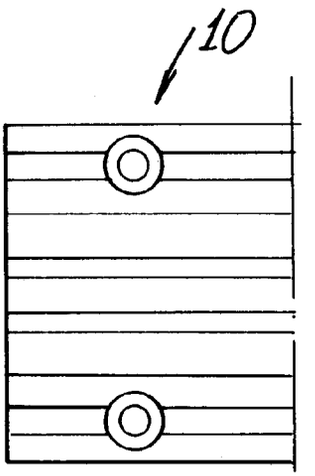


FIG. 16

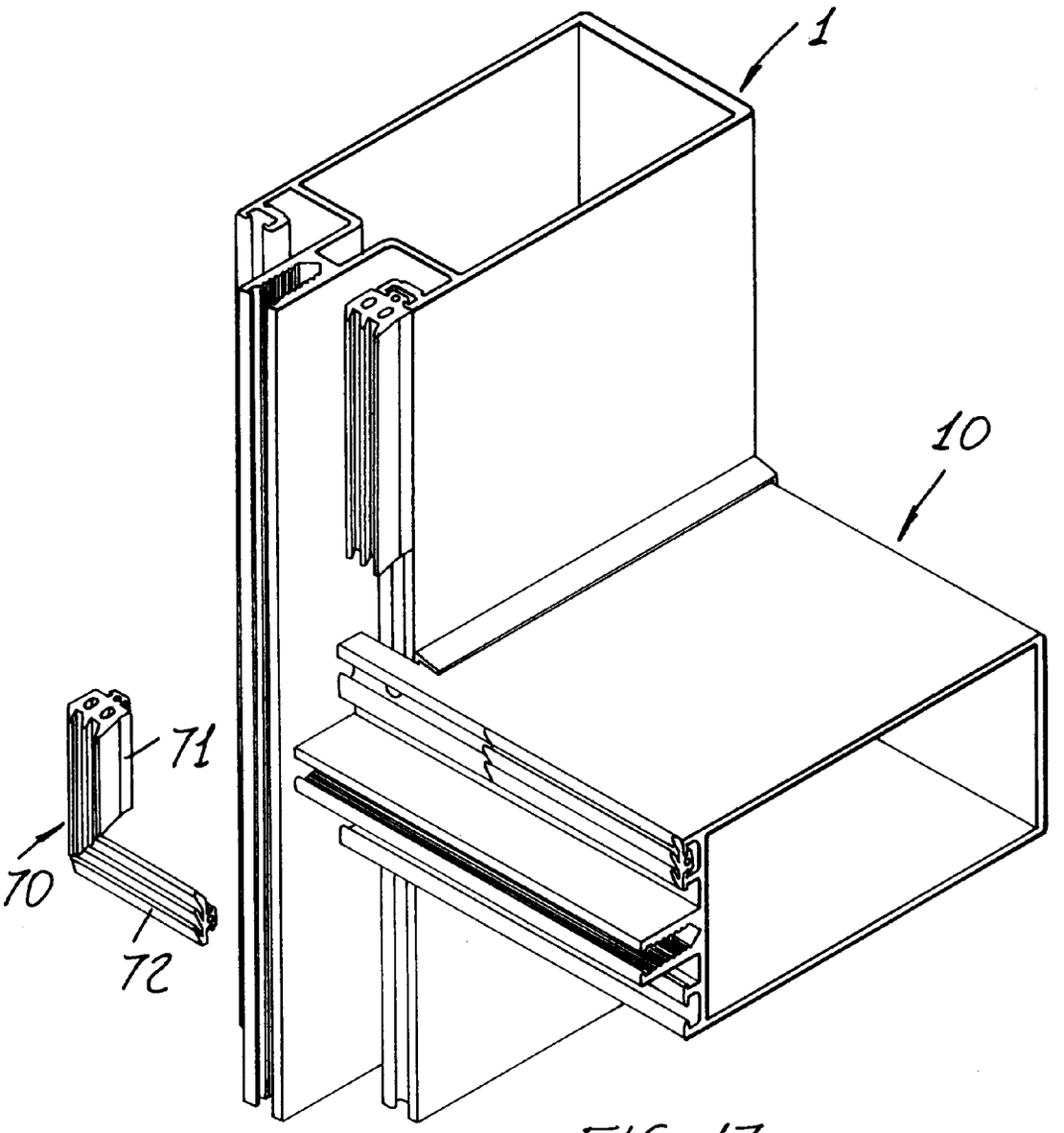


FIG. 17

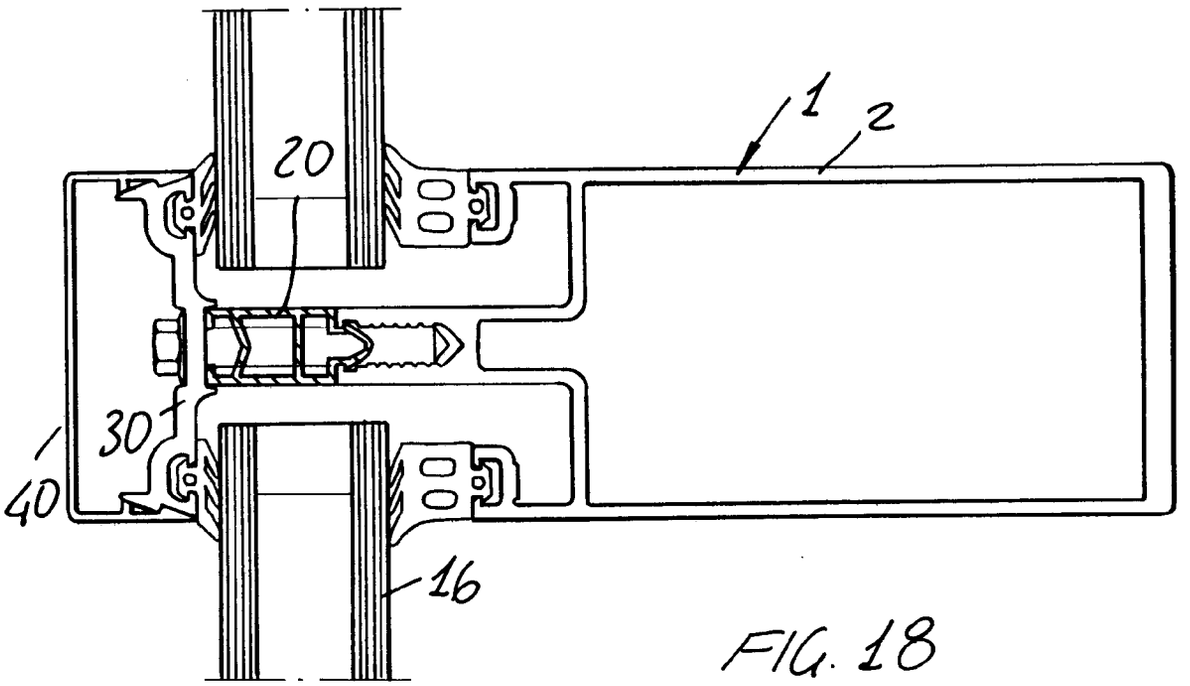


FIG. 18

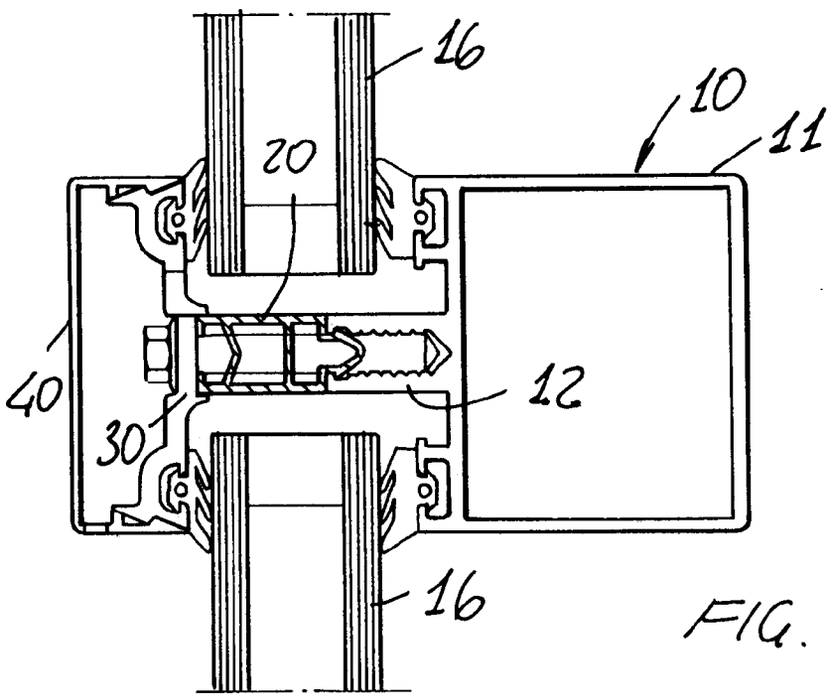


FIG. 19

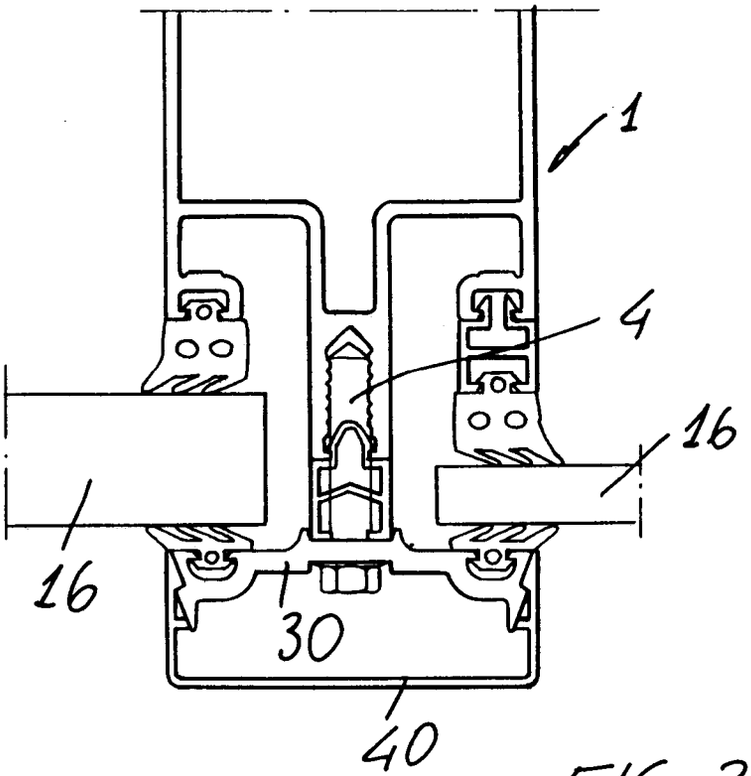


FIG. 20

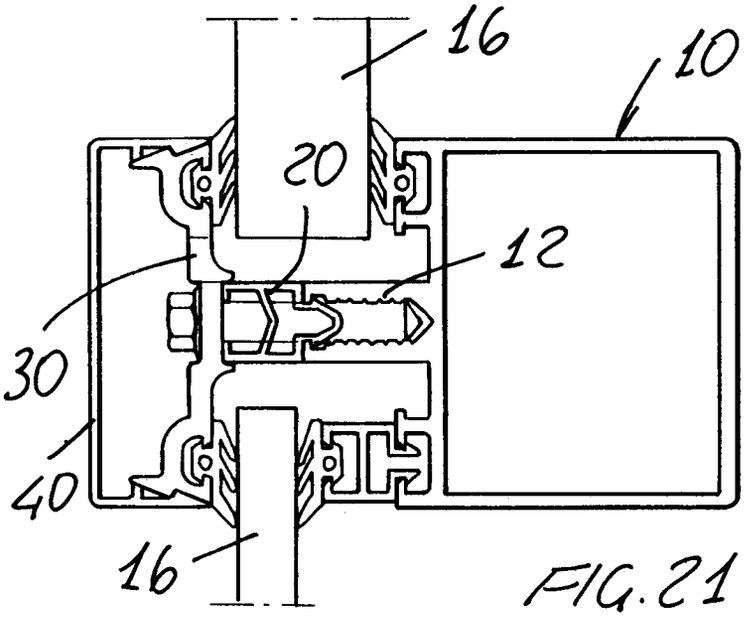


FIG. 21

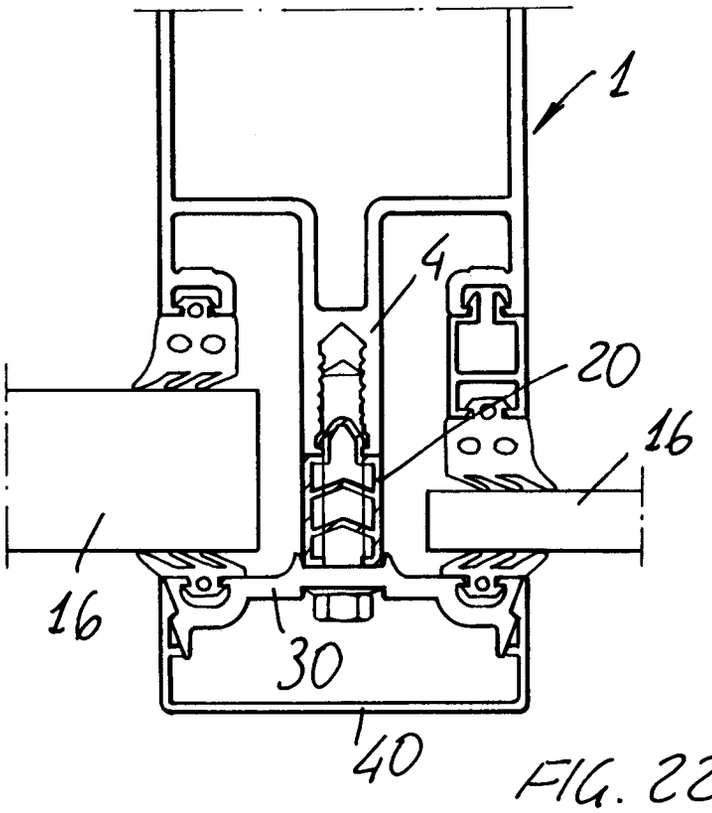


FIG. 22

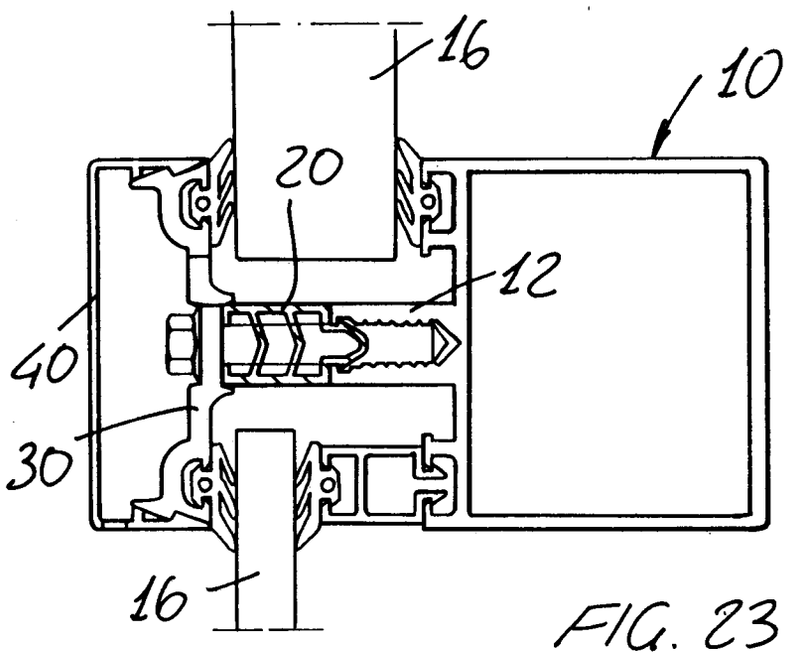


FIG. 23

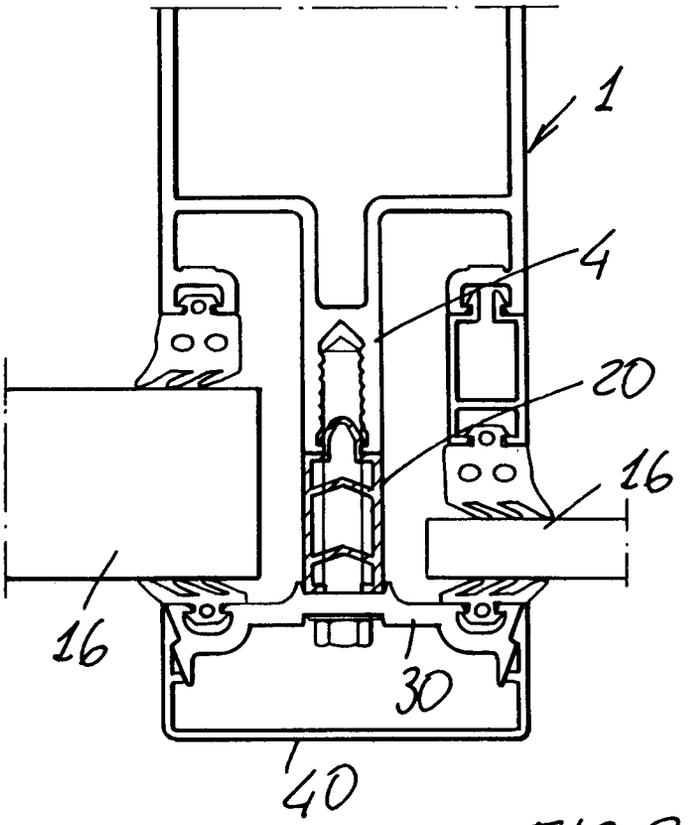


FIG. 24

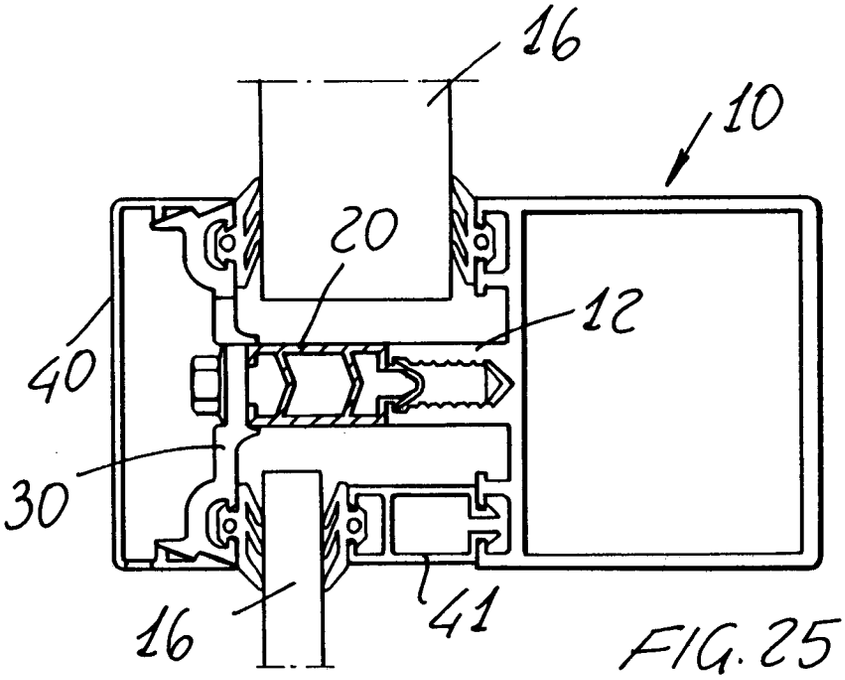


FIG. 25

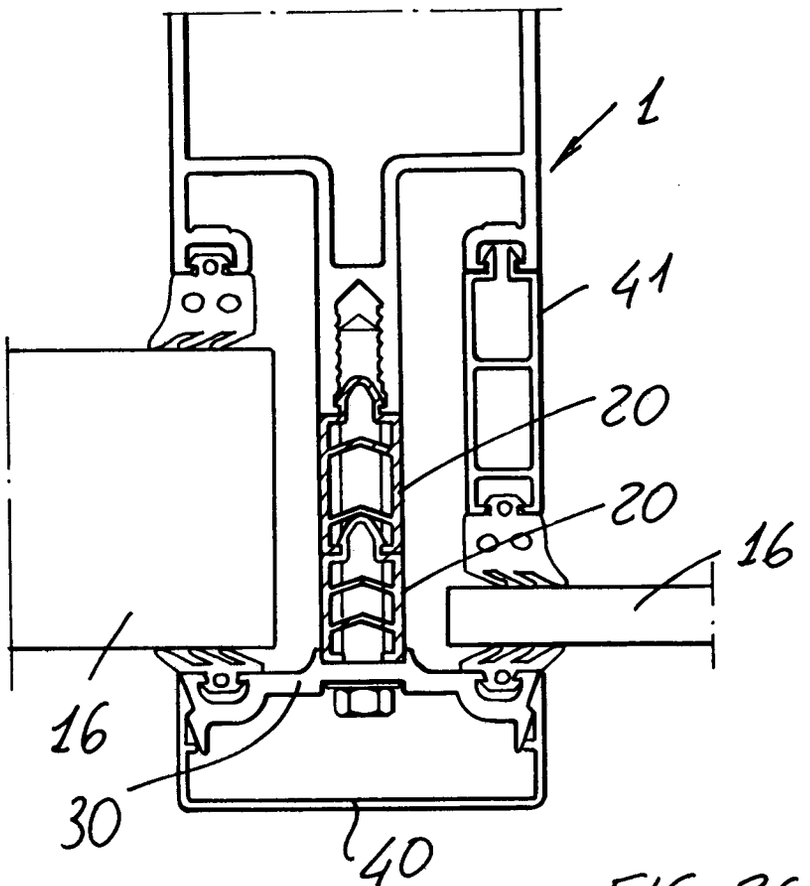


FIG. 26

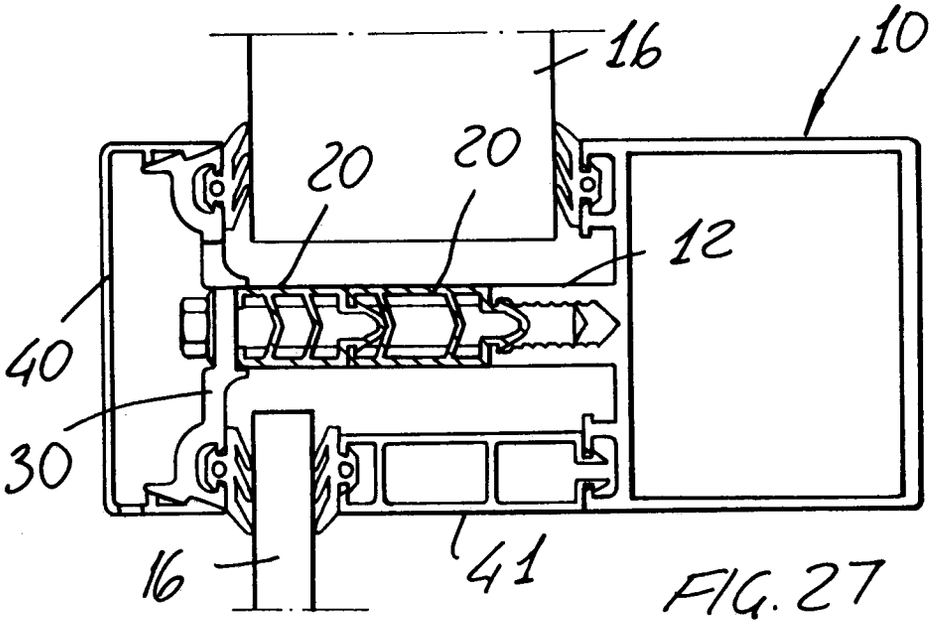


FIG. 27

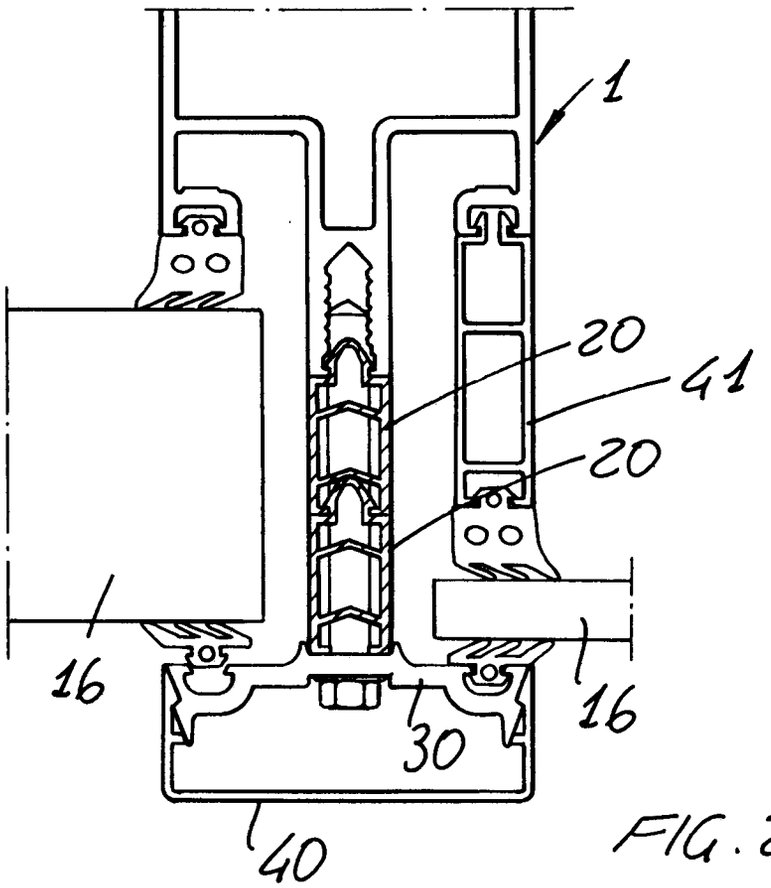


FIG. 28

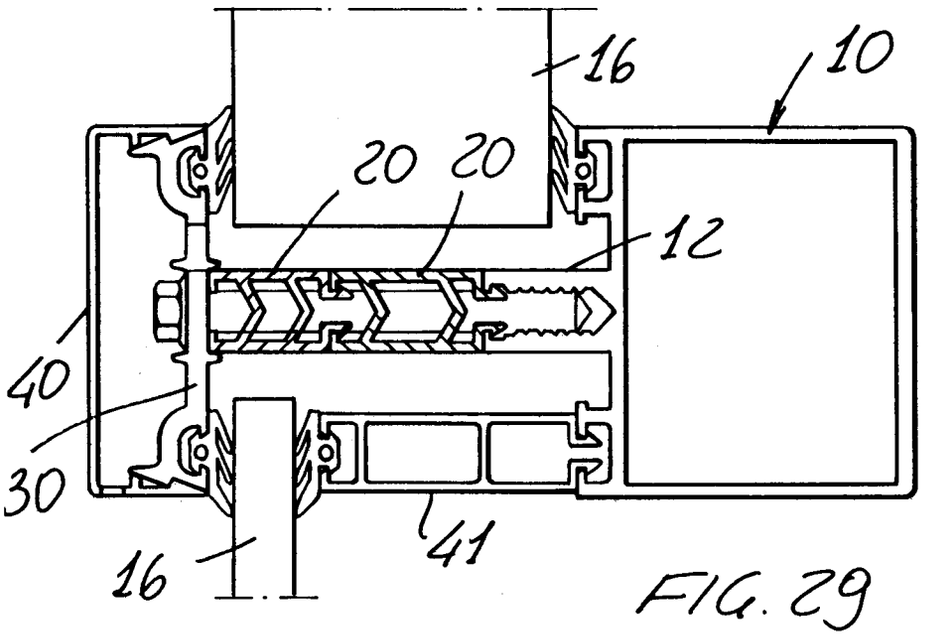


FIG. 29

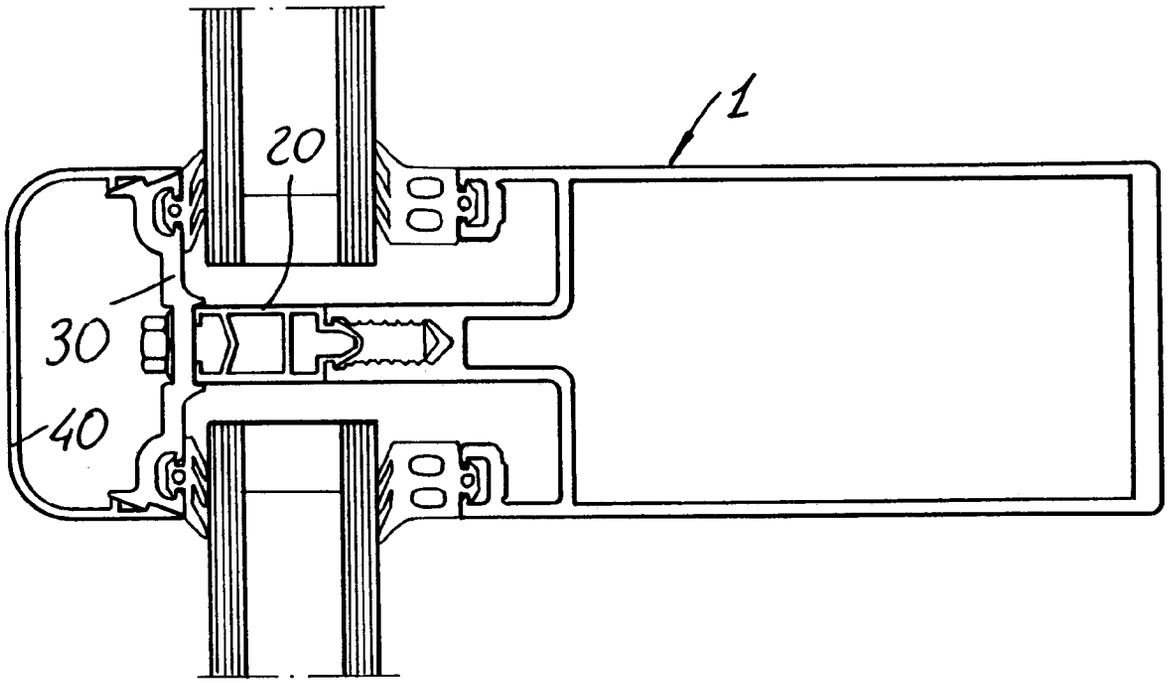


FIG. 30

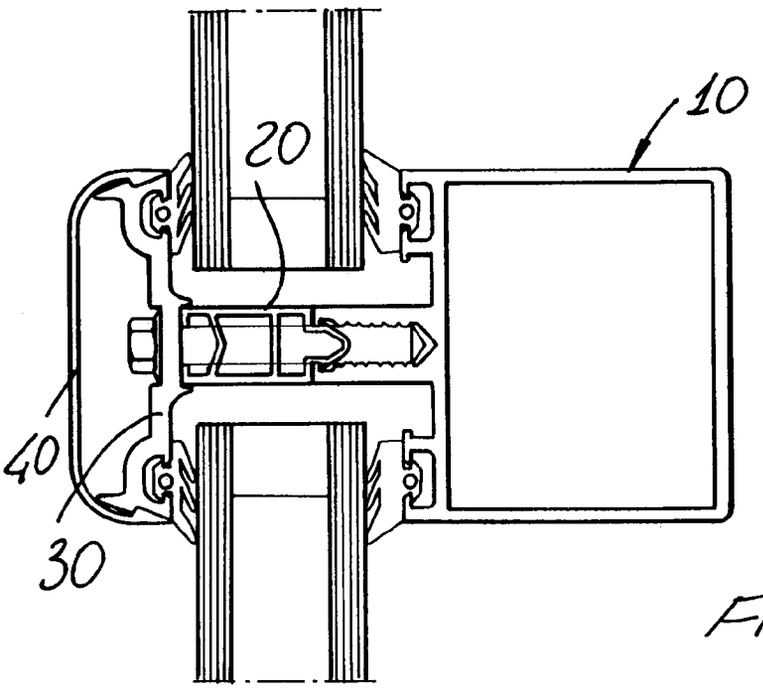


FIG. 31

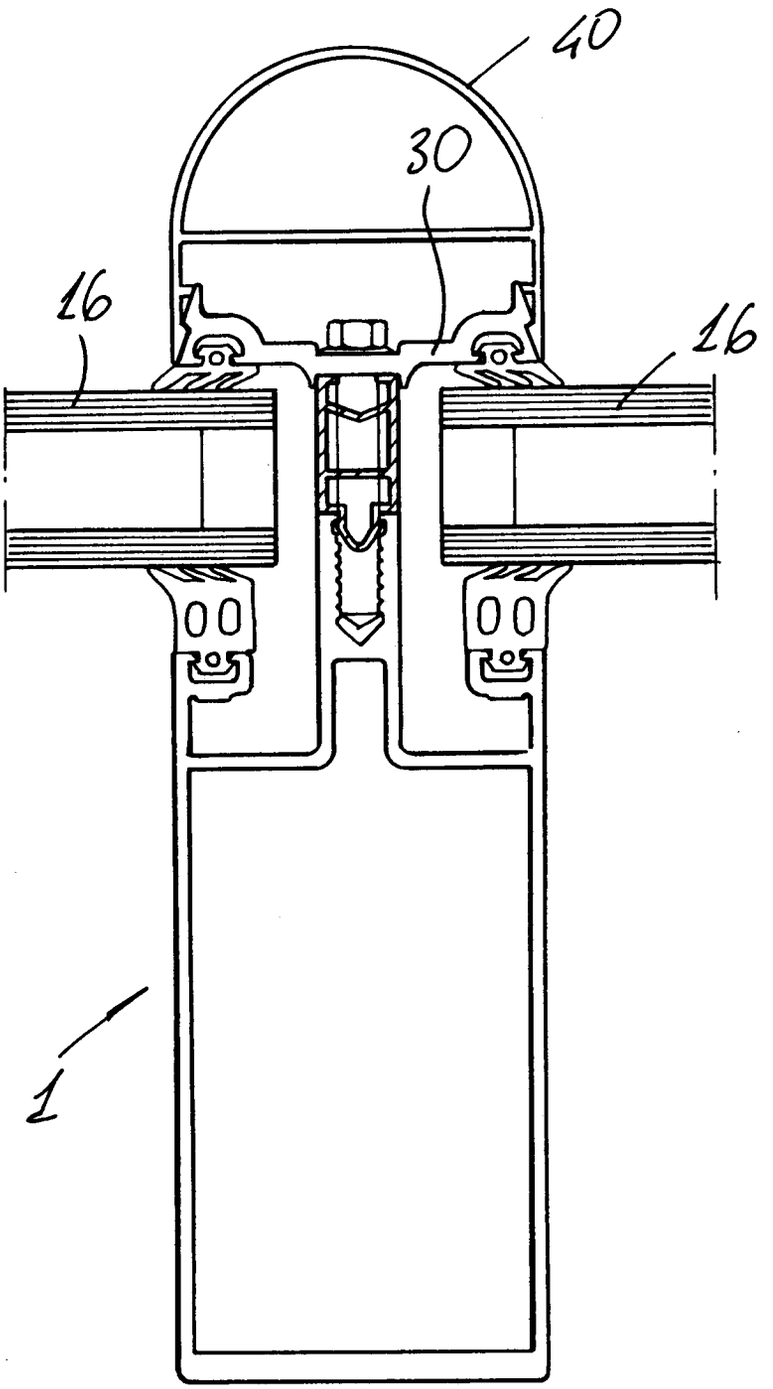


FIG. 32

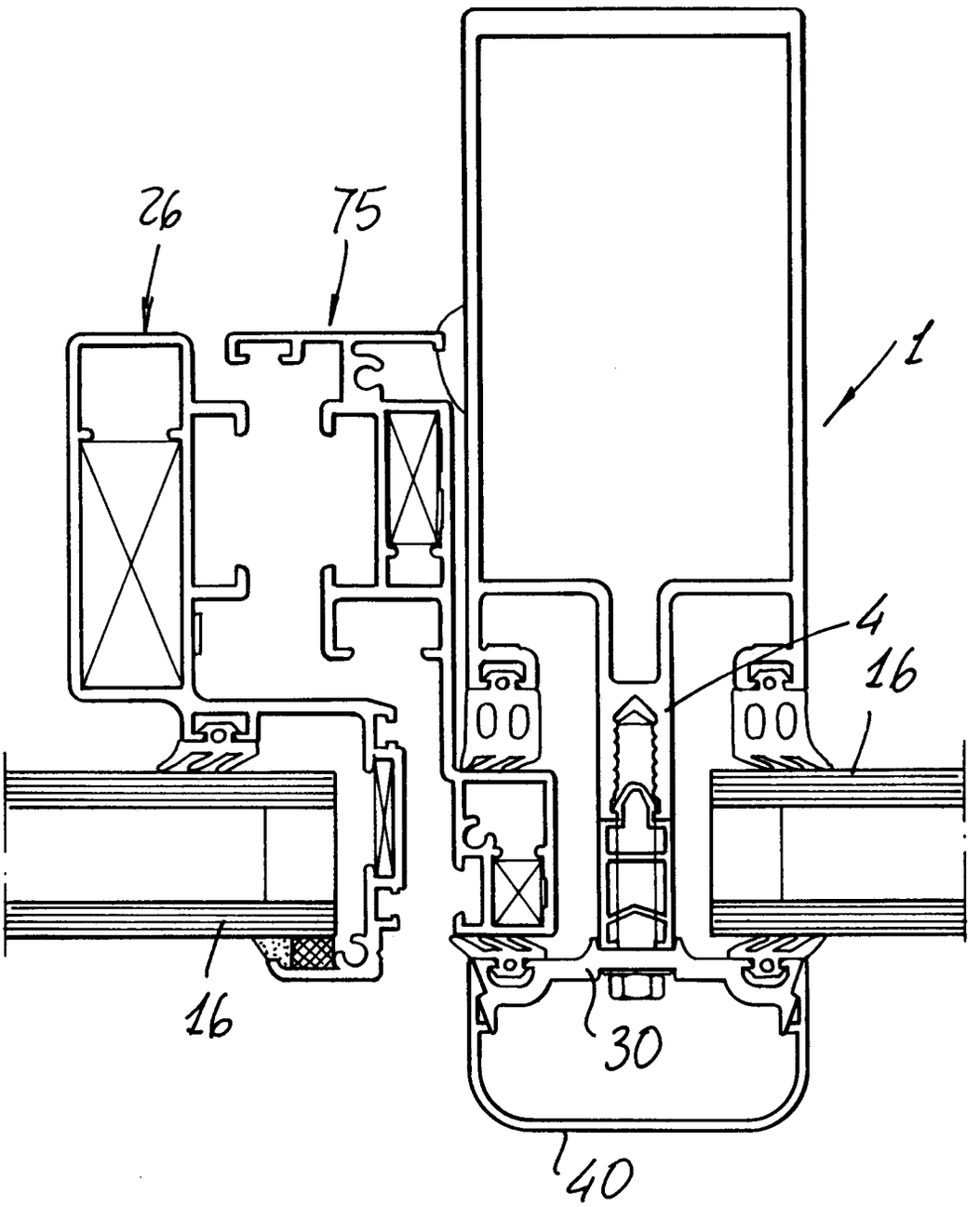


FIG. 33

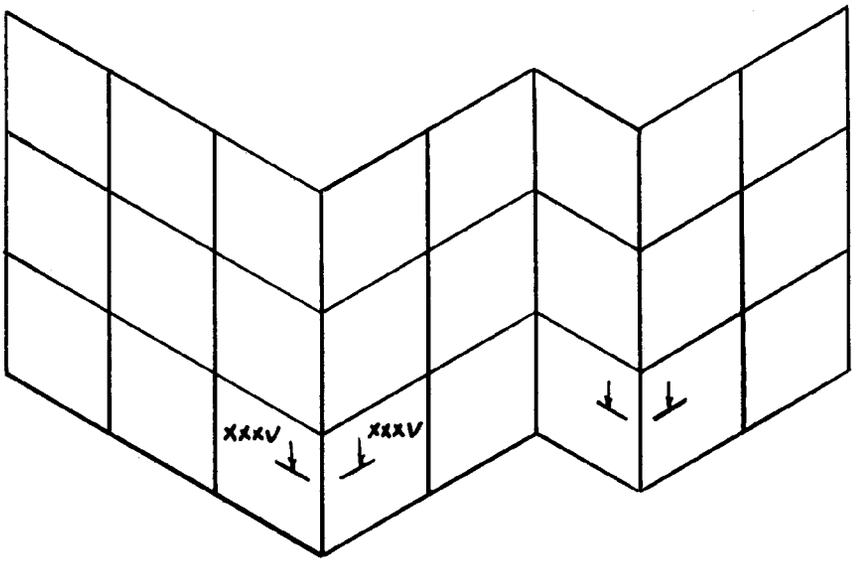


FIG. 34

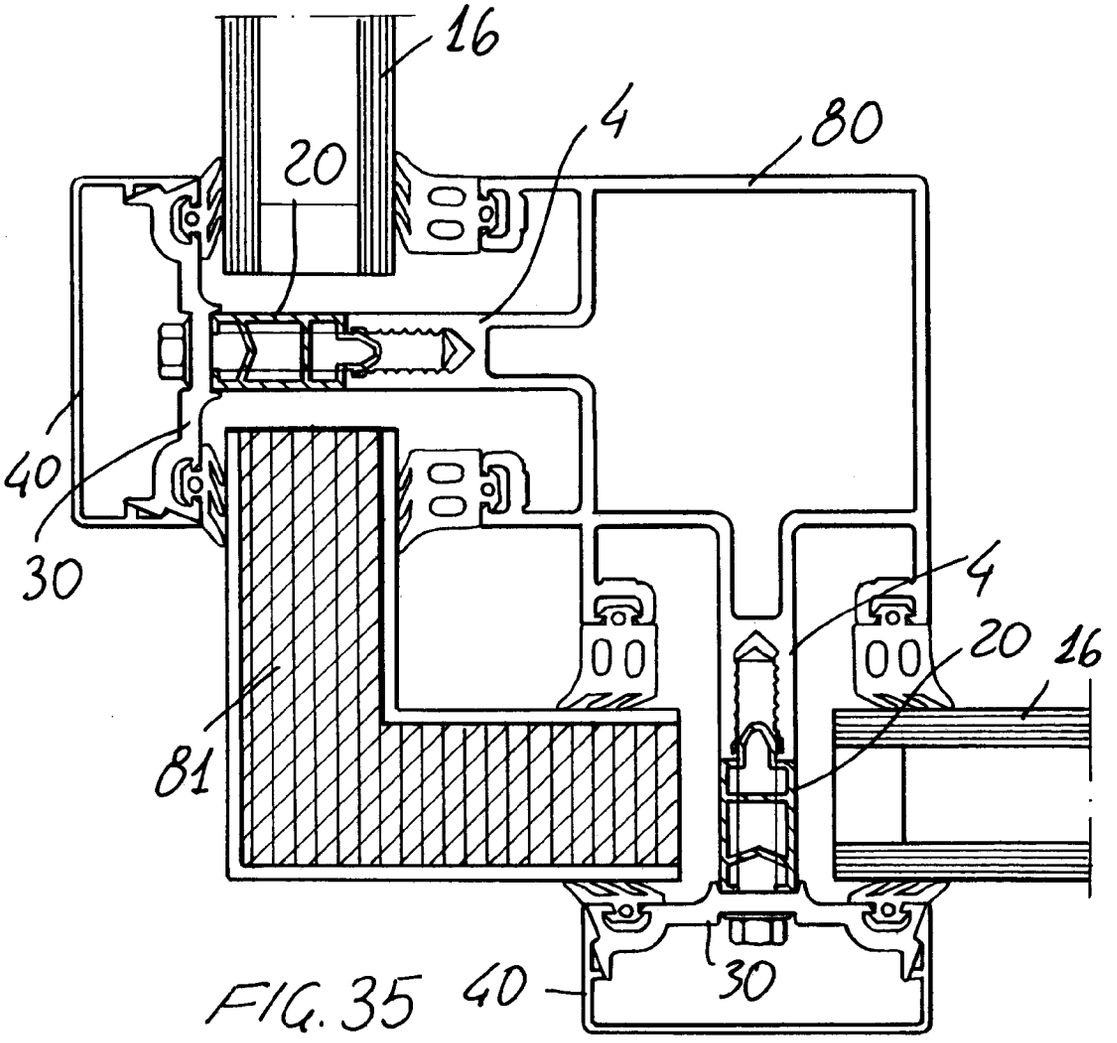


FIG. 35

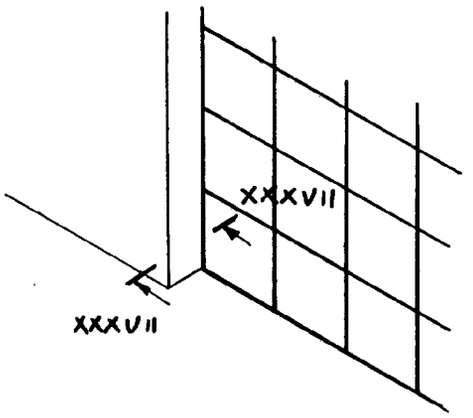


FIG. 36

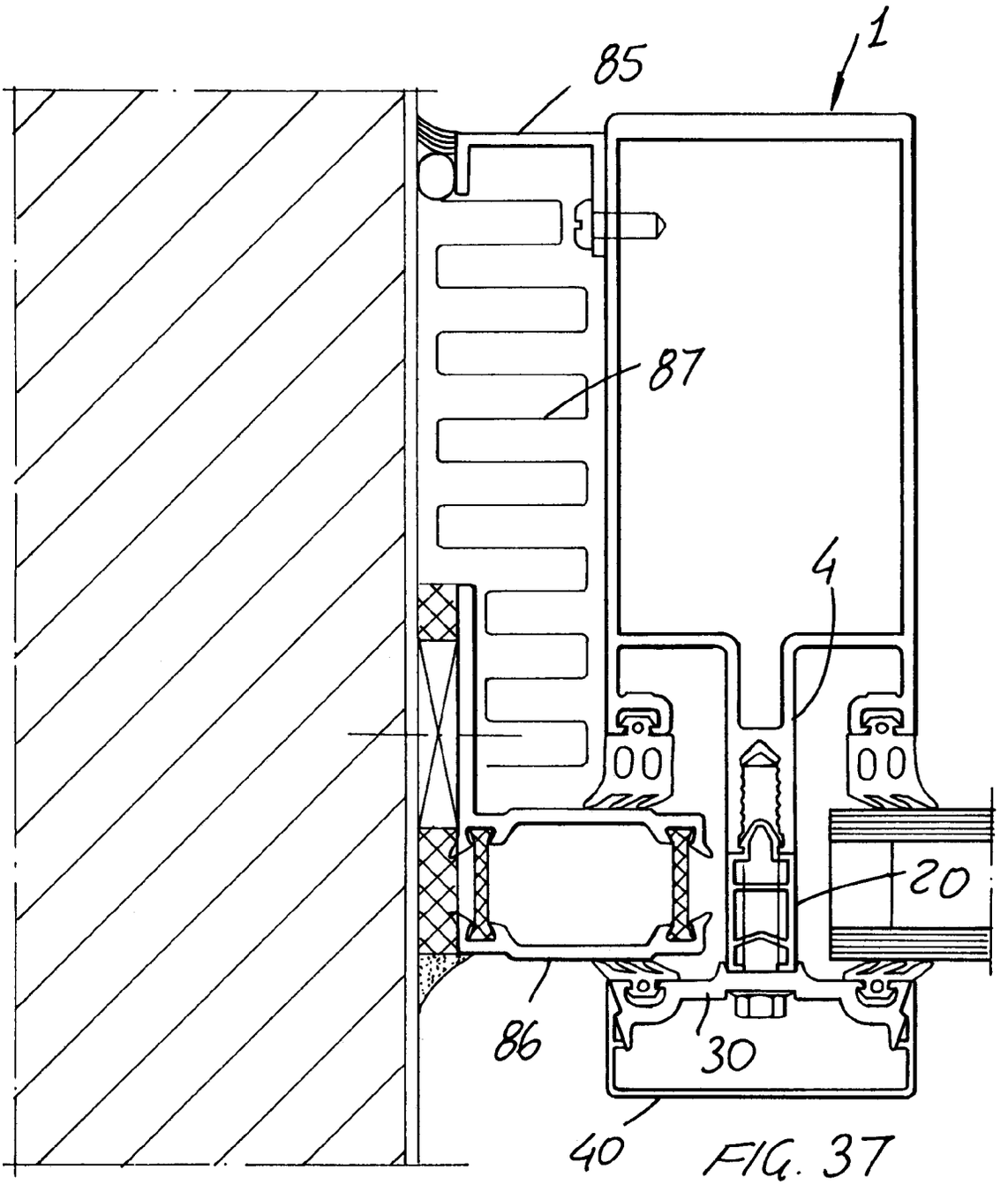


FIG. 37

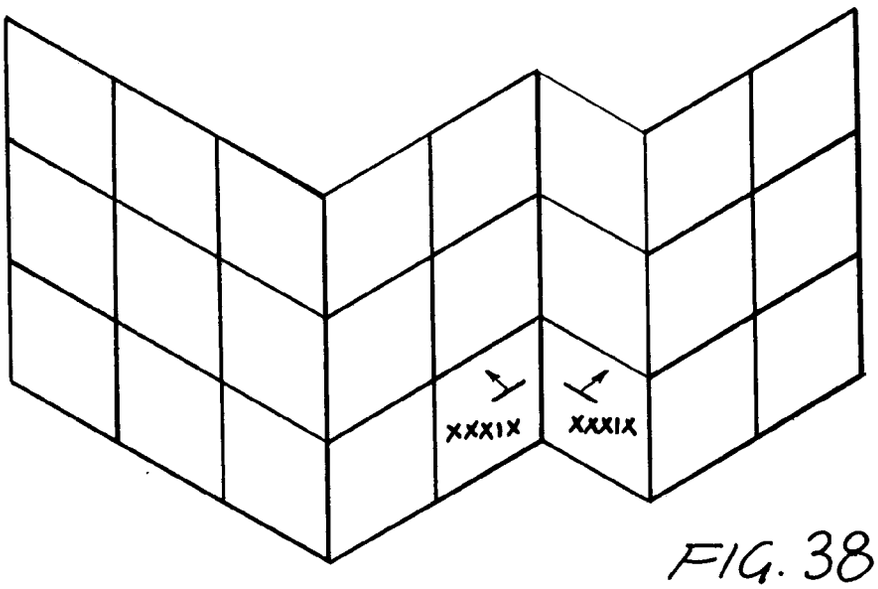


FIG. 38

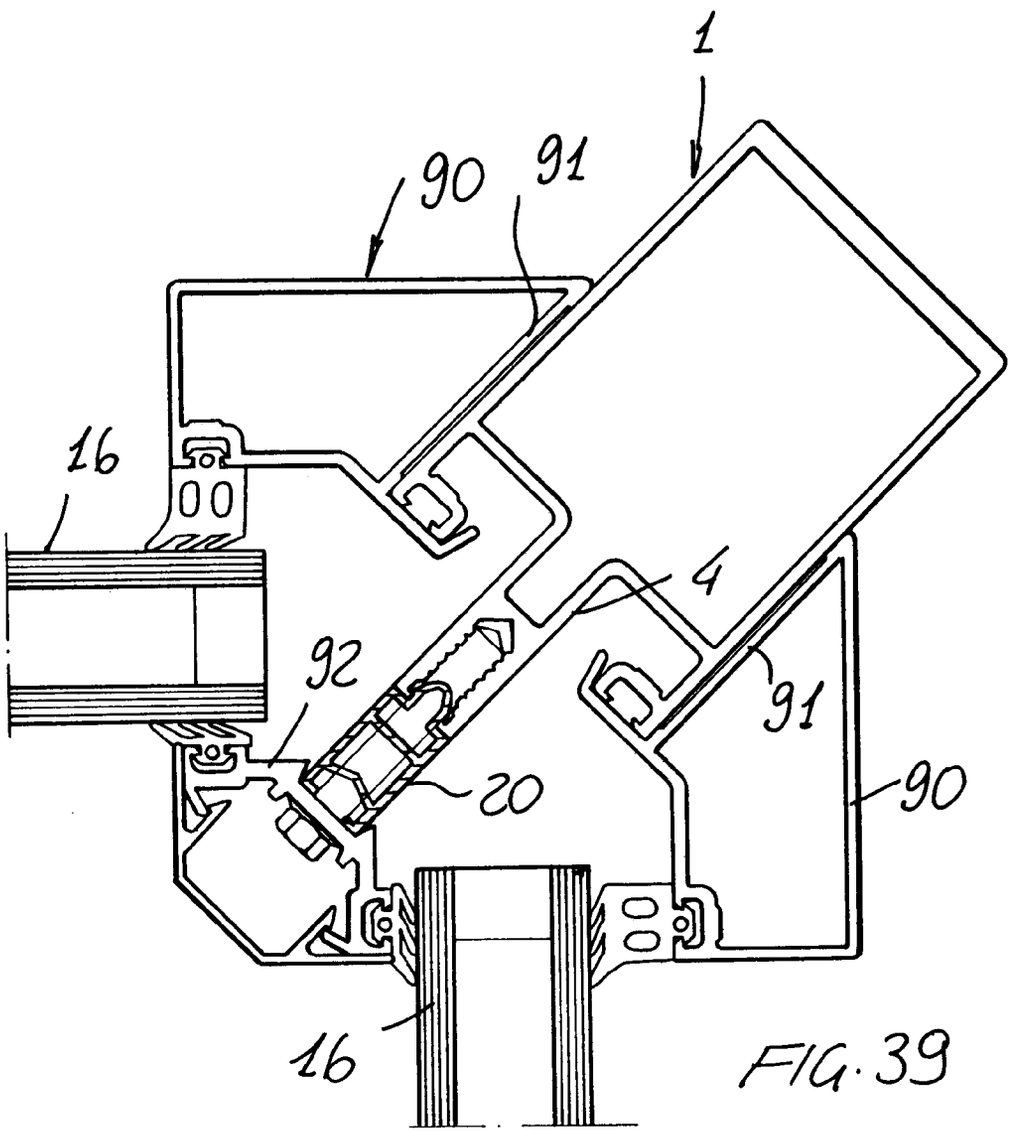


FIG. 39

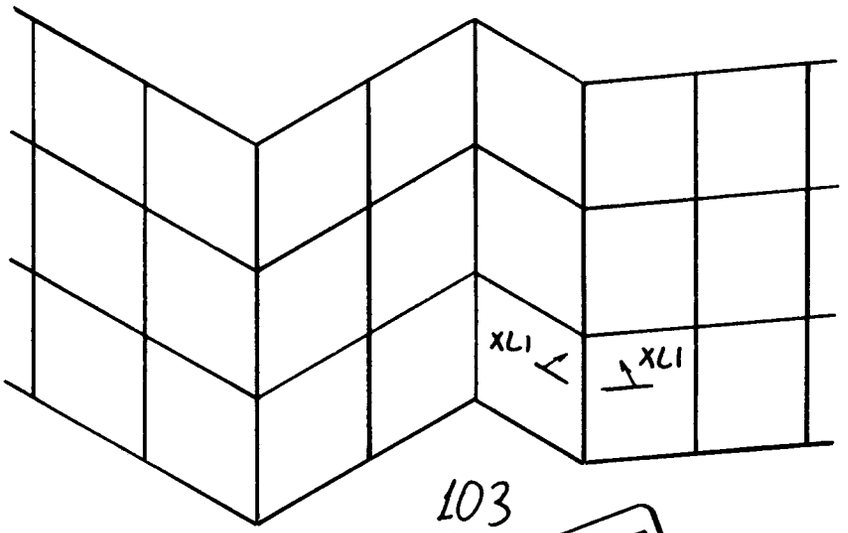


FIG. 40

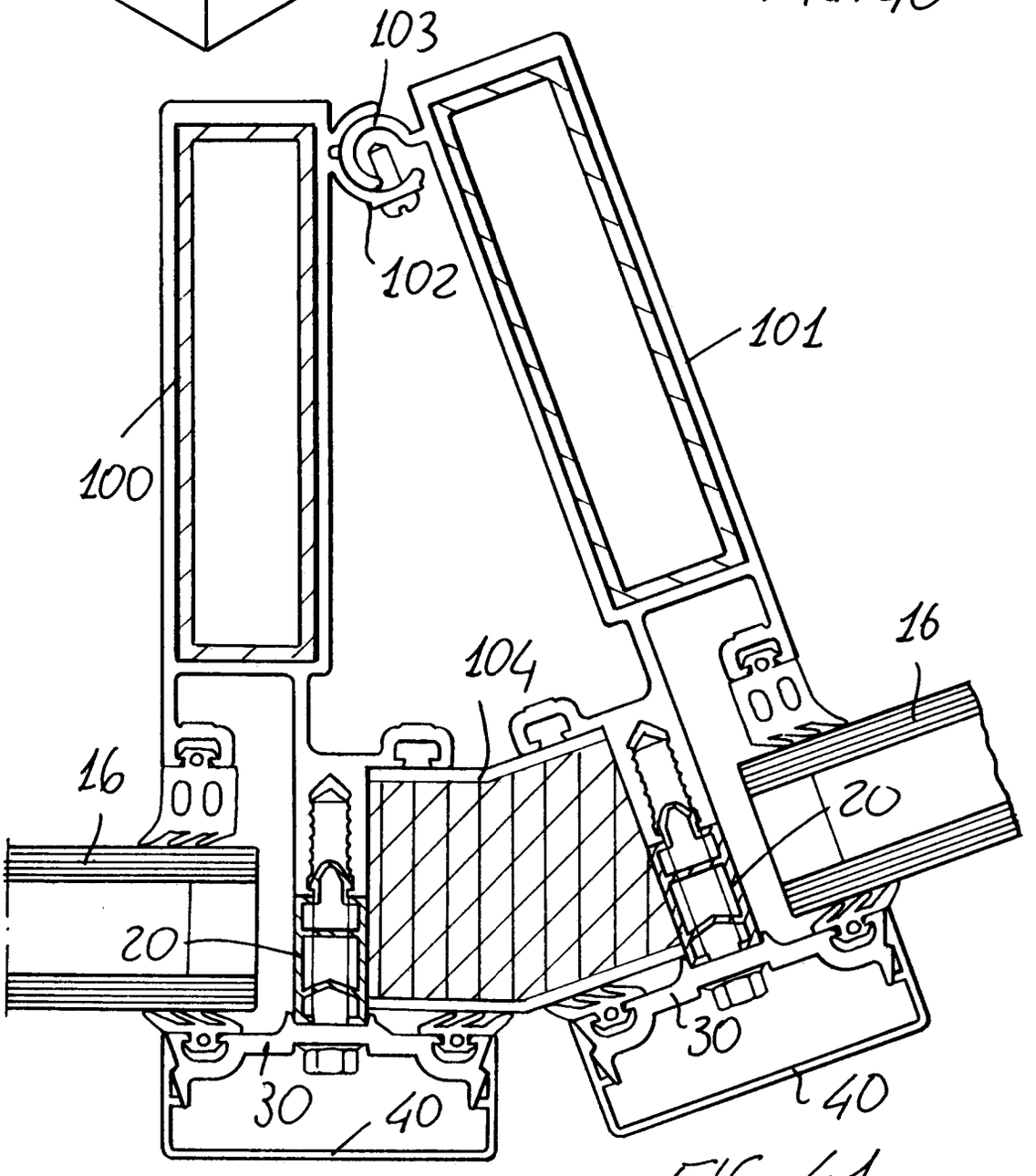


FIG. 41

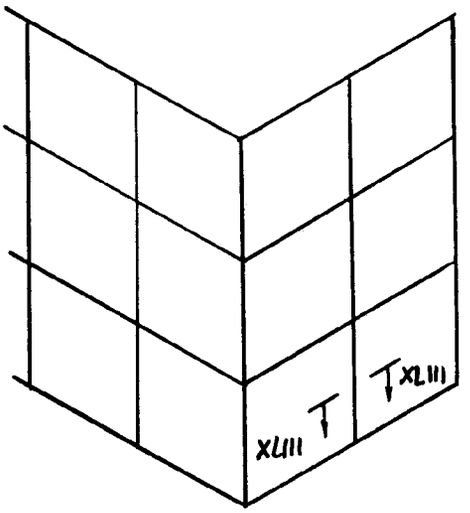


FIG. 42

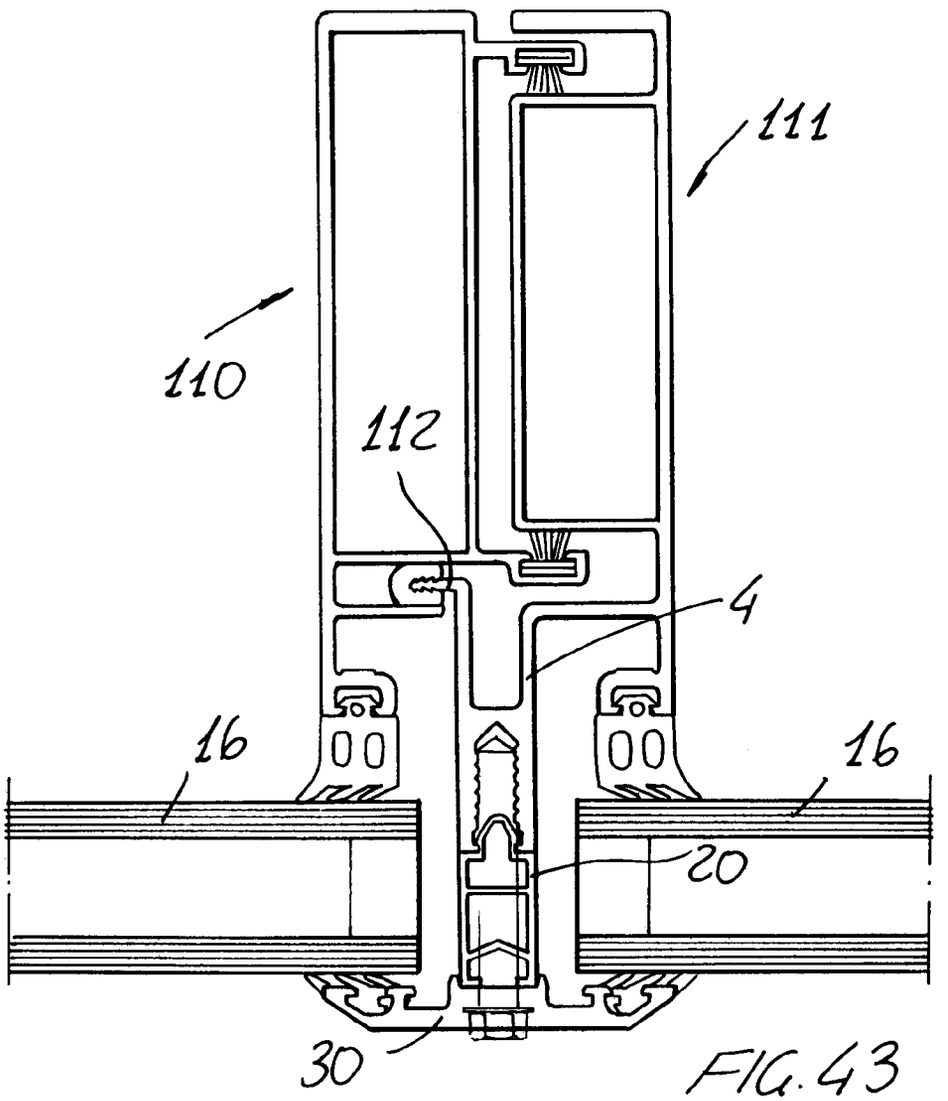


FIG. 43

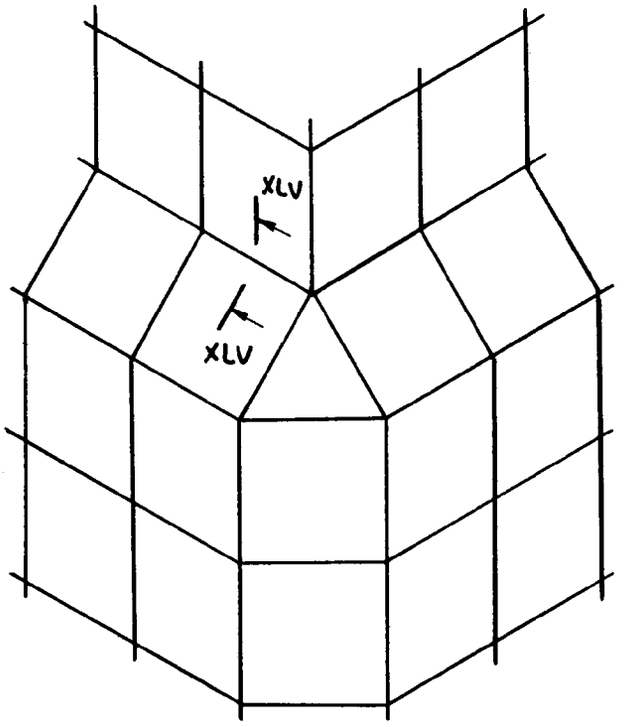


FIG. 44

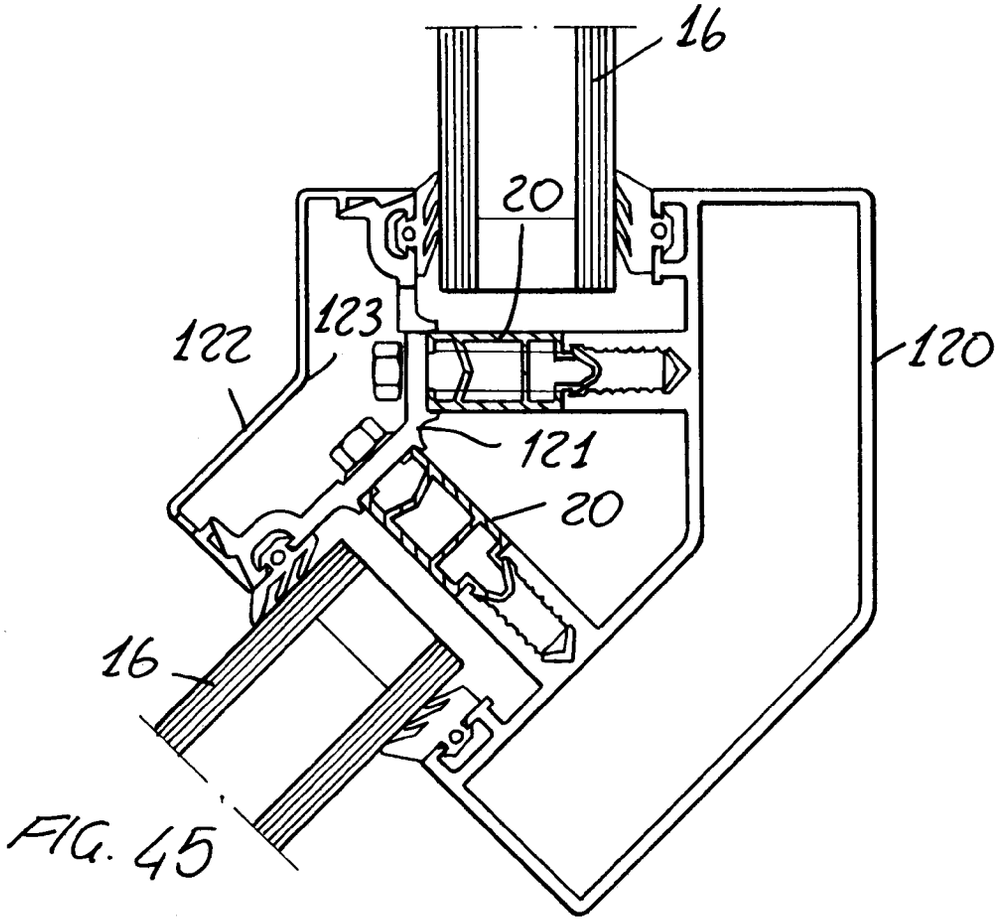


FIG. 45

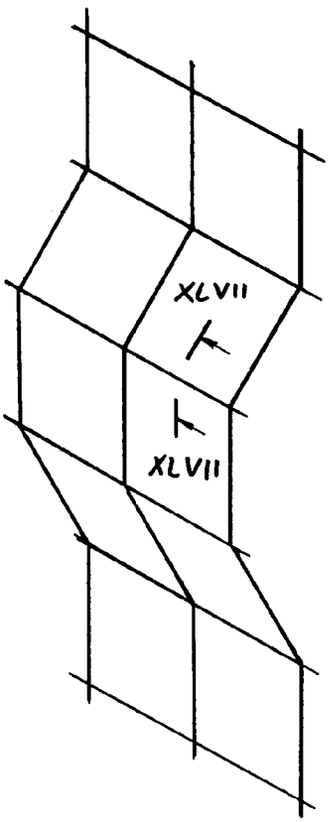


FIG. 46

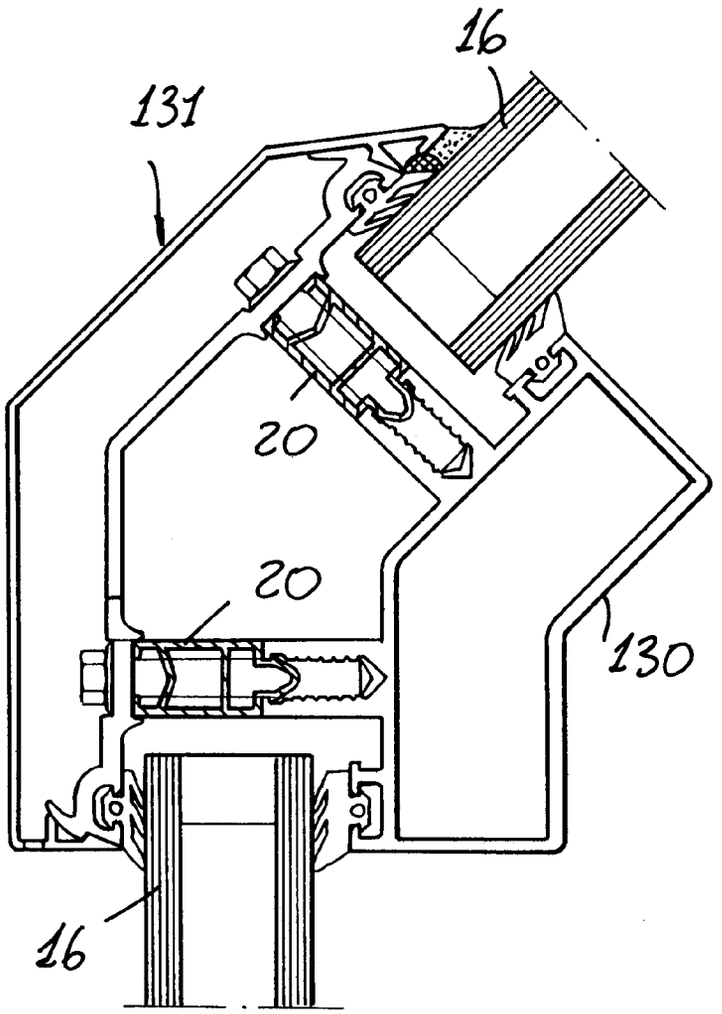


FIG. 47

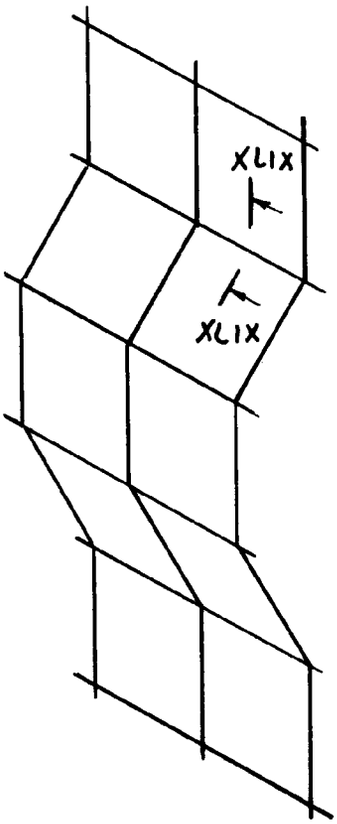


FIG. 48

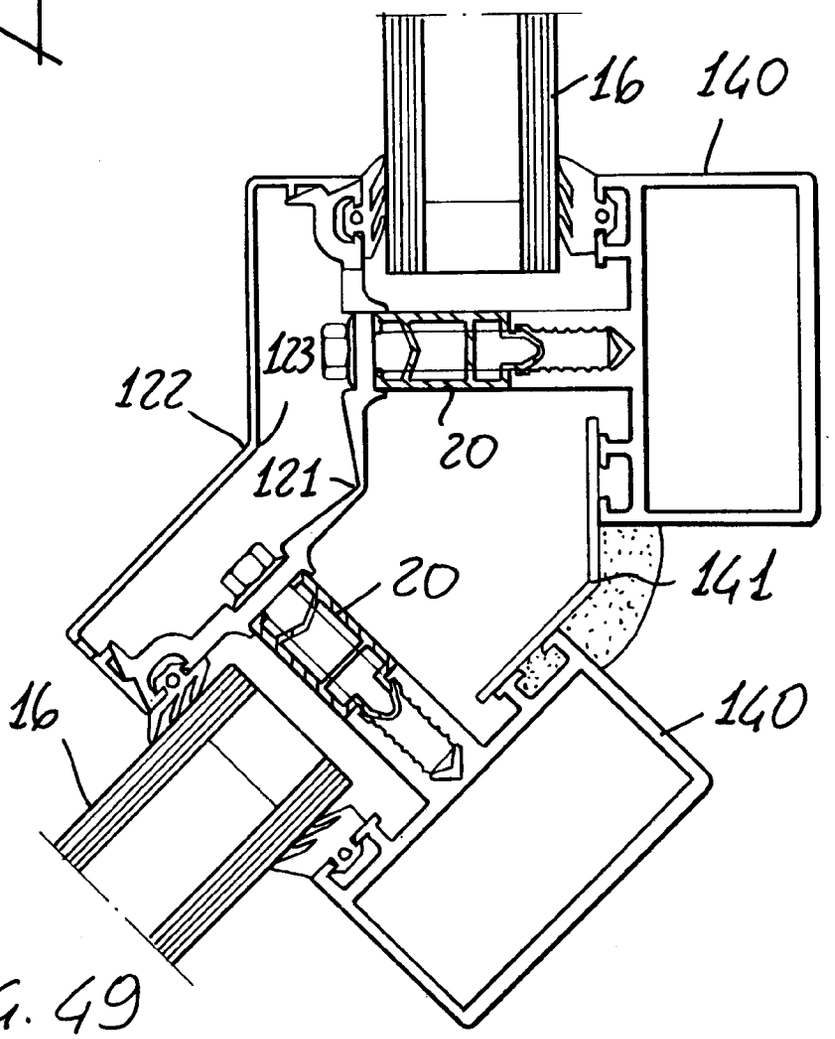


FIG. 49

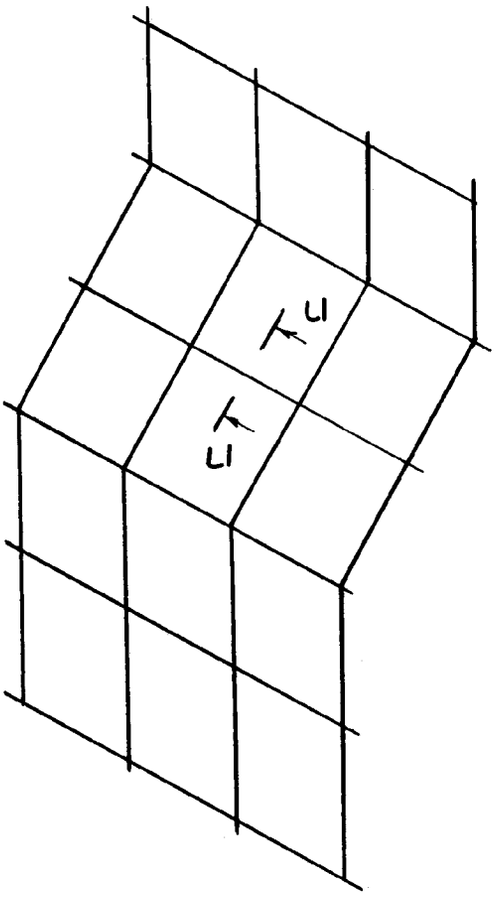


FIG. 50

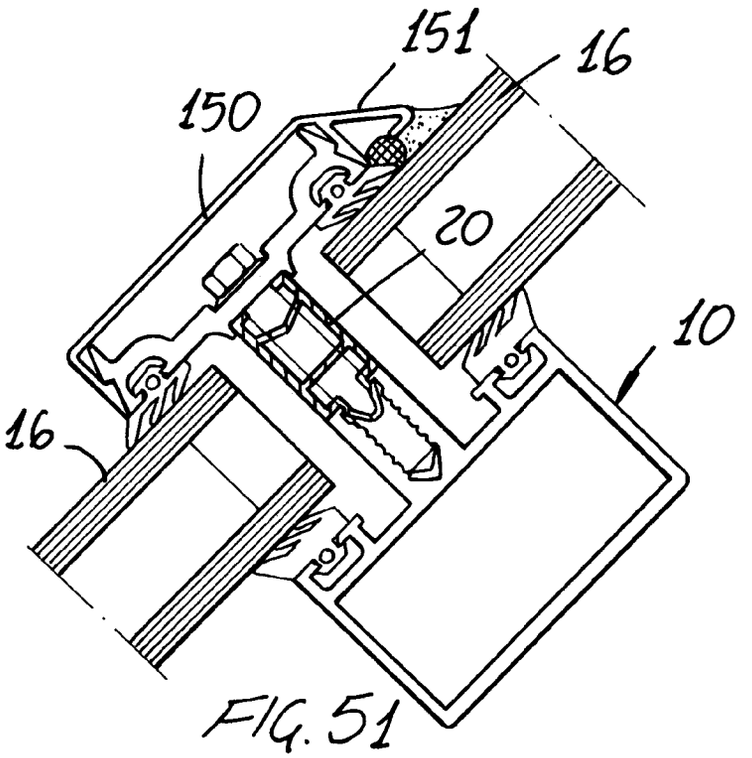


FIG. 51

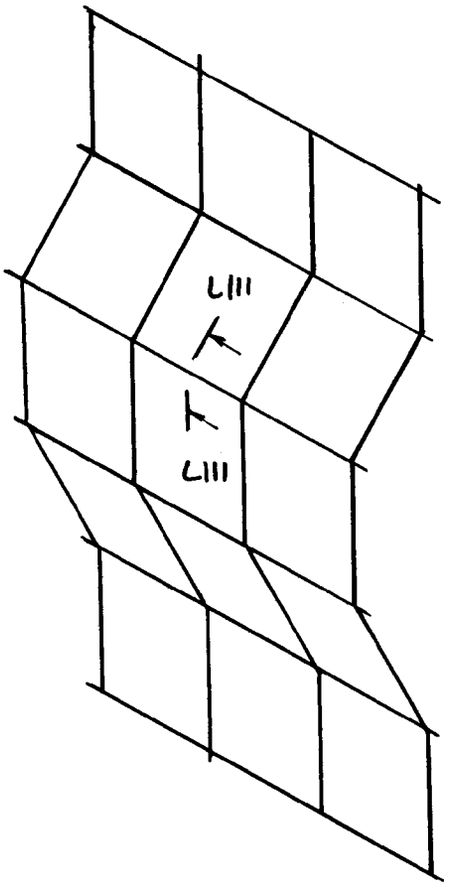


FIG. 52

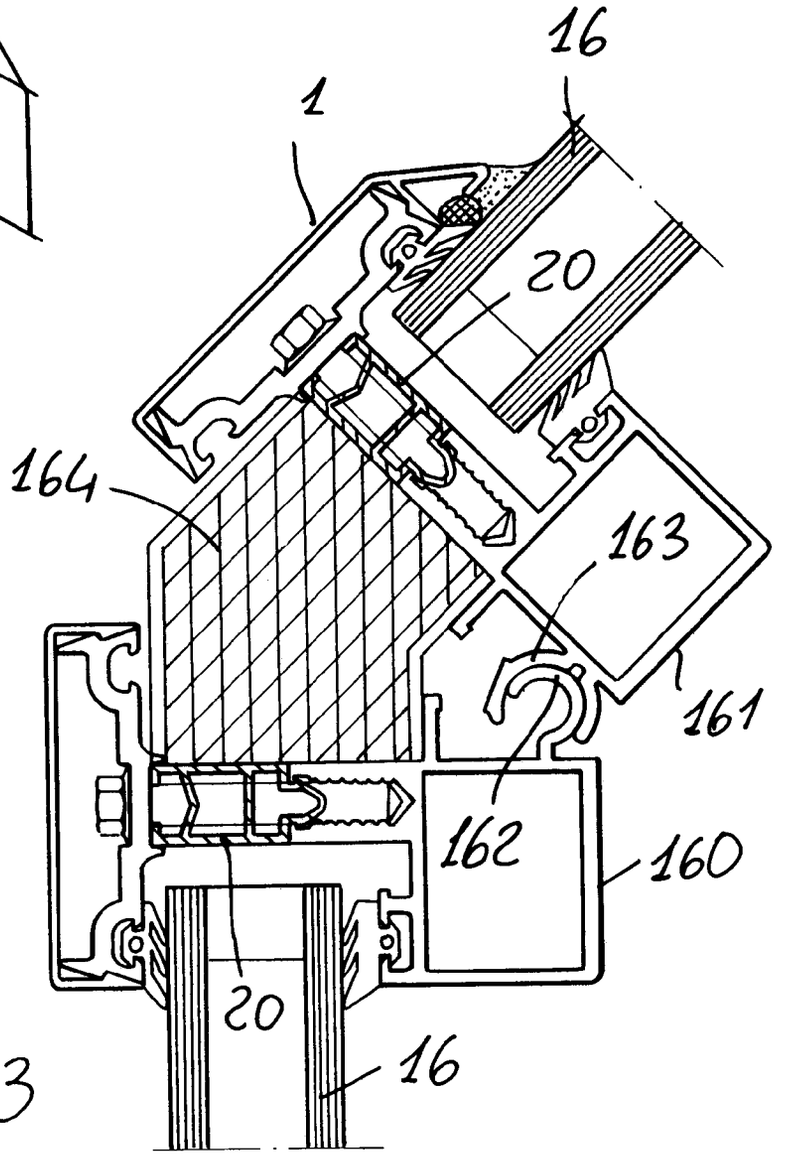


FIG. 53

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0245

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.6)
X	EP-A-0 445 866 (HYDRO ALLUMINIO ORNAGO S.P.A.) * column 2, line 3 - column 4, line 23; figures 4,8,12,14,15 *	1,3,5, 10,11, 14,19	E04B2/96
Y		2,4,6-9, 12,15,18	
A		13,15	
A	DE-A-39 03 117 (OTTO WOLFF KUNSTSTOFFVERTRIEB GMBH) * column 1, line 21 - line 67; figure *	1	
Y	EP-A-0 162 227 (SCHÜCO HEINZ SCHÜRMANN GMBH & CO.) * page 6, line 8 - line 12; figures 2-5 *	2,8	
Y	DE-C-41 24 820 (M. NEU) * column 3, line 27 - line 35; figure 7 *	4	
Y	DE-C-37 42 747 (WICONA-BAUSYSTEME GMBH & CO KG) * the whole document *	6	TECHNICAL FIELDS SEARCHED (Int.Cl.6) E04B
Y	EP-A-0 496 187 (METRA METALLURGICA TRAFILATI ALUMINIO S.P.A.) * column 3, line 22 - column 4, line 46; figures 7,29,30 *	7,9	
Y	US-A-3 858 375 (J. K. SILVERNAIL) * column 2, line 50 - column 4, line 12; figures 2,3 *	12	
Y	EP-A-0 436 868 (REYNOLDS ALUMINIUM DEUTSCHLAND, INTERNATIONALE VERTRIEBSGESELLSCHAFT MBH) * column 9, line 40 - column 13, line 45; figures 11,14 *	15,18	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 November 1994	Delzor, F

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

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