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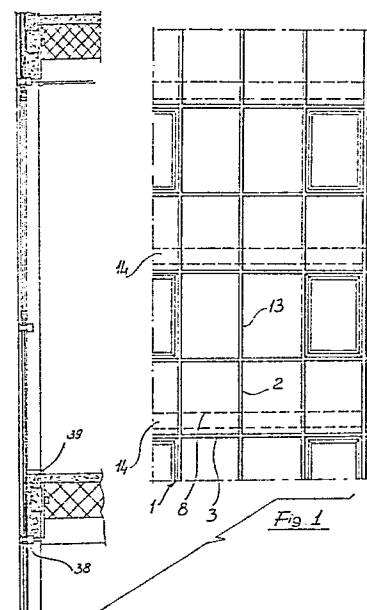
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54 **Continuous front for covering the outside walls of buildings, made of modular section members and having high insulation properties.**

57 The present invention relates to a continuous front or facade for covering the outside surfaces of walls of buildings, which front is made of modular section members and has high insulation properties, wherein the front supporting frame is assembled by intercoupling a plurality of bearing section members, which have a substantially rectangular profile which is provided with a projection projecting from the middle or center line of one of the sides thereof or, in angle section members, from two adjacent sides, in the end portion of which a gasket and coupling means for an outer tight section member can be arranged.

The tightness section member substantially consists of a web having, on the two faces thereof, two further projections symmetrically arranged with respect to the middle line and operating as respective abutments for the projection of the bearing section member, for the gasket and for the coupling means.



Description

CONTINUOUS FRONT FOR COVERING THE OUTSIDE WALLS OF BUILDINGS, MADE OF MODULAR SECTION MEMBERS AND HAVING HIGH INSULATION PROPERTIES

BACKGROUND OF THE INVENTION

The present invention relates to a continuous front or facade, for covering the outside surfaces of buildings in general, which front is made of modular section members and is provided with high insulation properties.

As is known, continuous fronts of buildings, which are generally used for forming the exposed envelope of a building, are presently made starting from metal, plastics and the like materials and are specifically designed for coating, by broad glass surfaces having metal frames, industrial and office use buildings.

Continuous fronts are also used, the so-called structural continuous fronts, in which the metal shaped elements supporting glass panel elements are not exposed to view.

For assembling the above mentioned continuous fronts a great amount of resilient silicone based glue materials must be used and the thus made structural assemblies can not be universally applied to buildings, because of a lacking of operating flexibility.

SUMMARY OF THE INVENTION

Accordingly, the task of the present invention is to overcome the drawbacks above mentioned of conventional fronts, by providing such a front which is provided with a frame the component elements of which can be used in a very flexible way, so as to drastically reduce the construction and storing costs.

Within the scope of the above mentioned task, a main object of the present invention is to provide such a continuous front which can be safely and quickly installed and which, moreover, assures a very high insulation of the covered building.

Another object of the present invention is to provide such a front including a supporting frame which, in addition to compensating the differential expansion movements of metal and glass materials, can be easily and quickly assembled, with a very reduced labour, within the tolerance ranges of the building field.

According to one aspect of the present invention, the above mentioned task and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a continuous front for coating the outside surfaces of walls or buildings in general, said front being made of modular section members and having high insulation properties, characterized in that said front comprises a supporting frame made by assembling a plurality of load bearing section members having a substantially rectangular profile.

These section members are provided, on their profile, with a projection or lug projecting either from

the center line of one of the side of the section members or from two adjacent sides of angle or corner section members, the end portion of said projection or lug being specifically designed for engaging with a gasket member and coupling means for coupling with an outer tightness section member.

Further characteristics and advantages of the invention will become more apparent hereinafter from the following detailed description of some preferred, though not exclusive, embodiments of the continuous front according to the present invention which is illustrated, by way of an indicative but no limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a partial view of the continuous front according to the present invention;

Figure 2 is a vertical cross section view of the continuous front or facade according to the present invention;

Figure 3 is a horizontal cross-section view of the continuous front taken at a panel, at a glass gap or "chamber" and at a window frame;

Figures 4, 5 and 6 are respective cross-sectional views illustrating some exemplary corner upright members;

Figures 7 and 8 schematically show the section members used for making the upright members of the preceding figures;

Figure 9 schematically shows reducing or restraining members arranged between a upright member or cross-member and the tightness section members;

Figure 10 schematically shows the section member used for making a reducing member;

Figures 11 and 12 are respectively a side and front cross-sectional view illustrating joints of sheet metal elements of the top end portion of the subject continuous front;

Figure 13 is a side cross-sectional view illustrating a variation of the joint of the end elements of the front;

Figures 14 and 15 show the section members used for making the mentioned joint;

Figure 16 is a cross-sectional view illustrating a top and/or side end portion for inner panels, taken at a sill level;

Figure 17 shows the section member for making the end portion of figure 16;

Figure 18 is a cross-sectional view illustrating a flush covering element for the middle joints of the sill covering inner panels;

Figure 19 shows the section member used for making the above flush covering element;

figure 20 is a cross-sectional view illustrating a combination section member;

Figures 21 and 22 show the component elements of the combination section member;

Figure 23 schematically shows an interposed element;

Figures 24 and 25 show section members

which can be used both as upright members and as cross-members;

Figure 26 show a section member generally used as a cross-member;

Figures 27,28,29,30 and 31 show several types of tightness section members;

Figure 32 shows the procedure for applying a replacement gasket and a snap flush covering element;

Figures 33 to 38 show the section members used as wire covering elements for several types of different configuration fronts;

figure 39 show a perimetrical restraining frame;

Figure 40 shows a section member to be used for forming panels with glass outside and sheet metal inside;

Figure 41 shows a possible coupling of two upright members of cross-members, arranged mutually at an angle;

and

Figures 42 and 43 show the section members used for performing the above coupling;

Figure 44 shows a section member to be used for forming withdrawable wings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, a continuous front according to the present invention is provided with a supporting or bearing frame 1, made by assembling a plurality of load bearing section members, comprising upright members 2 and cross-members 3, tightness members 4 and flush covering members 5, comprising a modular constructional arrangement.

The upright members 2 and cross-members 3, on the inside side, and the tightness section members 4, on the outside side of the front, are formed with seats 6 for housing gaskets 7, made of a rubber or plastics special material, which, as they are engaged with panels 8, glass gaps 9, glass plates 10 and board 11, either individual or mutually associated, as well as with movable window frames, will provide a high thermal and acoustic insulation.

Further gaskets 13 are provided which, in cooperation with sealing materials, will provide the front with air and water tightness properties.

The subject section members are used depending on the configurations-flat, concave or convex angle-assumed by the structure 14 to be covered or its projecting portions and comprise elements which can be indifferently used as cross-member 15 or corner members 16, or as a restraining perimetrical frame 17, or as joints 18 between the sheet metal elements 19 forming the end portion of the continuous front.

The modular section member arrangement further comprises section members 20 which can be used as top and/or side end portion for internal panels 21, at a sill level; as flush covering elements 22 for covering the joint region of the panels 21; as section members 23 for forming special panels 24, with outside glass element 25 and inner steel or alumi-

nium sheet element 26 which provide coupling 27 of two upright element 2 or two cross-members 3, which are arranged with an adjoining relationship with angles from 20° to 60°.

5 The upright members 2 and cross-members 3 have their load bearing structural portions arranged inside the plates 10 or panels 11, in order to conceal them to view; in a like manner is arranged the movable frame 12, for making withdrawable wings 10 28, so as to form a continuous structural front.

In the openings defined by the supporting aluminium frame 1, glass "chambers" can be engaged, indicated at 9, as well as glass plates 10 and panels or boards 11, of different thicknesses, the perfect leveling of which is assured by suitable gaskets and space reducing section members 29, between the upright member 2, or the cross member 3, and the tightness section member 4.

Some section members 30 of the subject modular section member arrangement consist of the assembled combination of two fitting or mating component elements, which are assembled with the interposition of a further intermediate element 31, for fitting the combination section member to the glass plate 10 25 movements, due to temperature and load variations.

The tightness section members 4 are provided with double T-shaped legs 32 defining engaging seats 33 in which there are snap engaged the flush covering section members 5, provided in turn with corresponding coupling means and abutment legs 30 34 and of different shapes depending on the application type, such as on a flat front, at a corner region or as projections.

The tightness section members 4 are mounted by means of threaded means 35 in seats defined on elements 36 projecting from the outer sides of upright members 2 and cross-members 3 and operate to pressure hold the glass plates 10, panels 11 and frames 12 applied to the continuous front.

40 Instead of the section members 5 rubber or plastics material gaskets 37 providing the same function can be used.

With reference to figure 1, at 38 there is shown the coupling, by adjustable brackets, to the building bearing structure 39.

45 In figure 2 there are shown: a cross-member 3 made by using a section member 40, and used generally as a cross-member proper, in particular cases as a upright member; the tightness section member 4 made by using the section member 41; the flush covering section 5, made by using the section member 42; at 43 there being shown a further section member adapted to operate as a flush covering section member 5.

55 Figures 4, 5 and 6 show: corner upright members 16, made by using section members 44 and 45; a flush covering section member 5, made by using section members 46 and 47, a tightness section member 4, made by using the section member 48.

60 Figures 13, 14 and 15 show the joints 18 between the sheet metal members 19, made by using the section members 49 and 50.

65 Figures 20, 21, 22 and 23 show the section members 30 formed by the combination of the members 51 and 52 with the interposition of the member 31

having a substantially double T shaped profile, provided with lugs on the legs in order to facilitate the assembling procedure.

Figures 24 and 25 show the section members 53 and 54 used, indifferently, as upright members and as cross-members. Figure 26 shows the cross-member 55.

Figures from 27 to 31 show the section members 41, 56, 57, 58 and 59 which form the tightness members 4.

Figures 33 to 38 show the flush covering members 5, made respectively by using the section members 60, 61, 62, 47, 63 and 46.

Figures 41, 42 and 43 show the section members 64 and 65 which are used for forming the joints 27 between two upright members 2 or two cross-members 3.

Figure 44 shows the section member 66, which has been specifically designed for making withdrawing wings 28, that is wings the movable frame 12 of which is rather concealed to view from outside of the front or facade.

While preferred embodiments of the invention have been illustrated and disclosed, it should be apparent that the disclosed embodiments are susceptible to several modifications and variations all of which will come within the scope and spirit of the appended claims.

Claims

1- A continuous front or facade for covering the outside surfaces of buildings, said front being made of modular section members and having high insulation properties, characterized in that it comprises a load bearing frame made by assembling a plurality of load bearing section members, said load bearing section members having a substantially rectangular profile which is provided with a projection, projecting from the center line of one of the sides of the section members or, in the corner section members, from two adjoining sides, the end portion of said projection being provided for engaging with a thermal gasket and coupling means for coupling with a tightness outside section member.

2- A continuous front or facade according to the preceding claim, characterized in that said tightness section member essentially consists of a web, provided, on the two faces thereof, with two projections arranged symmetrically with respect to the center line and operating as abutments respectively for the projection of said profile, for said gasket and for said outside coupling means.

3- A continuous front according to one of the preceding claims, characterized in that said tightness gasket is provided, at the end portions thereof, with double T-shaped legs, defining seat for housing gaskets which are adapted to abut respectively against the bottom and top por-

tions of panels or glass plates laying adjoining in the continuous front, on the opposite sides of said projection.

4- A continuous front, according to one or more of the preceding claims, characterized in that said tightness gasket is snap engaged by a flush covering section member, having a substantially C-shaped profile and the legs of which are provided toward the inside with two symmetrically arranged projections operating as an abutment for one of the double T legs of said tightness section member and with two end lugs engaging in snap coupling seats formed on the outside of said double T legs.

5- A continuous front according to one or more of the preceding claims, characterized in that the profile of said load bearing section members is provided, in the inside, with two projecting lugs projecting from opposite sides and defining seats for housing gaskets which are mirror-like symmetry applied with respect to the projections of said tightness section member, and with respect to the glass plate or panel thereon said gaskets abut.

6- A continuous front according to one or more of the preceding claims, characterized in that said gaskets, made of rubber or the like plastics material, are housed in the symmetrically opposite seats of said double T legs of said load bearing section member and said tightness section member, in abutment relationship with said glass plates, panels and the like.

7- A continuous front according to one or more of the preceding claims, characterized in that said flush covering section member has a C-shaped profile with a projecting lug, aligned with the offset, formed by said continuous front at a recess or a corner thereof.

8- A continuous front, according to one or more of the preceding claims, characterized in that there are further provided leveling gaskets and space reducing section members, with C-shaped profile, having seats formed on their bottom leg, in the upwardly bent adjacent edge.

9- A continuous front, according to one or more of the preceding claims, characterized in that it comprises combination section members consisting of two assembled component elements, and an interposed further element, having a double T shaped profile, provided with lugs on its legs, and being adapted to compensate possible movements induced by temperature variations.

10- A continuous front, according to one or more of the preceding claims, and substantially as disclosed and illustrated for the intended task and objects.

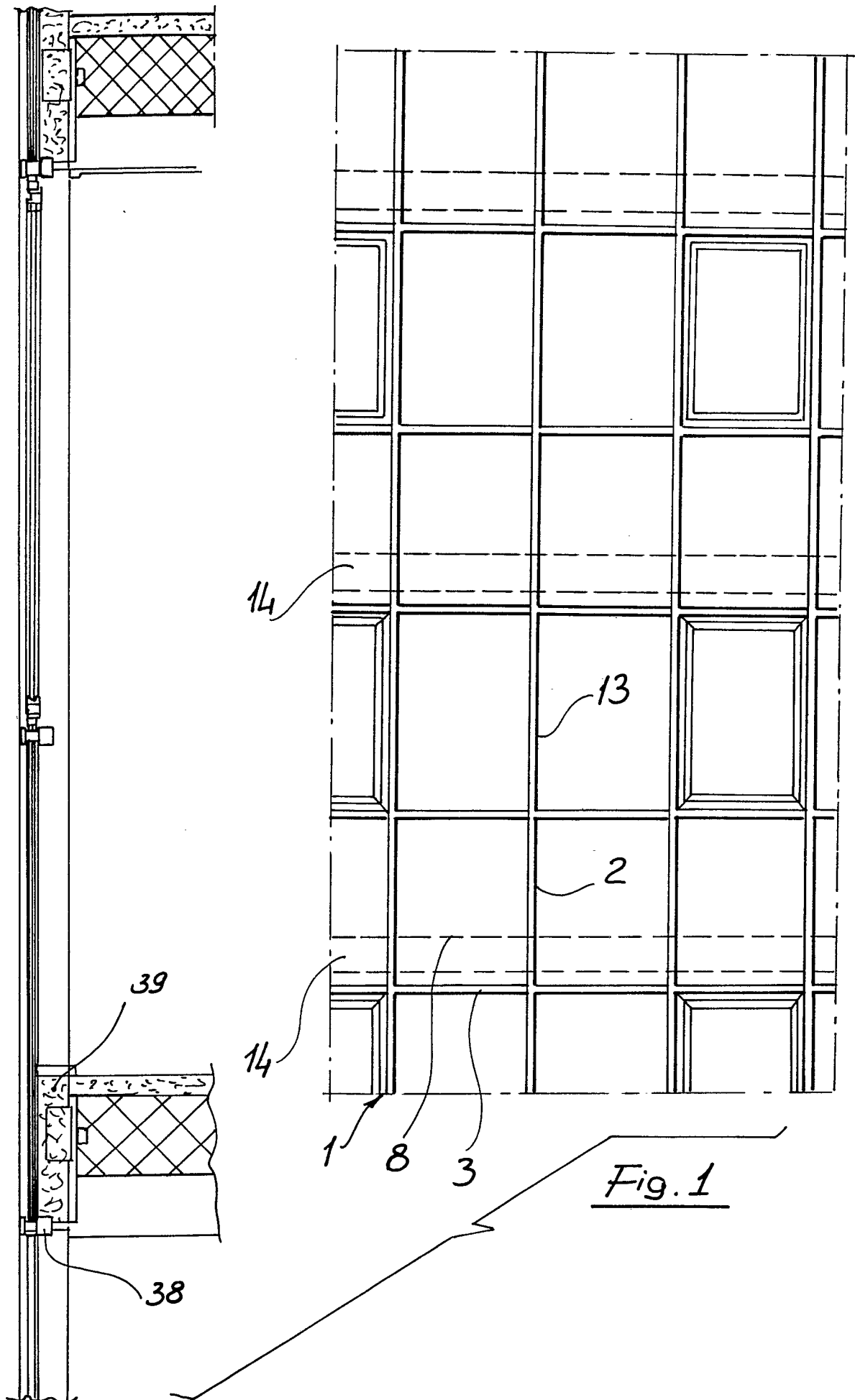


Fig. 2

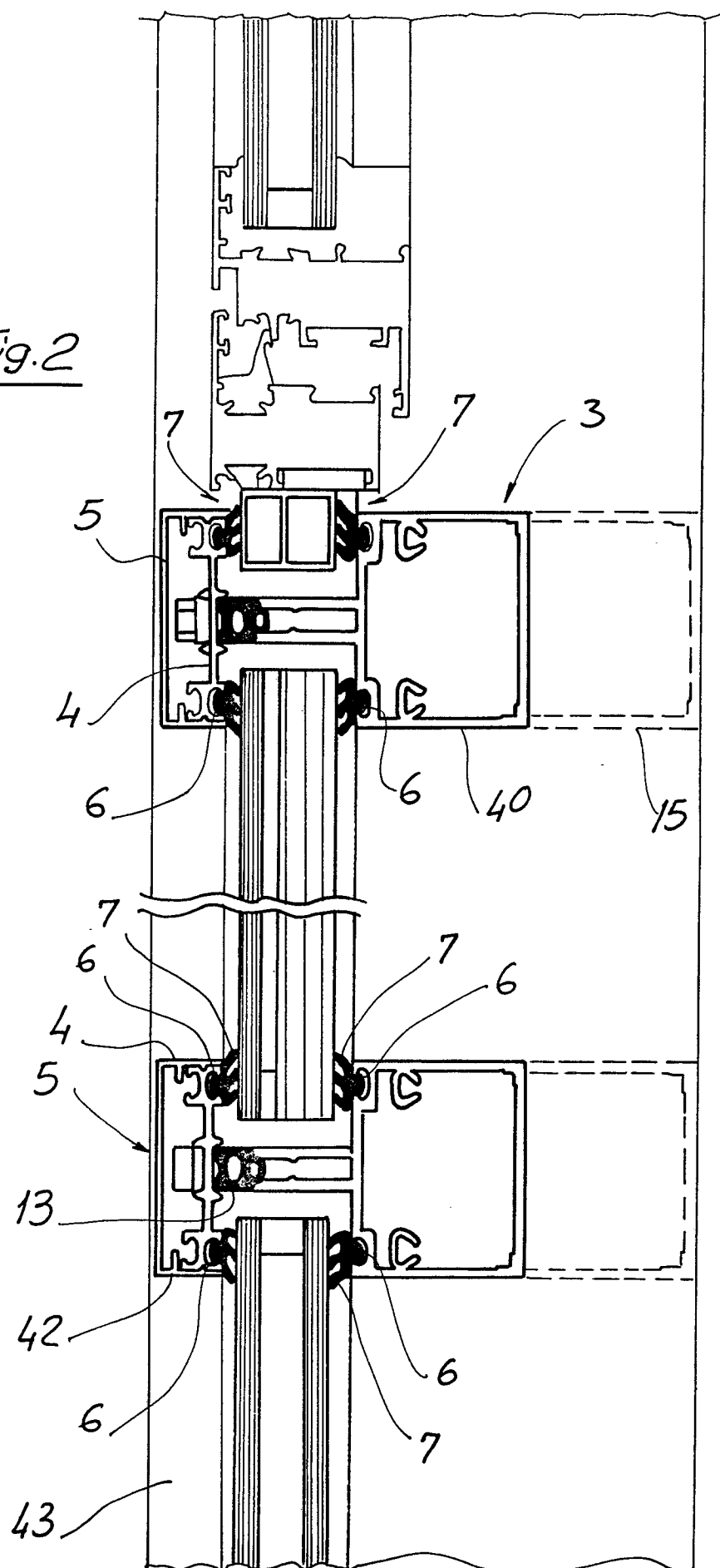
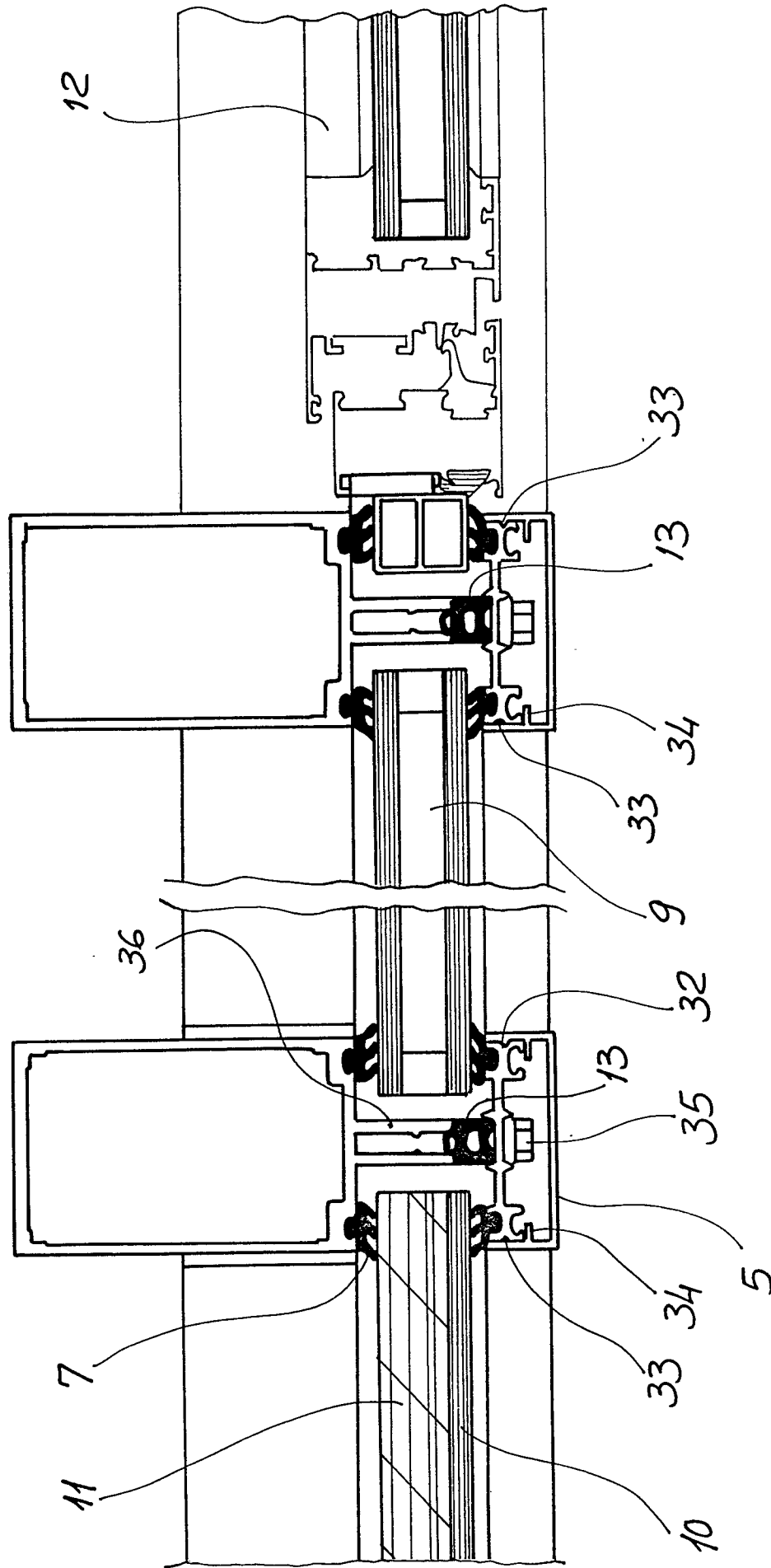
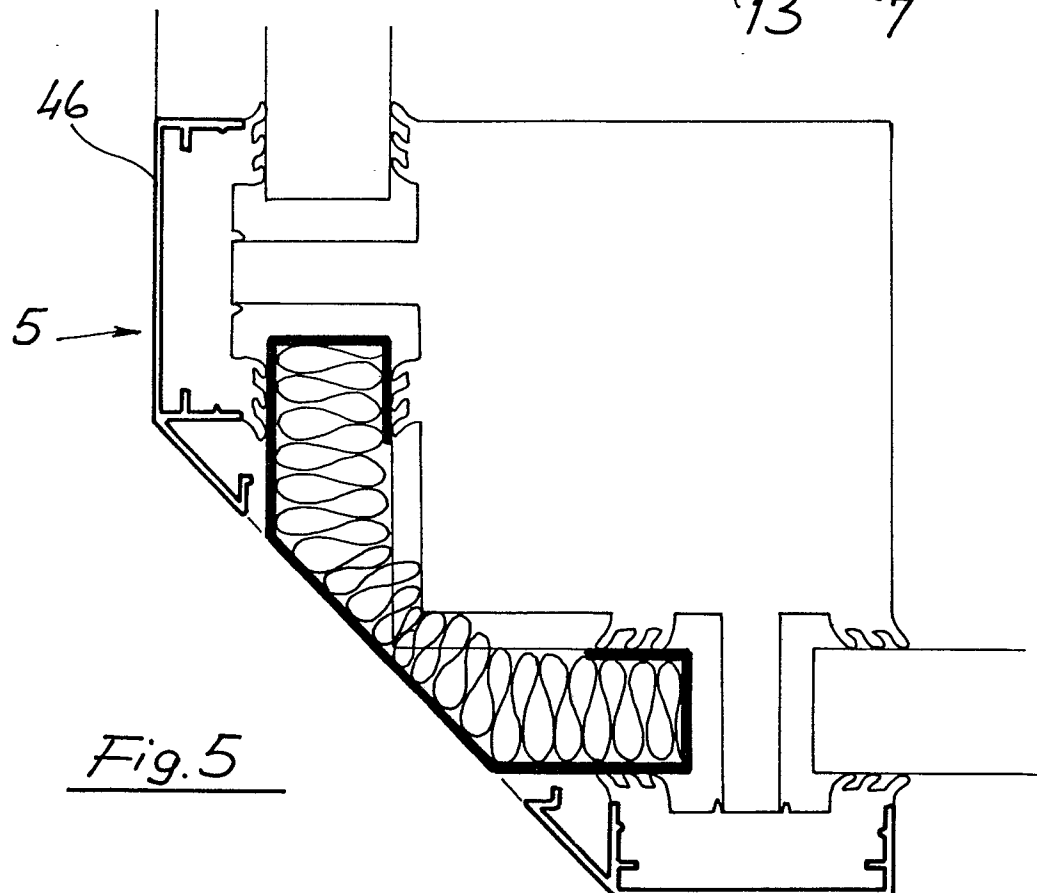
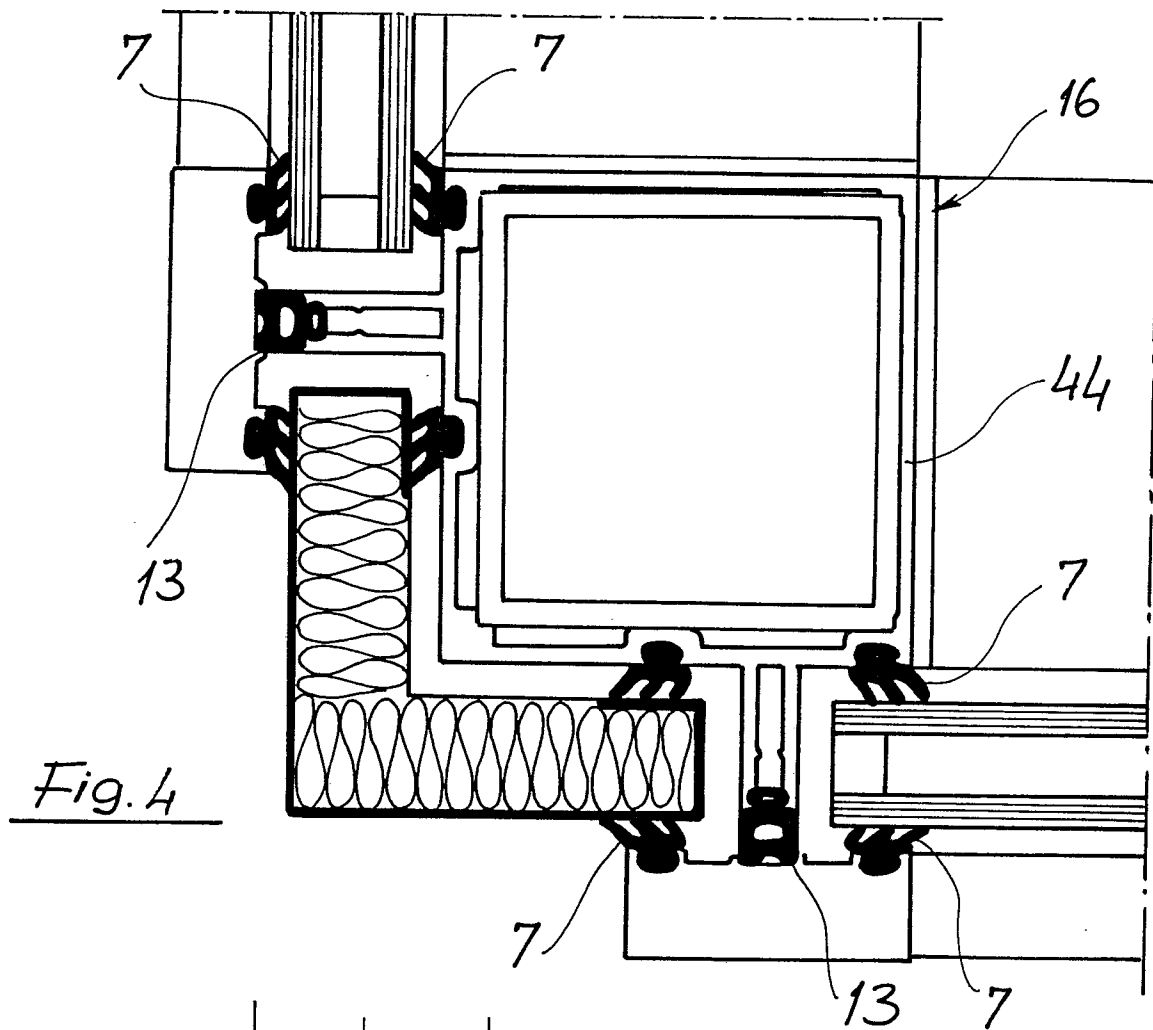
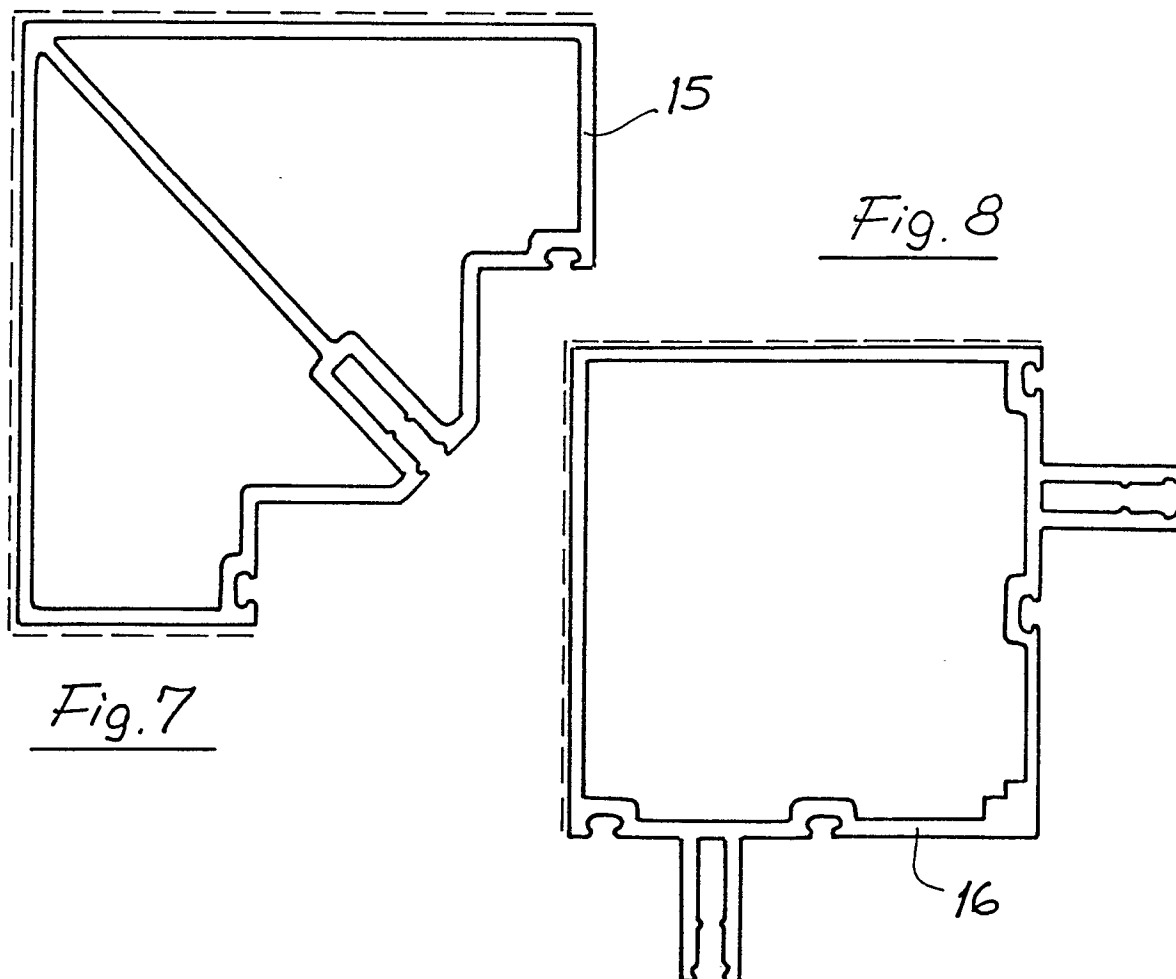
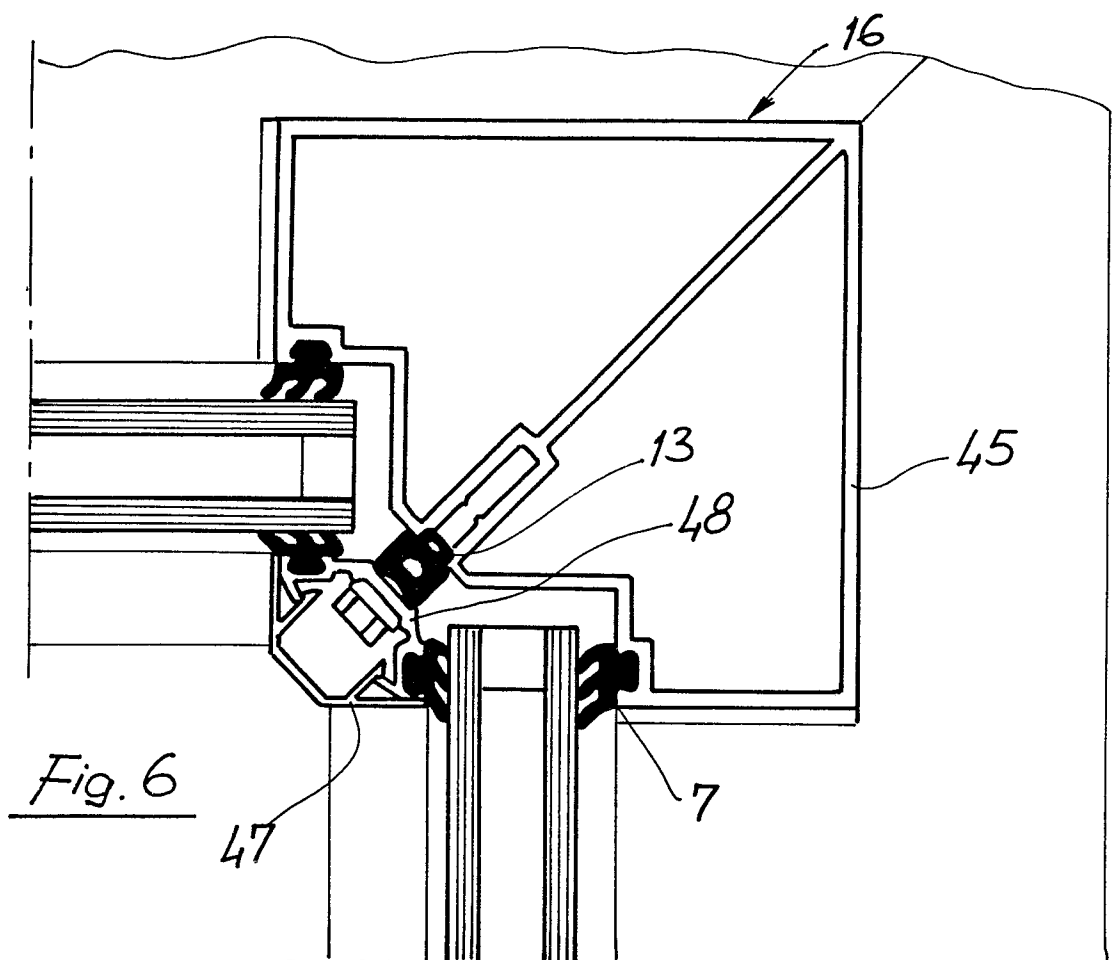


Fig. 3







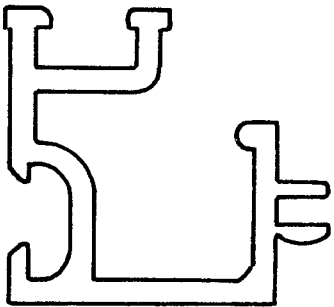
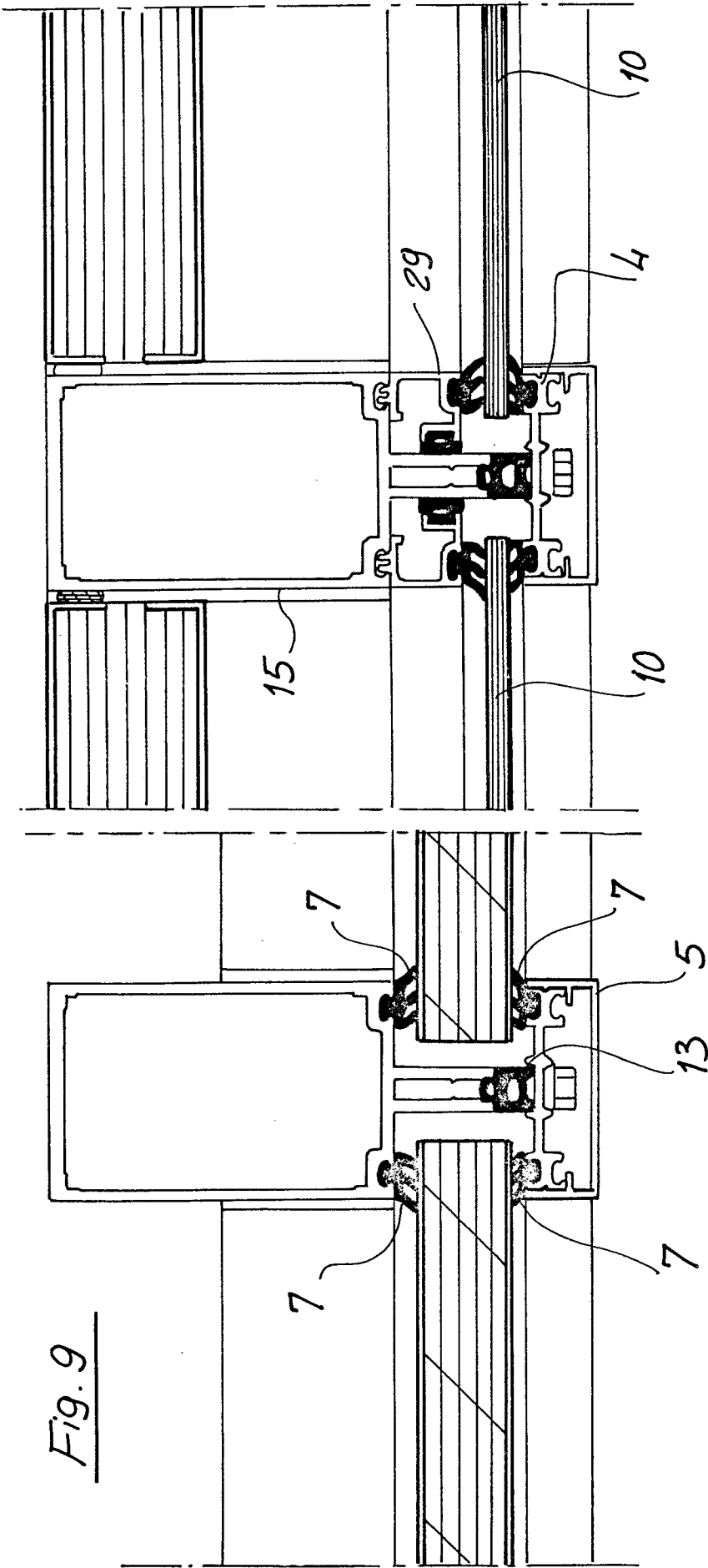


Fig.11

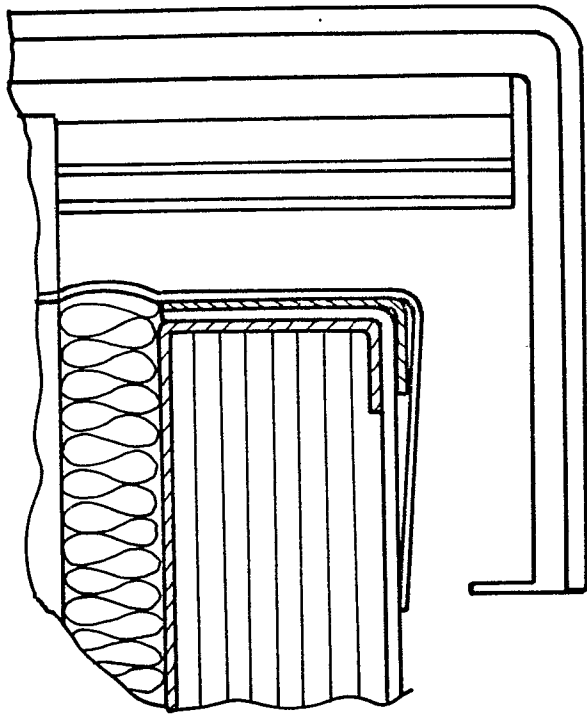


Fig.12

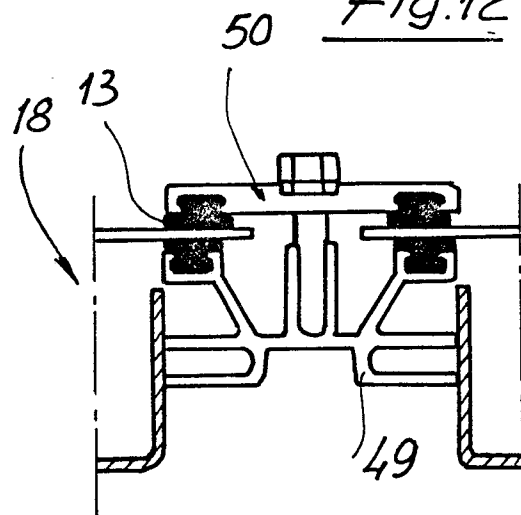


Fig.13

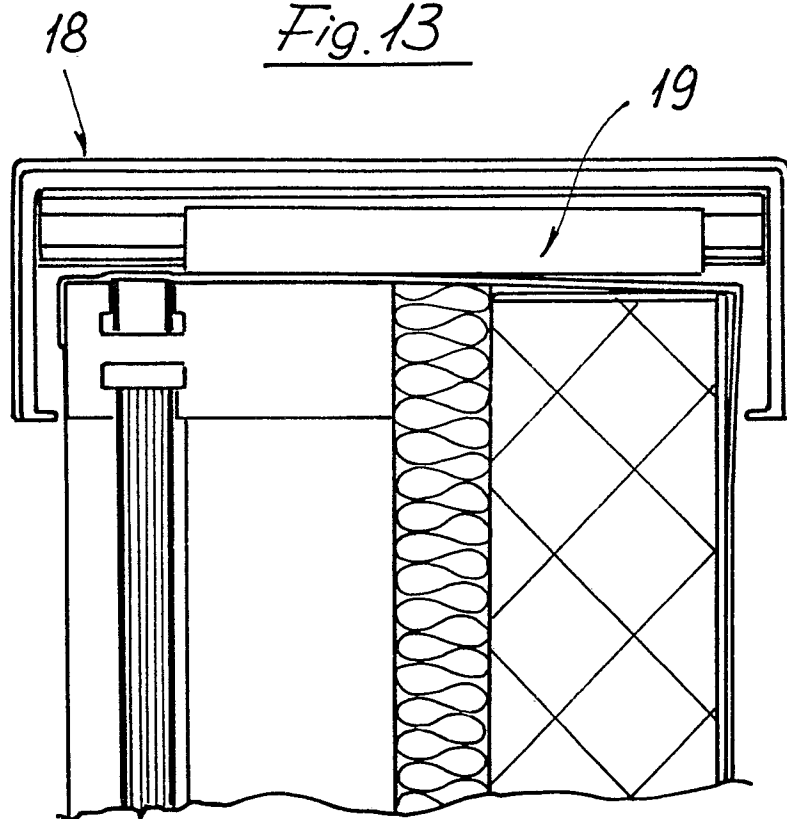


Fig. 14

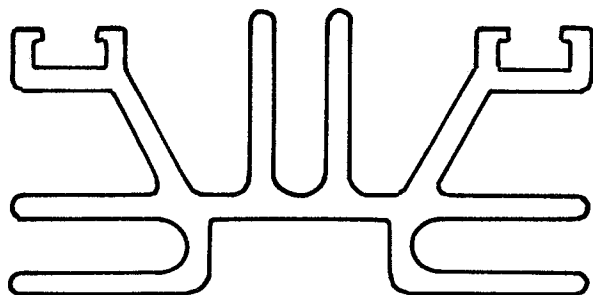
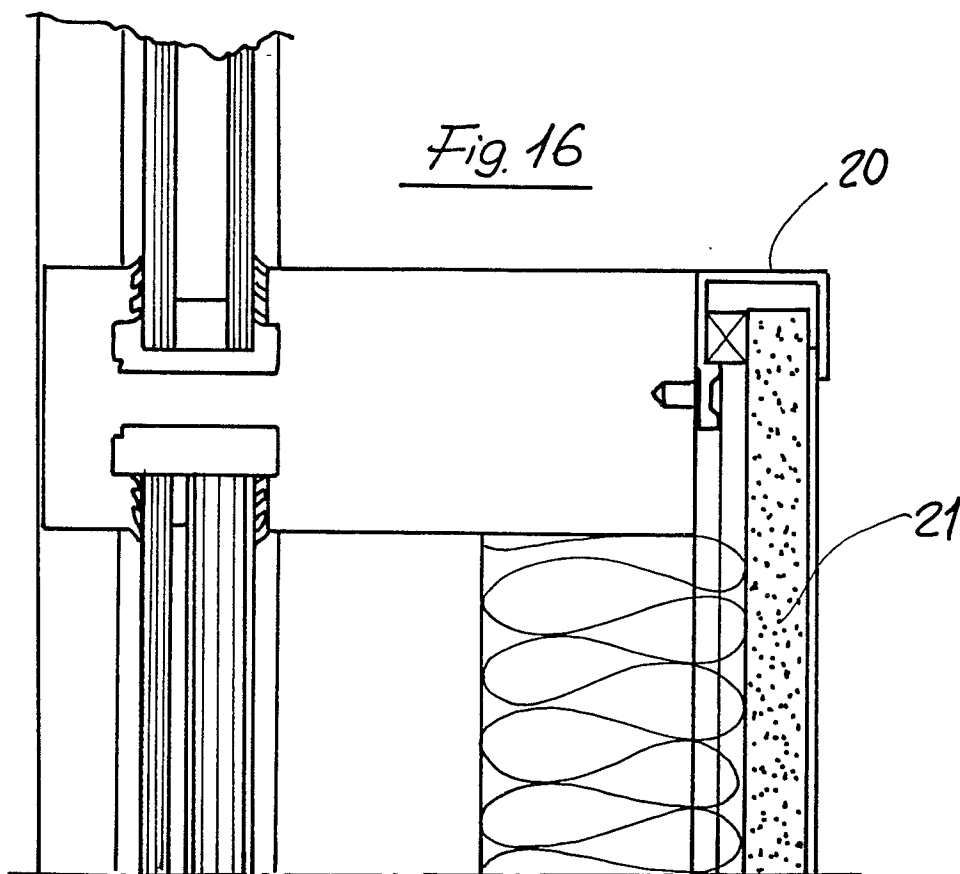


Fig. 15



Fig. 16



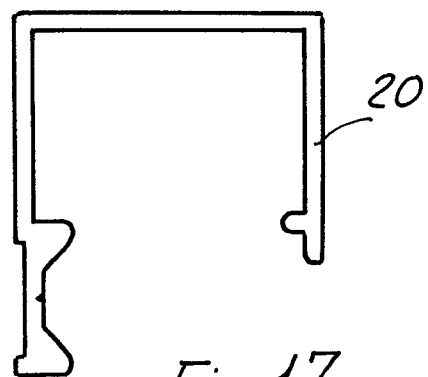


Fig. 17

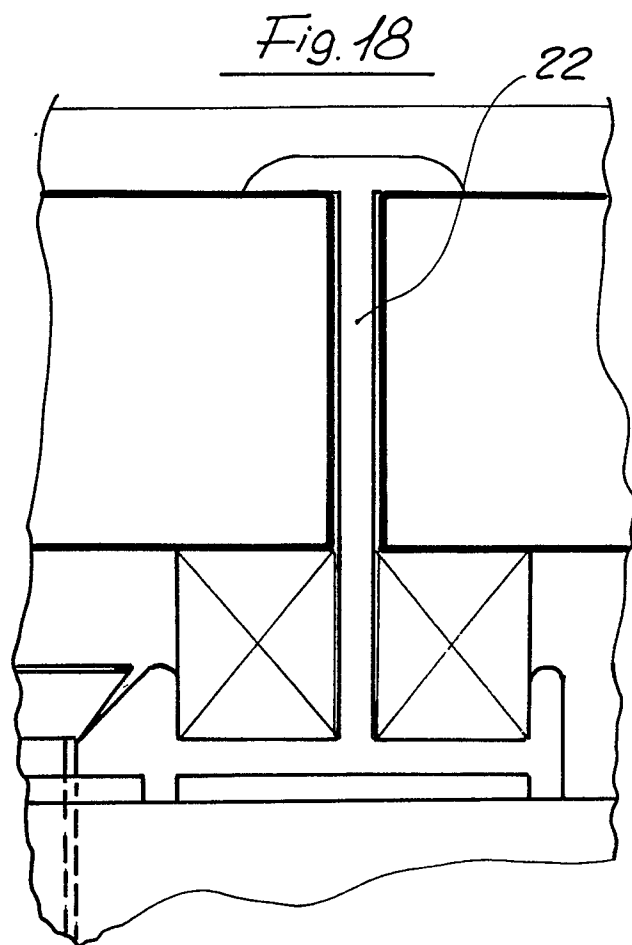


Fig. 18

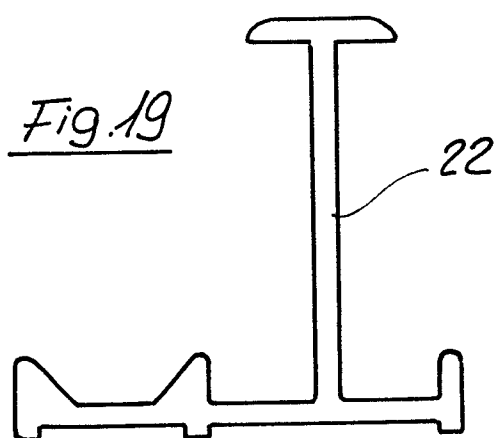


Fig. 19

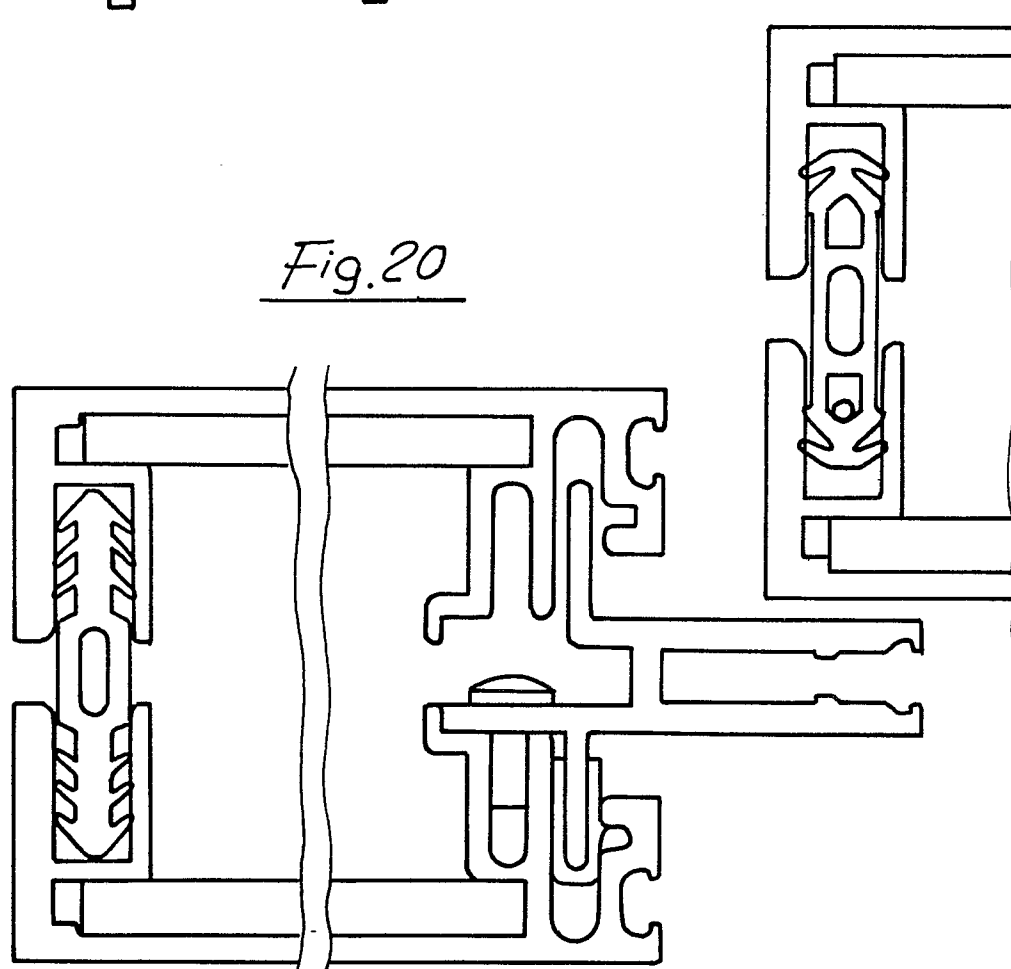


Fig. 20

Fig.21

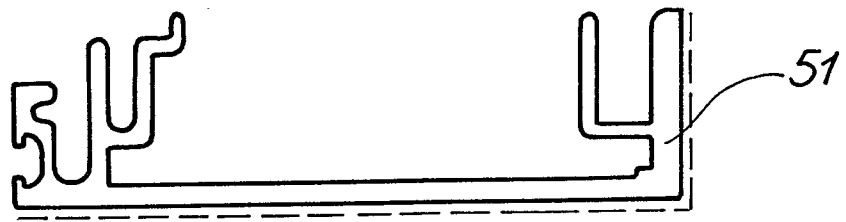


Fig.22

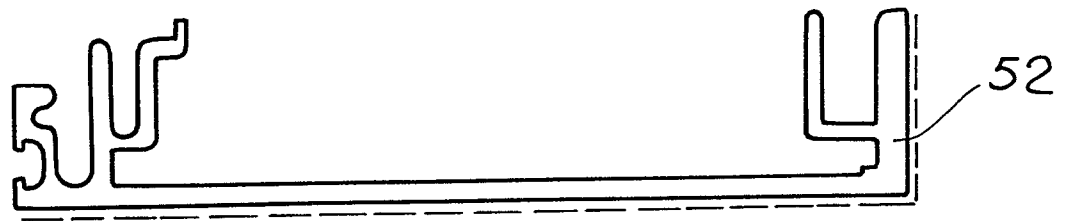


Fig.23

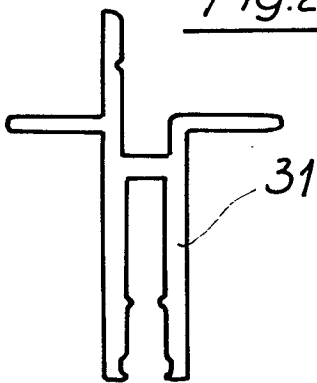


Fig.24

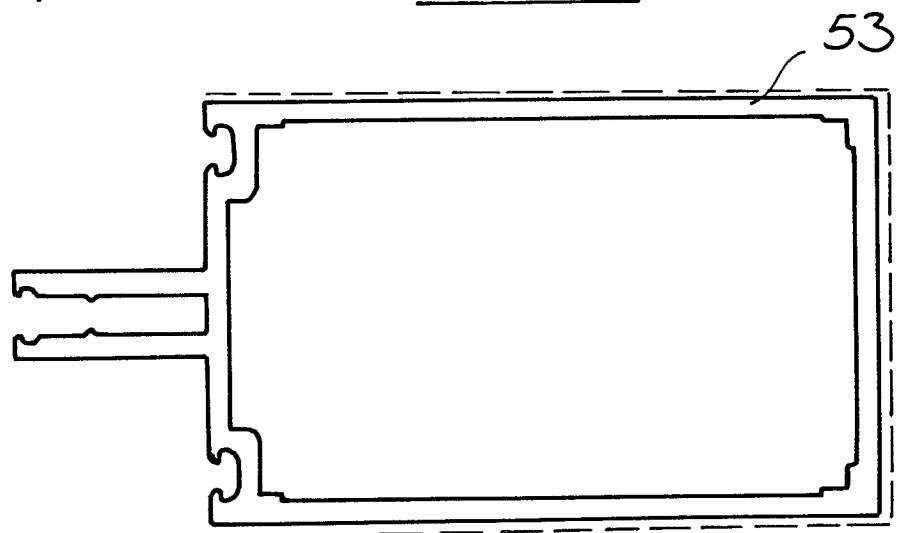


Fig.25

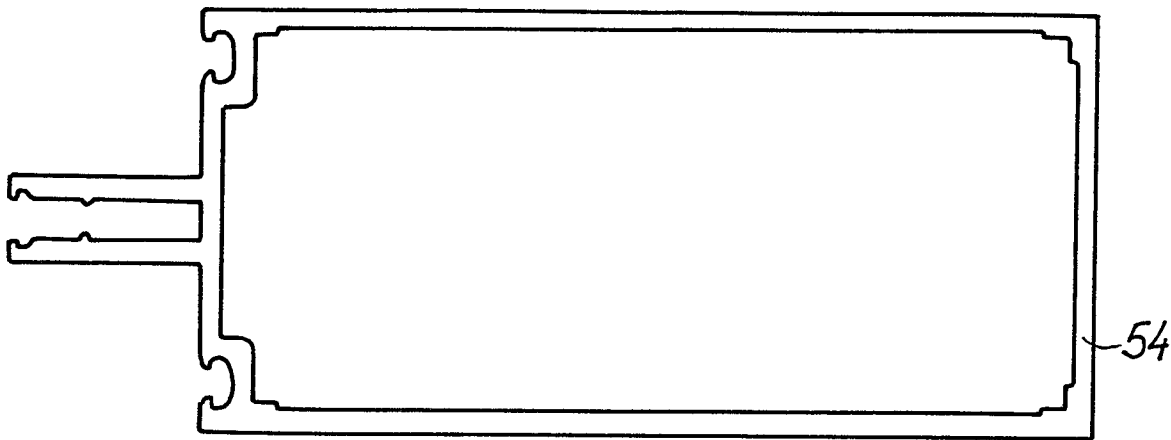


Fig.26

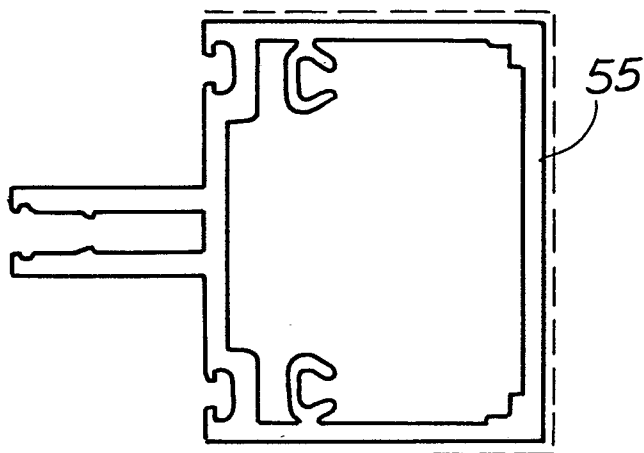


Fig.27

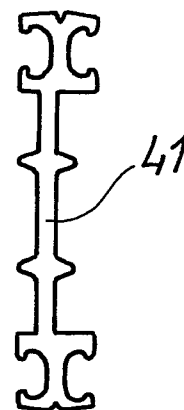


Fig.28

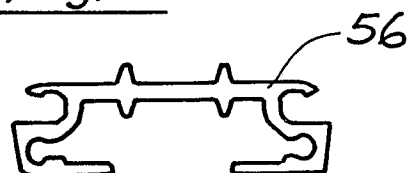
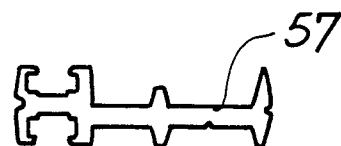
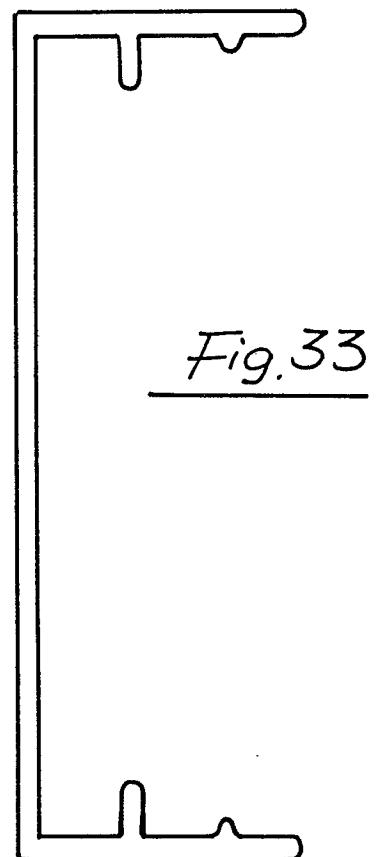
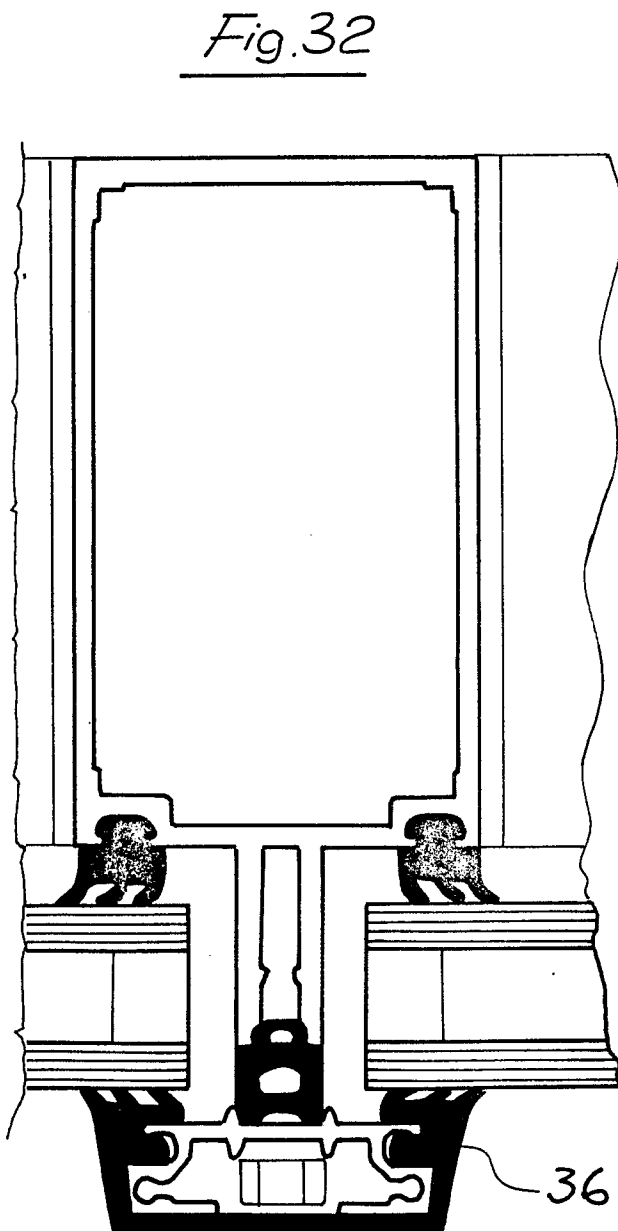
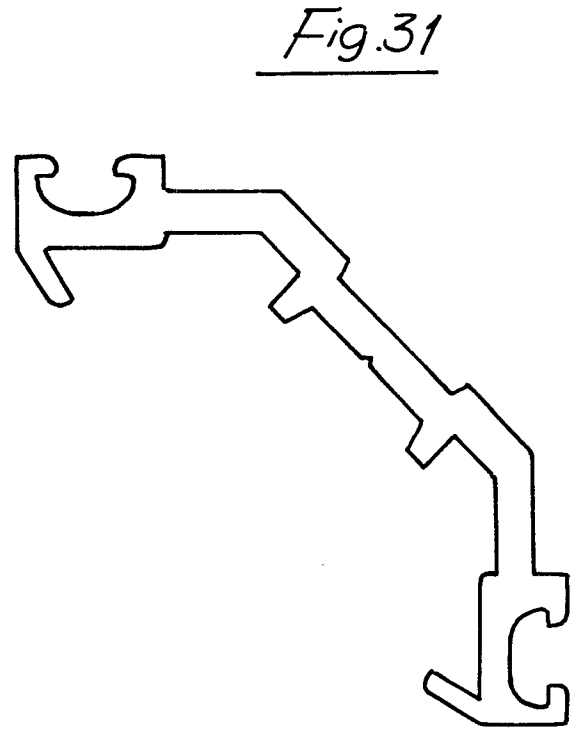
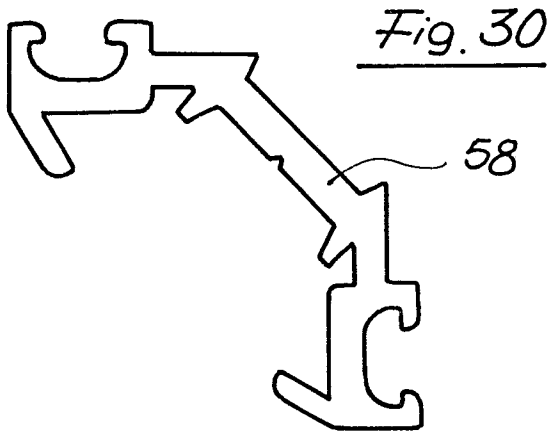


Fig.29





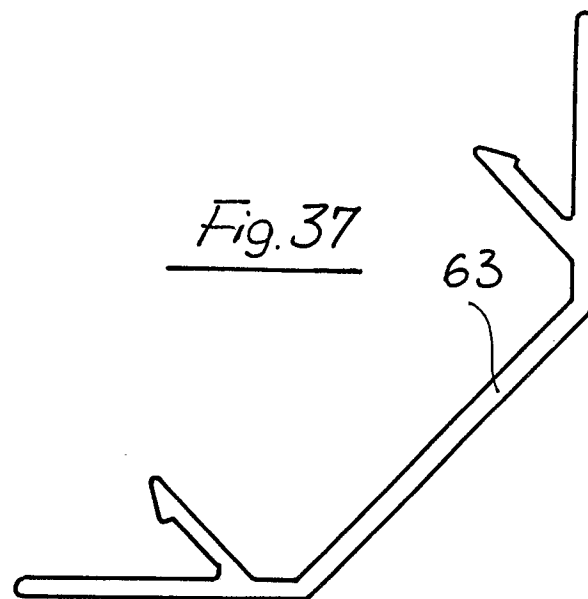
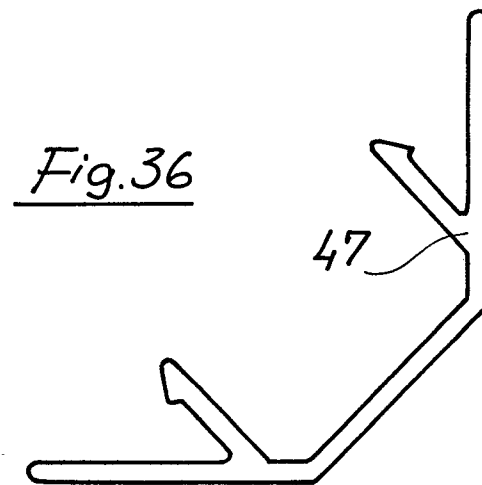
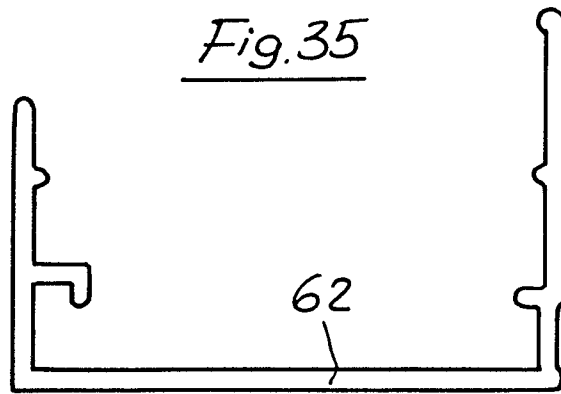
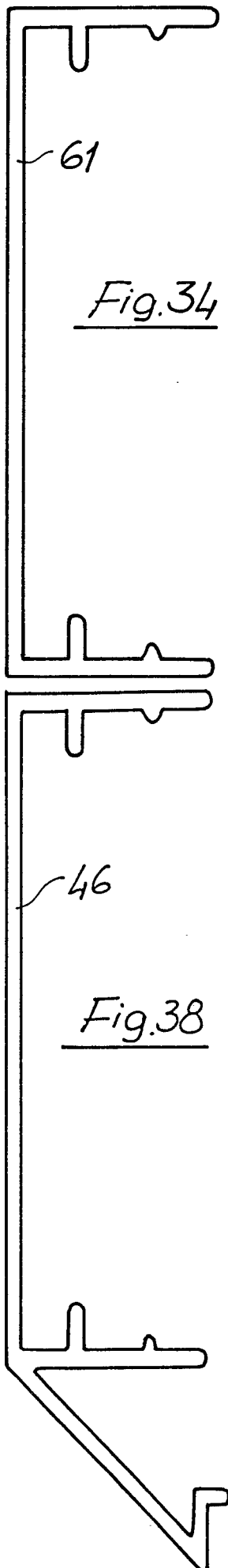


Fig.39

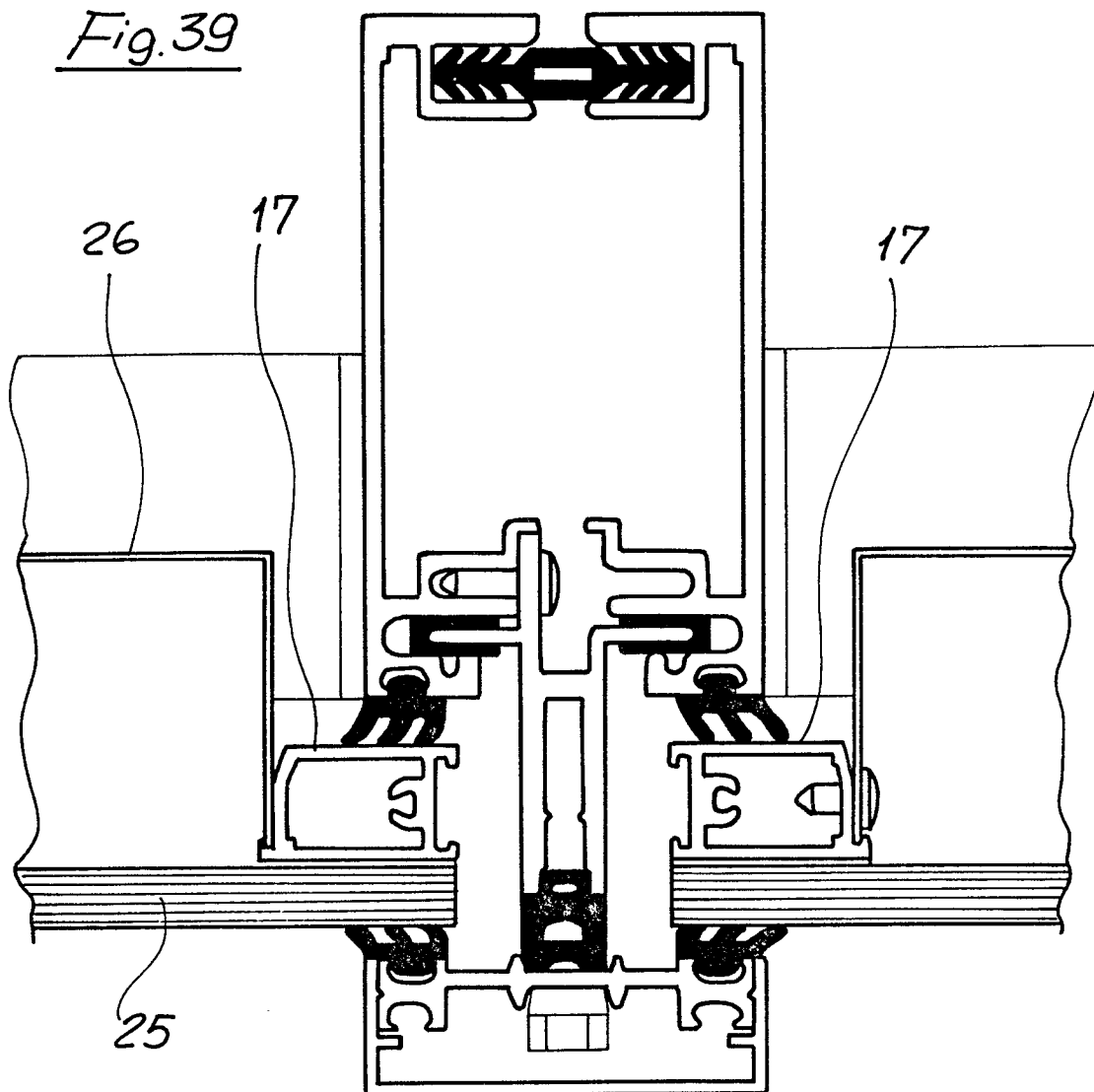
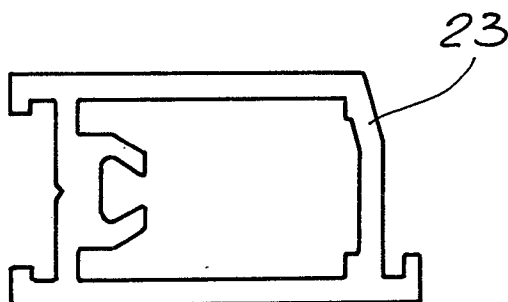


Fig.40



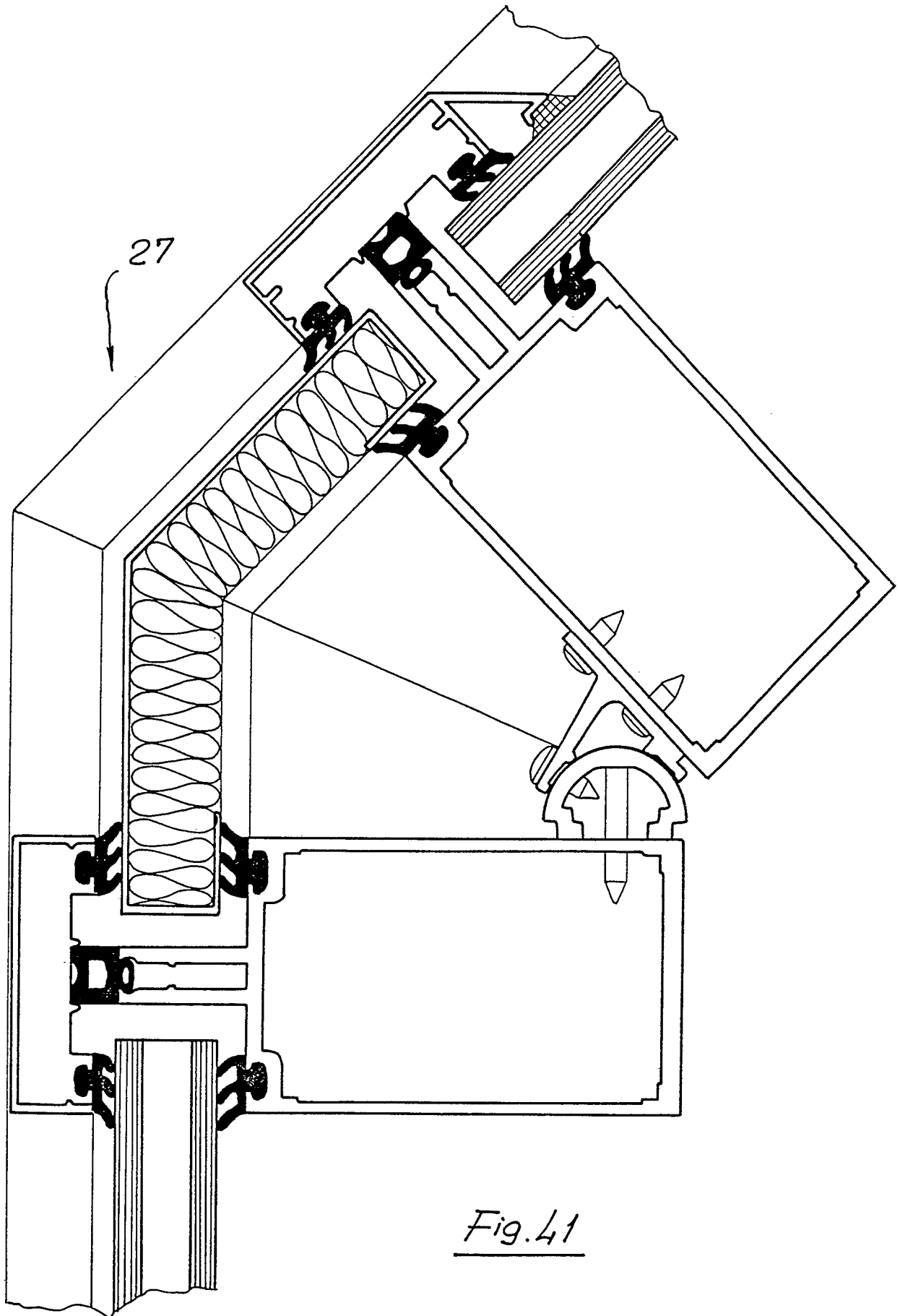


Fig. 41

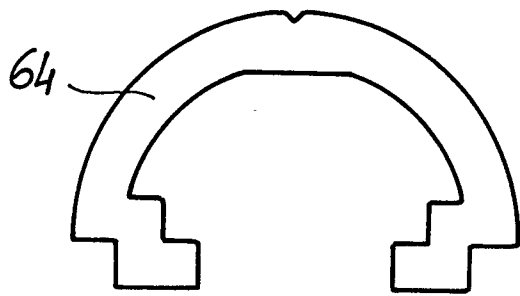


Fig. 42

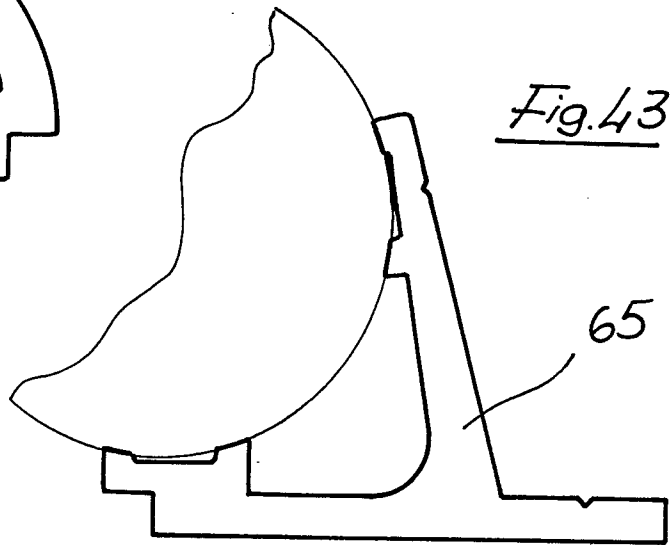


Fig. 43

Fig. 44

