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(54) **A balcony cover-up system for renovation of existing multi-storey buildings.**

(57) In a balcony cover-up system with plane facade elements and oriel projections for facade renovation of existing multi-storey buildings the facade elements and the oriel projections in their entirety are designed as frame structures of aluminium hollow profiles, whereby at least one side face of the hollow profiles serving as frame elements for glazing and panelling portions (26, 33, 62) is provided with a first type of longitudinal rail (24) for receiving and retaining connecting components in the form of installations strips (28) for fixed glass panes and panels, guide profiles and mounting strips for sliding glass panes, supporting profiles (46, 51, 60) for oriel cover and bottom plates and cappings.

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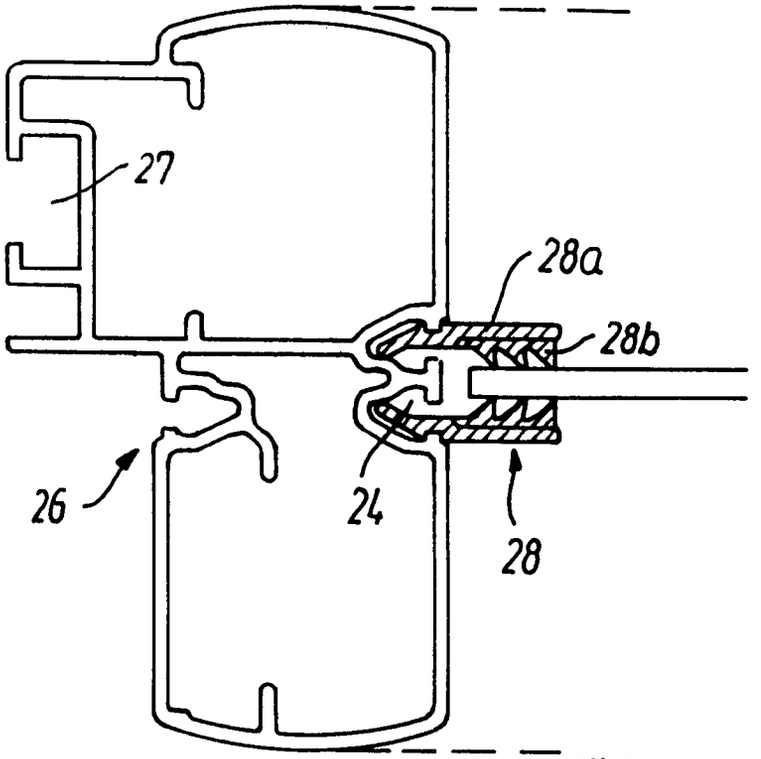

27
28a
28b
26
24
28

FIG. 7

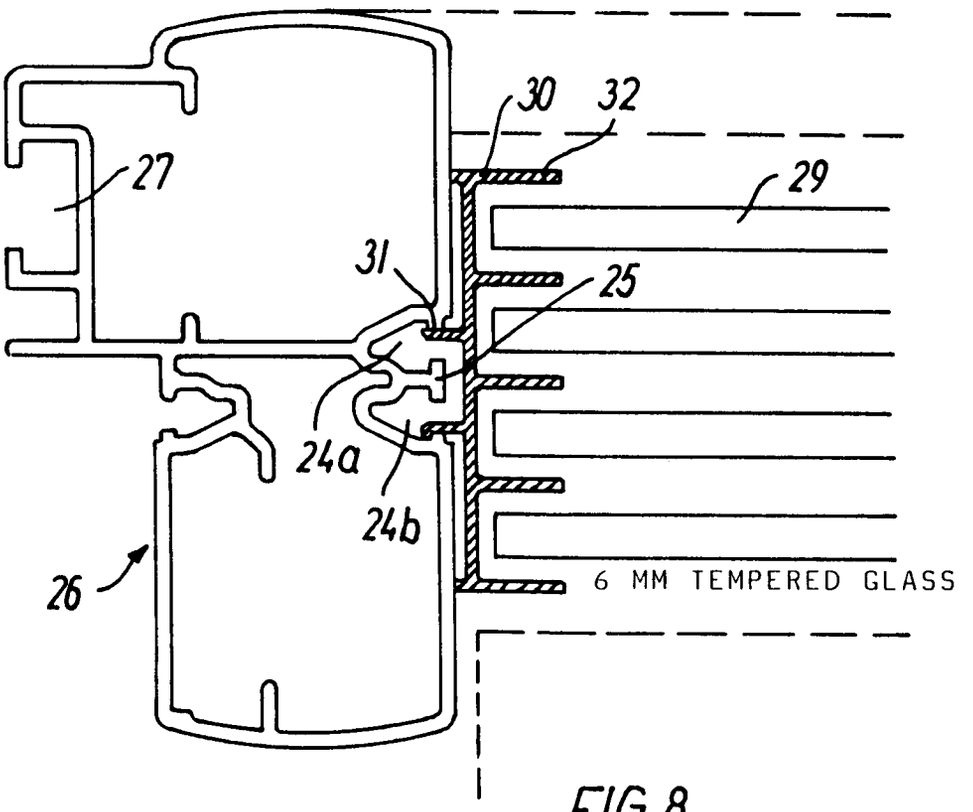

30
32
27
29
31
25
24a
24b
26
6 MM TEMPERED GLASS

FIG. 8

The invention relates to a balcony cover-up system with plane facade elements and oriel projections for facade renovation of existing multi-storey buildings.

For facade renovation of existing multi-storey buildings with open or roofed-in balconies systems have been developed in recent years, the primary object of which is to provide a weatherproof screen to protect the concrete elements of such buildings. At the same time it has been attempted through the extensive use of glazing portions with fixed window panes or sliding windows to convert the balconies into proper out-of-door rooms, increasing the utility value of the flats and reducing the heat loss.

In the known cover-up systems, solid massive aluminium profiles, frequently of a T-shaped cross section, are mainly used as vertical and horizontal supporting structures, assembled in situ to the desired facade appearance. The frame profiles proper for the glazing and panelling portions of the systems are often specially designed for the actual construction project. Consequently, both the manufacturing and the assembling costs have been relatively high.

The object of the invention is to provide a balcony cover-up system with improved manufacturing and assembling facilities, inasmuch as facade elements and oriel projections to a large extent can be supplied ready-made, the mounting and assembling work thus alleviated and at the same time, in the design of the main profiles of the system is obtained an extensive standardization of the devices serving to connect the frame elements and the glazing and panelling portions.

With a view to this a balcony cover-up system according to the invention is characterized in that said facade elements and oriel projections in their entirety are designed as frame structures of hollow aluminium profiles, whereby at least one side face of the hollow profiles serving as frame elements for glazing and panelling portions is provided with a first type of longitudinal rail for receiving and retaining connecting components in the form of installation strips for fixed windows and panels, guide profiles and strips for sliding window panes, supporting profiles for oriel cover and bottom plates and cappings.

In the balcony cover-up system according to the invention all the frame profiles are provided with the same cross sectional form of said first type of rail, and all said connecting components are shaped so as to be retained in these rails. The design of both plane facade elements and oriel projections as well as the frame structures allow finishing these construction modules in a factory, considerably facilitating the mounting work, whereby in so far as it is possible, the facade elements and oriel projections are anchored in the existing balcony structures.

The invention is further explained in the following with reference to the schematical drawing, in which

figs 1-3 show an embodiment of a plane facade element in a horizontal plan and horizontal and vertical sectional view;
figs 4-6 shows a corresponding view of an embodiment of an oriel projection;
fig 7 shows a cross section of a hollow profile for use as vertical and horizontal frame element in a plane facade element with a fixed glazing or panelling portion;
fig 8 shows an identical hollow profile used as vertical frame element for a sliding window;
figs 8 and 10 are sectional views of hollow profiles for use as top and bottom frame for a sliding window;
figs 11 and 12 show the same profiles as in figs 9 and 10 used as top and bottom frame elements, respectively, in an oriel projection;
figs 13 and 14 are sectional views of a hollow profile for use as horizontal window bar element in a plane facade element or as bottom frame in an oriel projection;
figs 15-17 show additional hollow profiles for use in an oriel projection;
fig 18 shows a window bar element, and
figs 19-21 show a corner joint for connection of hollow profiles in the gable portion of an oriel projection.

Figs 1-3 show an embodiment of a plane facade element, and the sectional line designations in fig 1 indicated by roman numerals refer partly to the sectional views in figs 2 and 3, partly to the enlarged sections of the profile cross sections shown in the subsequent figures. The facade element comprises upper and lower horizontal frame elements 1 and 2 and vertical frame elements 3 and 4, which are all made of the same hollow aluminium profile as shown in figs 7 and 8 and explained with reference to these figures. As horizontal upper and lower frame elements 5 and 6 for a sliding glazing portion 7, specially designed aluminium profiles are used as shown in detail in figs 9 and 10. Above and beneath the sliding glazing portion 7 the sections between the horizontal frame elements 1,5 and 2,6, respectively, are either made as fixed glass panes or as opaque panellings b and 9.

In figs 4-6 is shown an embodiment of an oriel projection, the front of which has a sliding glazing portion 10 and a subjacent fixed glass portion or opaque panelling 11. As upper and lower horizontal frame elements for the sliding glazing portion 10, hollow profiles 12 and 13 are used as shown in detail in figs 11 and 12, having the same cross sectional shape as the hollow profiles 5 and 6 in fig 1. As lower horizontal frame profiles at the oriel floor, a special hollow profile 14 is used as shown in detail in fig 14. In the example shown, the vertical gable portions of the oriel projection are formed by an oblique upper frame profile 15 placed at an angle of 30° on horizontal as shown in

detail in fig 16 to support an upper wall, in this example in the form of a glass pane, whereas a hollow profile having the same shape as the hollow profile 14 is used as lower frame element 18 in the gable portion. In addition, the gable portions are provided with horizontal bar elements 19 and 20, consisting of hollow profiles as shown in detail in fig 17. The sections between the frame elements in the shown example are filled in with fixed glazing portions 21, 22 and 23.

As a common feature, the hollow aluminium profiles shown in figs 7-17 are provided with a longitudinal rail of a first type in at least one side wall for receiving various connecting components. This rail, which in the illustrated embodiments of the hollow profiles is designed as a double rail with two in rail members 24a and 24b of a substantially V-shaped cross section, separated by a wall portion 25 has the same cross sectional shape in all the hollow profiles, the outwards apertures of the rail members 24a and 24b being narrowed down by the edge portions of the corresponding wall portions and the wall portion 25, having a T-shaped cross section. In compliance herewith, all connecting components to be received and retained in the rails 24 are provided with engaging members adapted to the cross section of the rail for engagement behind said edge portions at the rail apertures.

Fig 7 shows a dual-chamber hollow profile 26, which as mentioned is used as frame elements 1-4 in the facade element in fig 1 and also serves as rear frame elements in gable portions and bottom portions of the oriel projection in figs 4-6. With a view to receiving anchoring members not shown, this profile is provided with a rail 27 of a fourth type at the side opposite of rail 24.

In the example in fig 7, two identical mounting strips for retaining a fixed glazing portion or a panelling portion are journalled in the rail members 24a and 24b of rail 24, each strip comprising a relatively rigid profile 28a, which on one side is designed for engagement behind the edge portions of the rail members 24a and 24b facing away from each other, and on the other side is provided with a resiliently yielding weather strip abutting on a glass pane or a panel. The mounting strips 28 are preferably manufactured by co-extrusion of a thermoplastic polymer of a relatively high degree of hardness such as, e.g. polyethylene and a thermoplastic elastomer.

In the example in fig 8, an aluminium profile guide rail 30 is journalled in rail 24, serving as vertical guide rail for the individual glass panes 29 of the 4-leaf sliding glazing portion 7, having on its one side engaging members 31 for engagement with the edge portions of rail 24, and being provided on the opposite side with protrusions 32, forming four rails each of which can receive one of the panes 29 of the sliding glazing portion 7.

In figs 9 and 10 hollow aluminium profiles 33, having identical cross sections, are shown used as upper and lower frame elements 5 and 6 for the sliding glazing portion 7 in fig 1. The upper side and the underside of the rails 24 in these profiles are designed for receiving the fixed glazing or panelling portions 8 and 9 by means of mounting strips as shown at 28 in fig 7. In addition to the rail 24, each of the vertical side walls facing each other of the profile 33 is provided with two rails 34 of a second type for receiving and retaining supporting elements for oriel bottom plates or movables such as, e.g. tables or benches, which by means of such supporting elements can be hooked direct on the profiles. As opposed to the rail 24, the aperture of rail 34 is only narrowed down at the upper edge by means of a hook-shaped downwards turned edge portion 35 for engagement with a turned-in upper edge portion of a part of the supporting elements which is homothetic to the rail cross section as is shown in detail in fig 12, whereas the rail 34 is provided with an underside which is inclined towards the rail aperture 36 to allow drainage of water.

In order to serve as upper frame profile 5 for the sliding glazing portion 7, the profile 33 in the example shown in fig 9 is provided with a third type of rail 37 at its underside for removable reception of the supporting profiles 38 for at least two of the sliding glass panes 29. In order to receive the four panes 29 of the 4-leaf sliding glazing portion shown in the example, the profile 33 is provided with two rails 37 of the third type, each of which is designed to receive supporting profiles 38 for two sliding glass panes within the same rail cross section, as turned-in edge portions 39 at both sides of the rail aperture have an upwards concavity 40, forming a rail for roller or sliding members 41 on the supporting profiles 38, which as shown are designed with a fork-shaped cross section for receiving the glass panes 29 and being fastened to same, e.g. by riveting.

When used as lower frame profile for the sliding glazing portion 7, the profile 33 as shown in fig 10 is provided with a number of rails 42 at its upper side, in the example shown a total of five, for receiving guide strips 43, 44 for the bottom edges of the sliding glass panes 29. The guide strips 43 and 44 are made of a thermoplastic elastomer.

As concerns the hollow profiles 33 the rails 34 that are visible from the outside will provide a visually attractive tripartition of the comparatively tall profiles. In addition, the profiles 33 are preferably provided with a projecting longitudinal drip cap as shown.

In fig 11 the profile 33 is shown serving as upper frame for a sliding glazing portion in the same way as in fig 9, but in this case in an oriel projection. The longitudinal rail 24 of the first type in the upper side of the profile here serves to receive a cross sectional L-shaped special profile 46 for the oblique upper wall 17 of the oriel projection. The profile 46 is provided with a downwards turned engaging member at its underside

for engagement behind the edge portion at the aperture of one of the rail members of rail 24. In the example shown the profile 46 is furthermore provided with a substantially horizontal projecting flange part 48 at the bottom of its external vertical side wall, by means of which the profile can be fastened to the subjacent profile 33, e.g. by means of screws.

In fig 12 the profile 33 is shown serving as horizontal bottom profile at the front of the oriel projection. The figure shows one of the rails 34 being used to receive an turned-in upper edge portion 49 of a part 50 of a supporting element 51 for an oriel bottom plate 52, which is homothetic to the rail cross section.

Supporting elements of the same design as the shown element 50 can be used for hooking movables such as, e.g. tables or benches in the rails 34 of the profiles 33.

If it is preferred to have a fixed glazing portion instead of the sliding glazing portion 7 in a plane facade element as shown in figs 1-3, the frame profiles 5 and 6 may be replaced by bar elements made as hollow profiles 53 as shown in fig 13. Both the underside and the upper side of this profile are provided with rails 24 of the first type for receiving fixed glass panes or panelling and, as the profiles 33, are provided with hooking-in rails 34 at the vertical side walls facing each other.

As shown in fig 14 the profile 53 can be used as front horizontal frame profile for the bottom portion of an oriel projection in the same way as profile 33.

Fig 15 shows a special three-chamber hollow profile 54 for use as rear horizontal frame element at the upper portion of an oriel projection. As the profile 26, this profile is provided with a rail 27 of the second type for receiving anchoring members, but in the example shown it is without a rail 24 of the first type, since the top edge of the glass pane 17 of the upper portion is retained in a groove 55, formed between two of the profile chambers 56 and 57 by means of punctiform elastomer supports 58. This retention of the glass pane 17 of the upper portion serves as air inlet to the oriel projection, so that problems of condensate and thereby damage caused by humidity are avoided.

In fig 16 is shown a profile 59 for use as upper frame element in the gable portions of the oriel projection. Both the inner vertical side wall and the underside of this profile are provided with rails 24 of the first type. The rail at the inner vertical side wall serves to receive and retain a supporting element 60 for the glass pane 17 of the upper portion, which rests on supports 61 interspersed on this element.

Fig 17 shows a profile 62 for use as horizontal bar elements in the gable portions of the oriel projection. As the profile 53, both the upper side and the underside of this profile are provided with a rail 24 of the first type.

Finally, figs 18-20 show three different corner joints 63, 64 and 65 for connecting profiles in the gable portions of an oriel projection.

For covering up the rail 24 of the first type when it is not used for receiving connecting components, a capping can be used, having engaging members of the same design as the engaging members 31 at the guide rail 30 in fig 8.

Claims

1. A balcony cover-up system with plane facade elements and oriel projections for use in facade renovation of existing multi-storey buildings, **characterized** in that said facade elements and oriel projections in their entirety are designed as frame structures of hollow aluminium profiles, whereby at least one side face of the hollow profiles serving as frame elements for glazing and panelling portions is provided with a first type of longitudinal rail for receiving and retaining connecting components in the form of installation strips for fixed windows and panels, guide profiles and mouldings for sliding window panes, supporting profiles for oriel cover and bottom plates and cappings.

2. A balcony cover-up system as claimed in claim 1, **characterized** in that said first type of longitudinal rail is designed as a double rail with two in cross section substantially V-shaped rail members, the outwards aperture of which is narrowed down by by turned-in edge portions, each of said rail members serving to receive one of two mounting strips for glass panes and panels, each strip comprising a comparatively rigid strip profile, one side of which is shaped for engagement under said edge portion at the sides of the two rail members facing away from each other, the other side being provided with a resiliently yielding weather strip abutting on a glass pane or a panel.

3. A balcony cover-up system as claimed in claim 2, **characterized** in that said mounting strips are manufactured by co-extrusion of a thermoplastic polymer of a relatively high degree of hardness and a thermoplastic elastomer.

4. A balcony cover-up system as claimed in one of claims 1, 2 or 3, **characterized** in that a number of profiles extended in particular as horizontal frame or bar elements in their vertical side walls facing each other are provided with a second type of rail for receiving and retaining supporting elements for oriel bottom plates or movable members, which second type of rail has an aperture that only at its upper edge is narrowed down by a hook-shaped downwards turned edge portion for engagement with a turned-in upper edge portion

of a part of the supporting elements which is homothetic to the rail cross section, whereas the second type of rail is provided with an underside which is inclined towards the aperture to allow drainage of water.

5. A balcony cover-up system as claimed in claim 4, **characterized** in that said frame or bar elements comprise profiles serving as top frame and bottom frame, respectively, for sliding glass panes, the underside of which is provided with a third type of rail for removable reception of supporting profiles for at least two slide glass panes and on the upper side have a fourth type of rail for receiving guide rails for said sliding glass panes.

6. A balcony cover-up system as claimed in claim 5, **characterized** in that said frame or bar profiles on their vertical outsides are provided with a projecting longitudinal drip cap.

7. A balcony cover-up system as claimed in claim 5 or 6, **characterized** in that said third type of rail is designed to receive the supporting profiles for both said sliding glass panes within the same rail cross section, as turned-in upper concave edge portions at both sides of the rail aperture is shaped so that they each can receive a supporting profile for a sliding glass pane.

8. A balcony cover-up system as claimed in one of the preceding claims, **characterized** in that a profile serving as a horizontal front frame element for an oblique oriel covering is provided with protrusions at its underside for engagement with a rail of the first type in the upper side of a subjacent horizontal frame or bar profile.

9. A balcony cover-up system as claimed in one of the preceding claims, **characterized** in that frame elements for plane facade elements at their sides facing downwards are provided with a fourth type of rail for engagement with anchoring members.

10. A balcony cover-up system as claimed in one of the preceding claims, **characterized** in that profiles for use as frame elements in plane facade elements and as vertical frame elements in oriel facade elements on their inside are provided with longitudinal grooves to receive screws for connecting profiles placed at angles to each other.

11. A balcony cover-up system as claimed in one of the preceding claims, **characterized** in that it comprises angle joints for connecting profiles in the gable portions of oriel projections.

FIG.3

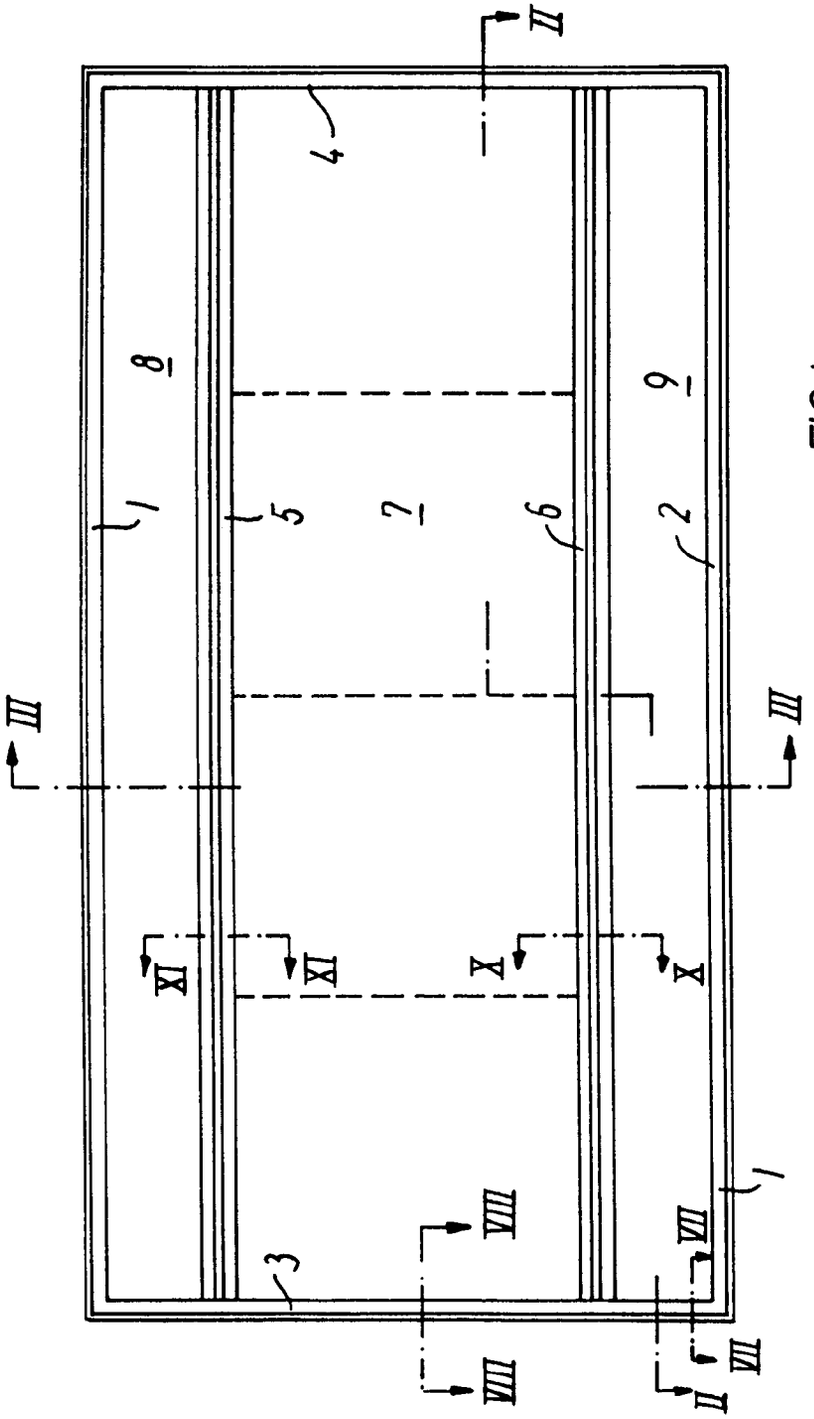


FIG.1

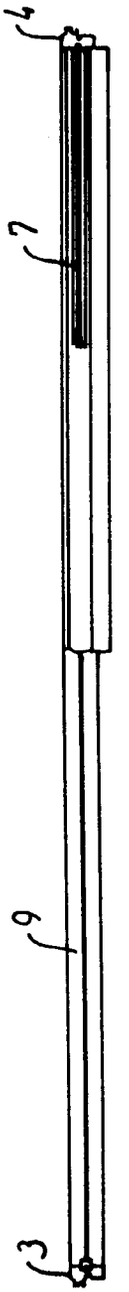


FIG.2

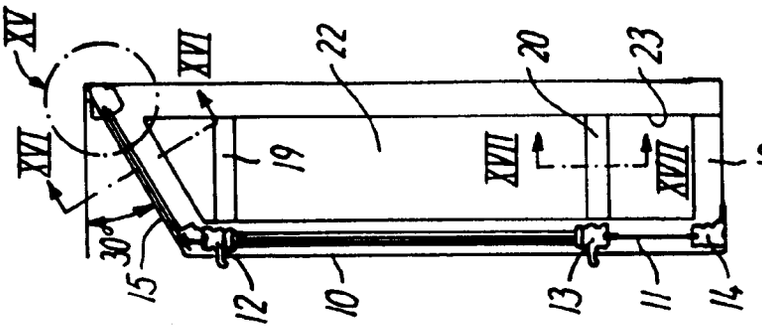


FIG.6

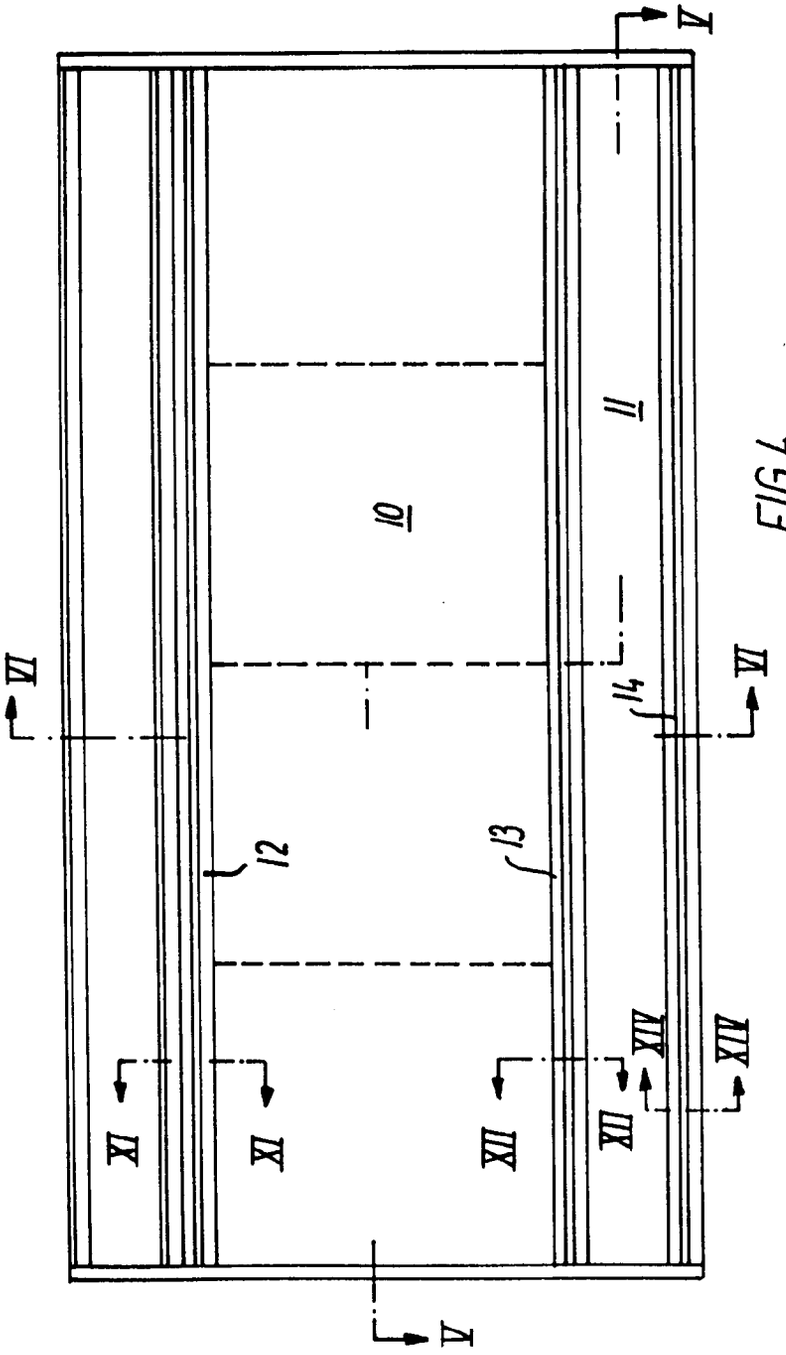


FIG.4

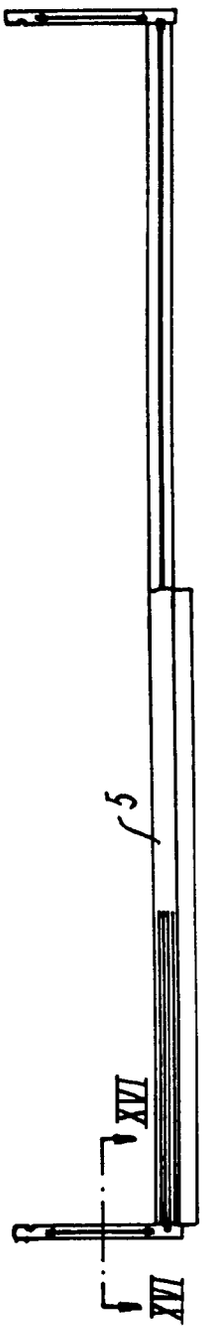
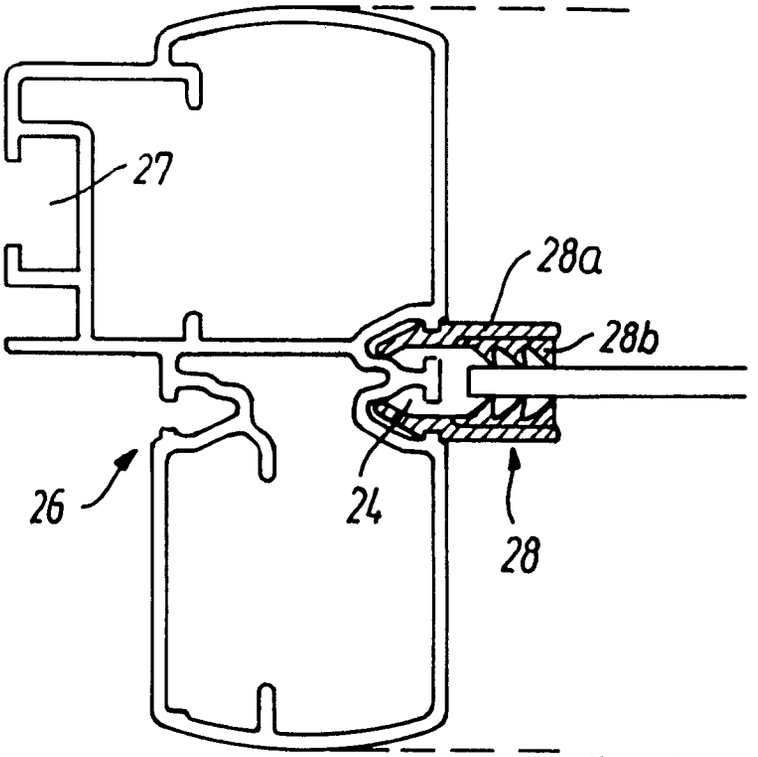


FIG.5


27
28a
28b
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24
28

FIG. 7

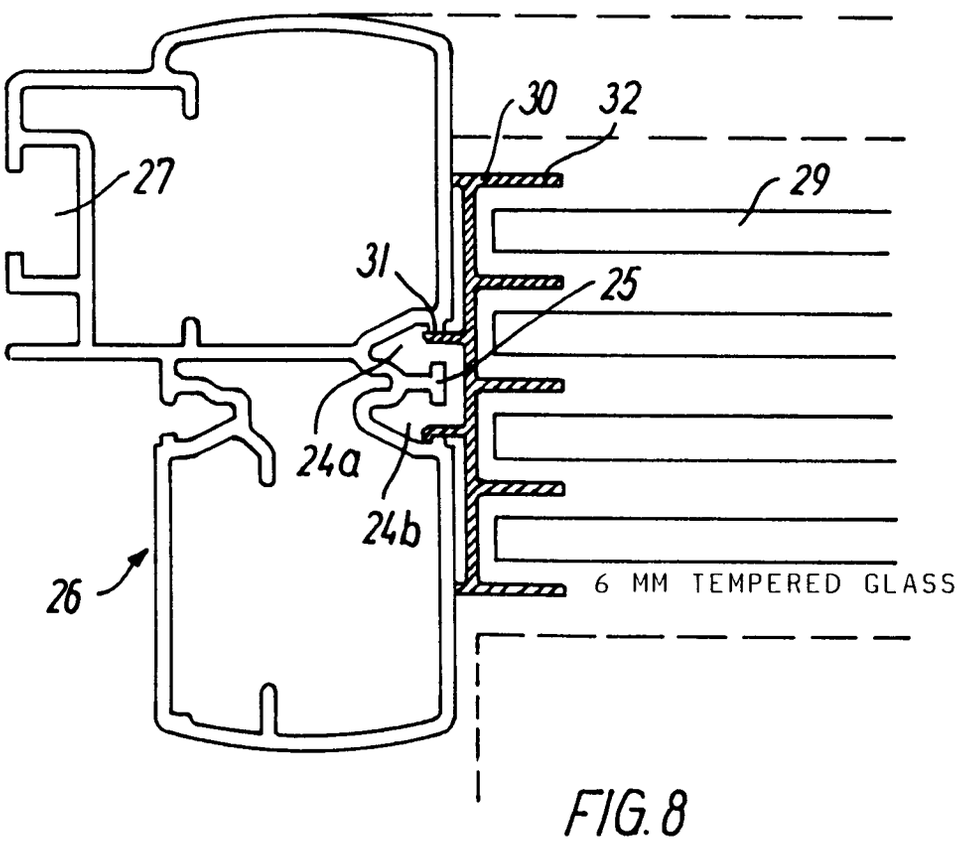
30
32
27
29
31
25
24a
24b
26
6 MM TEMPERED GLASS

FIG. 8

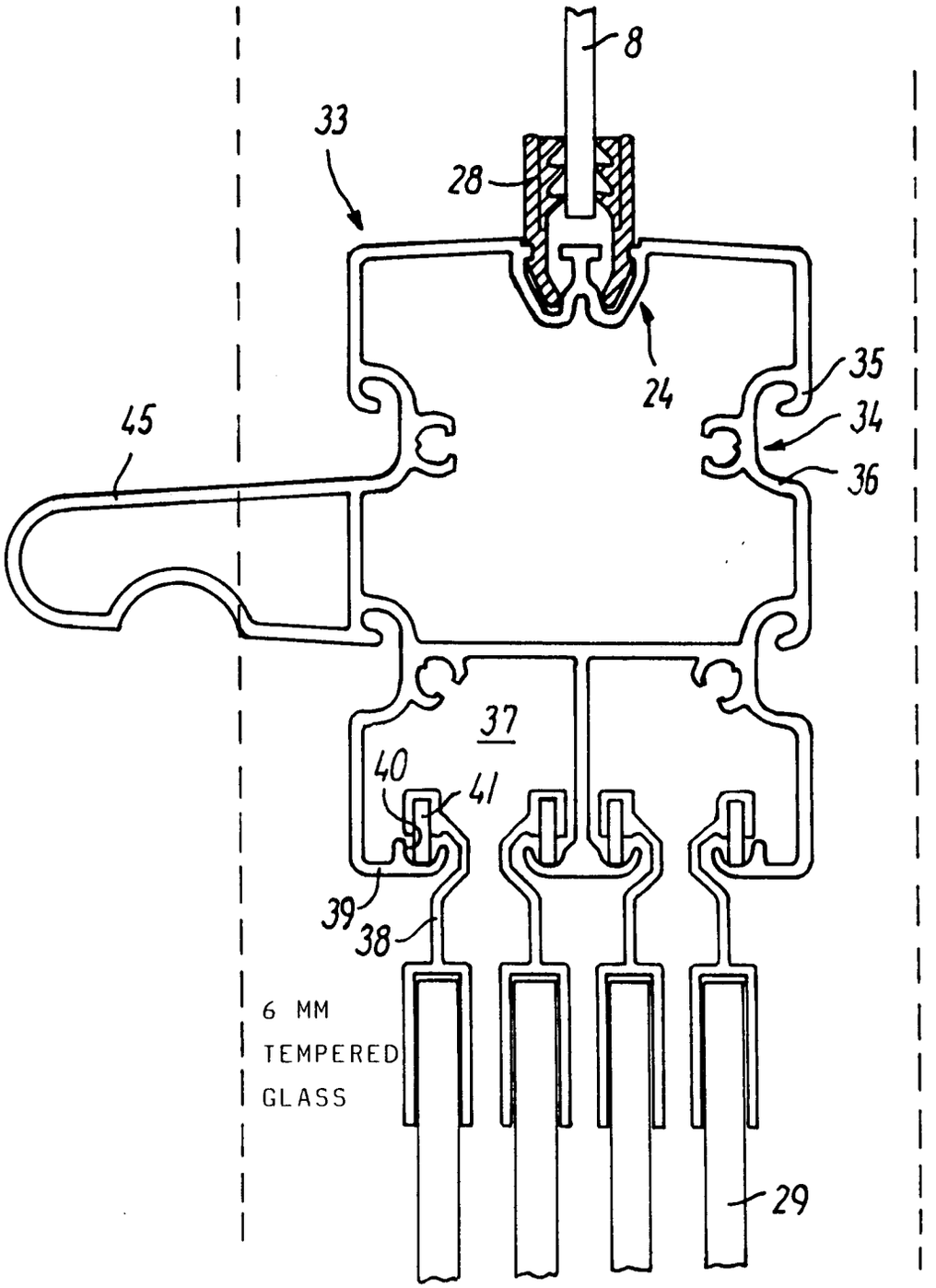

FIG. 9

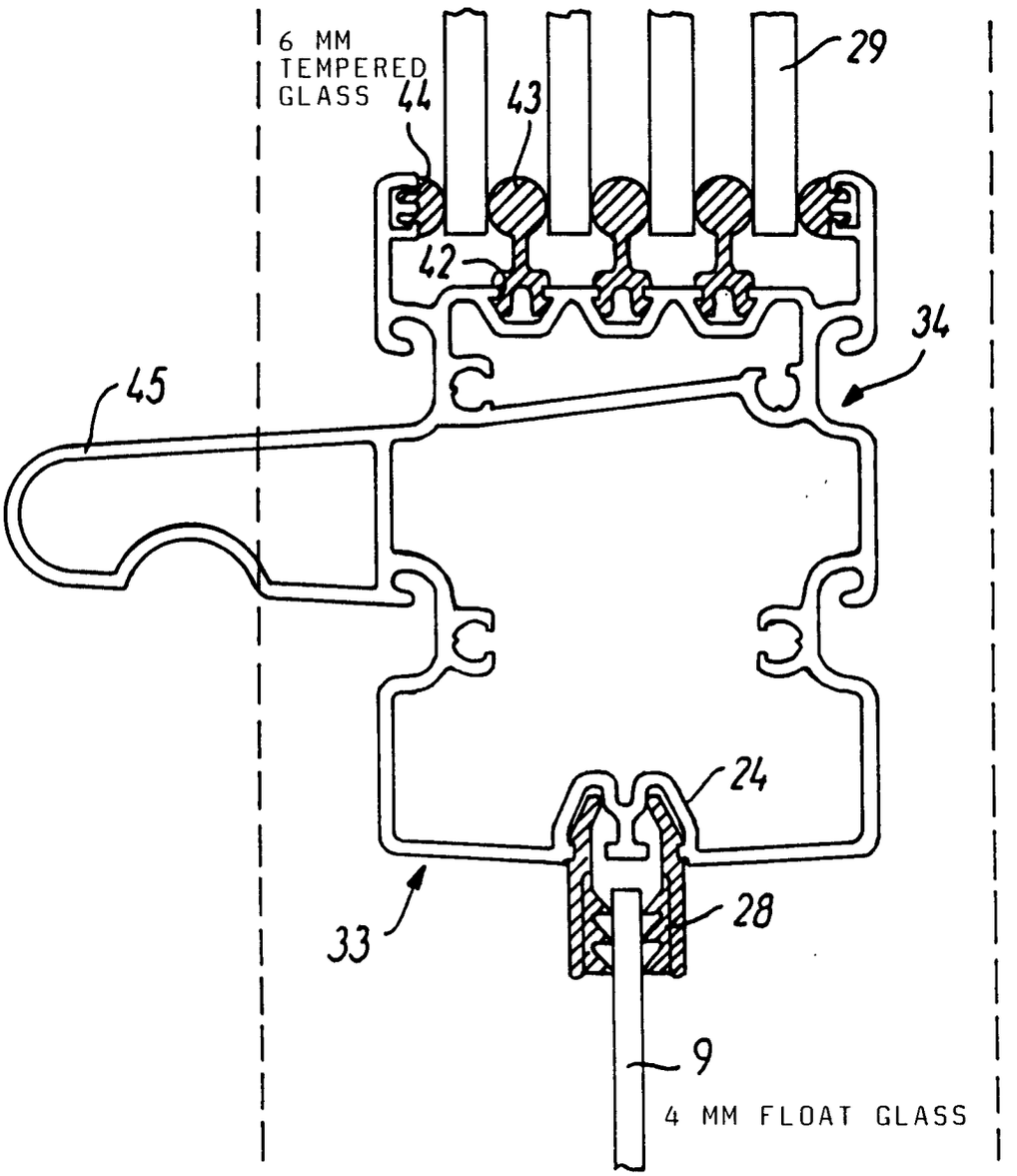

FIG. 10

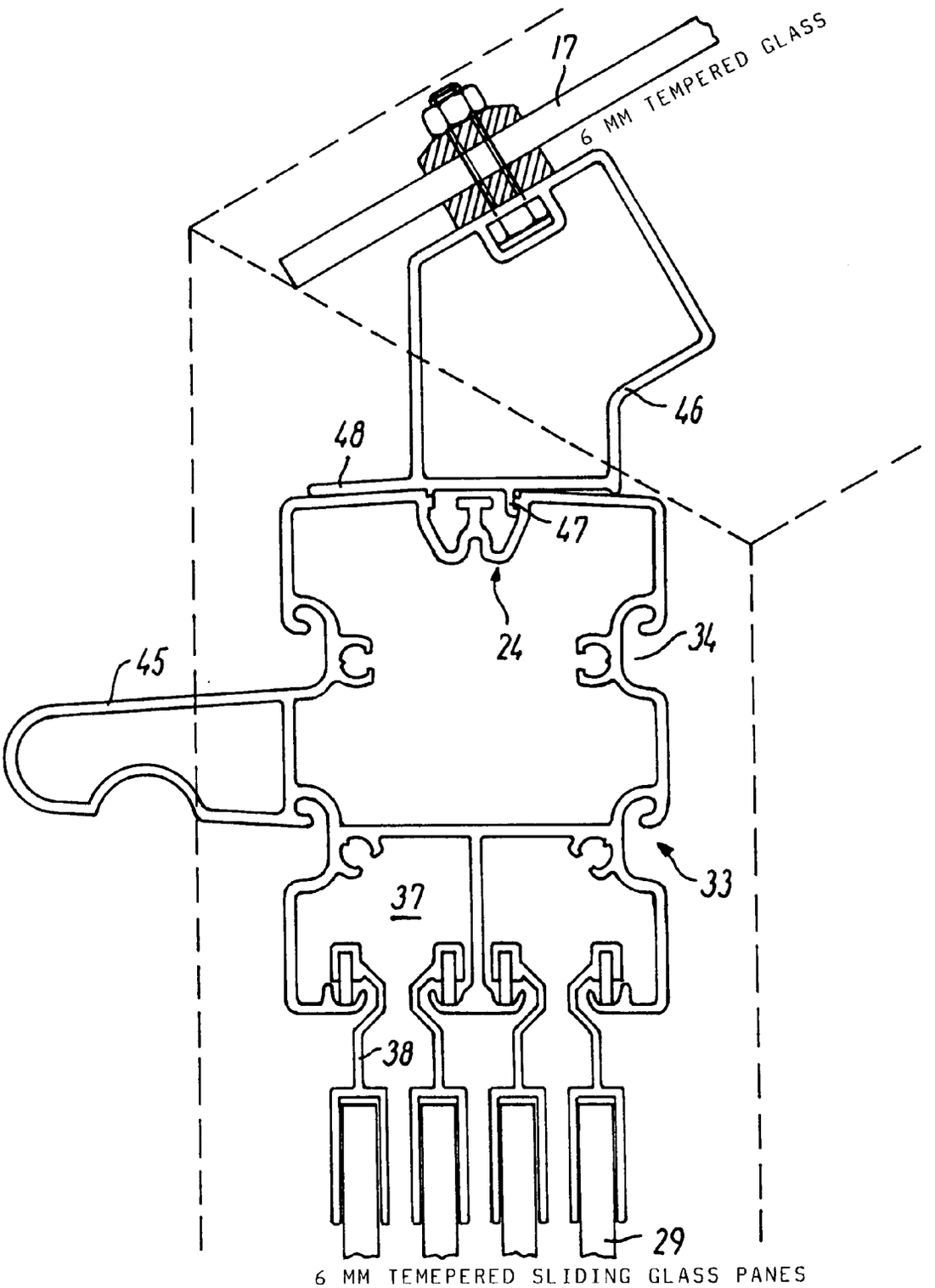
17
6 MM TEMPERED GLASS
46
48
47
24
34
45
33
37
38
29
6 MM TEMEPERED SLIDING GLASS PANES

FIG. 11

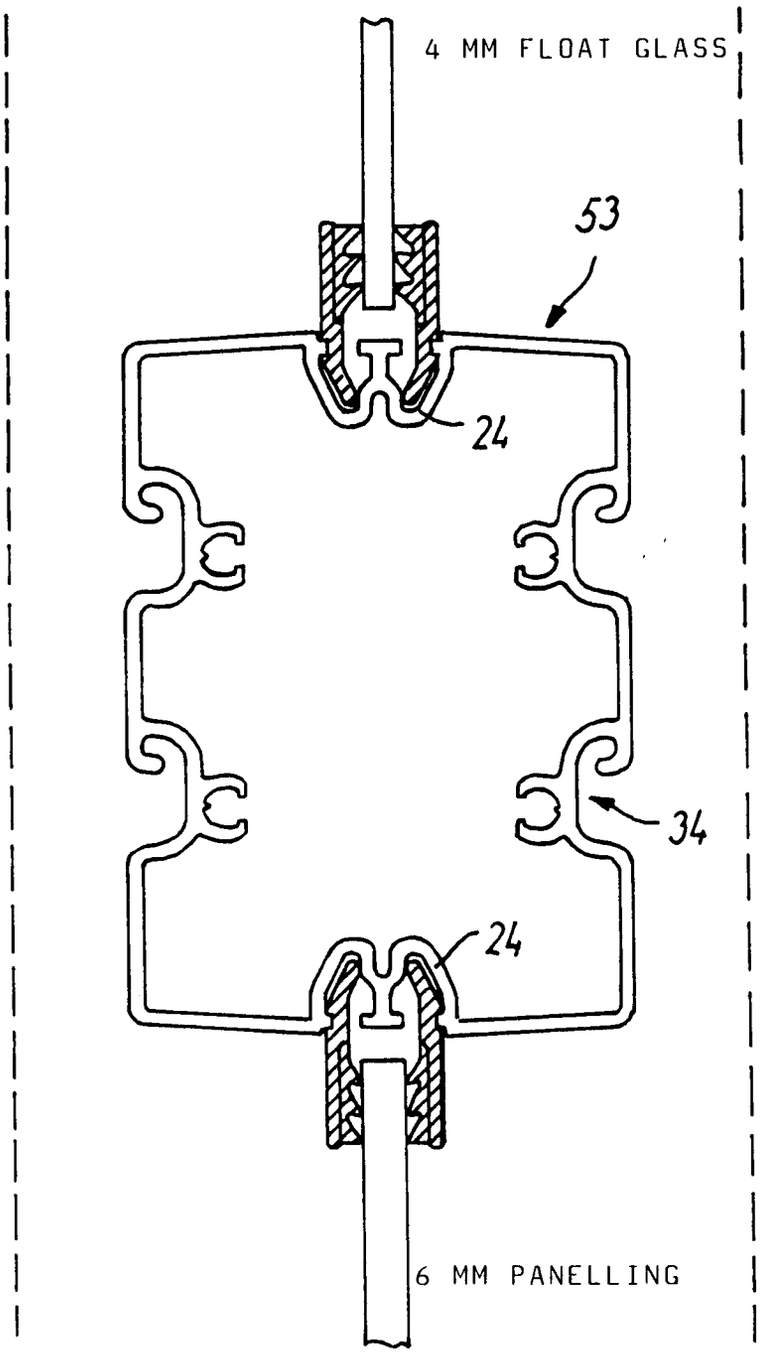

FIG.13

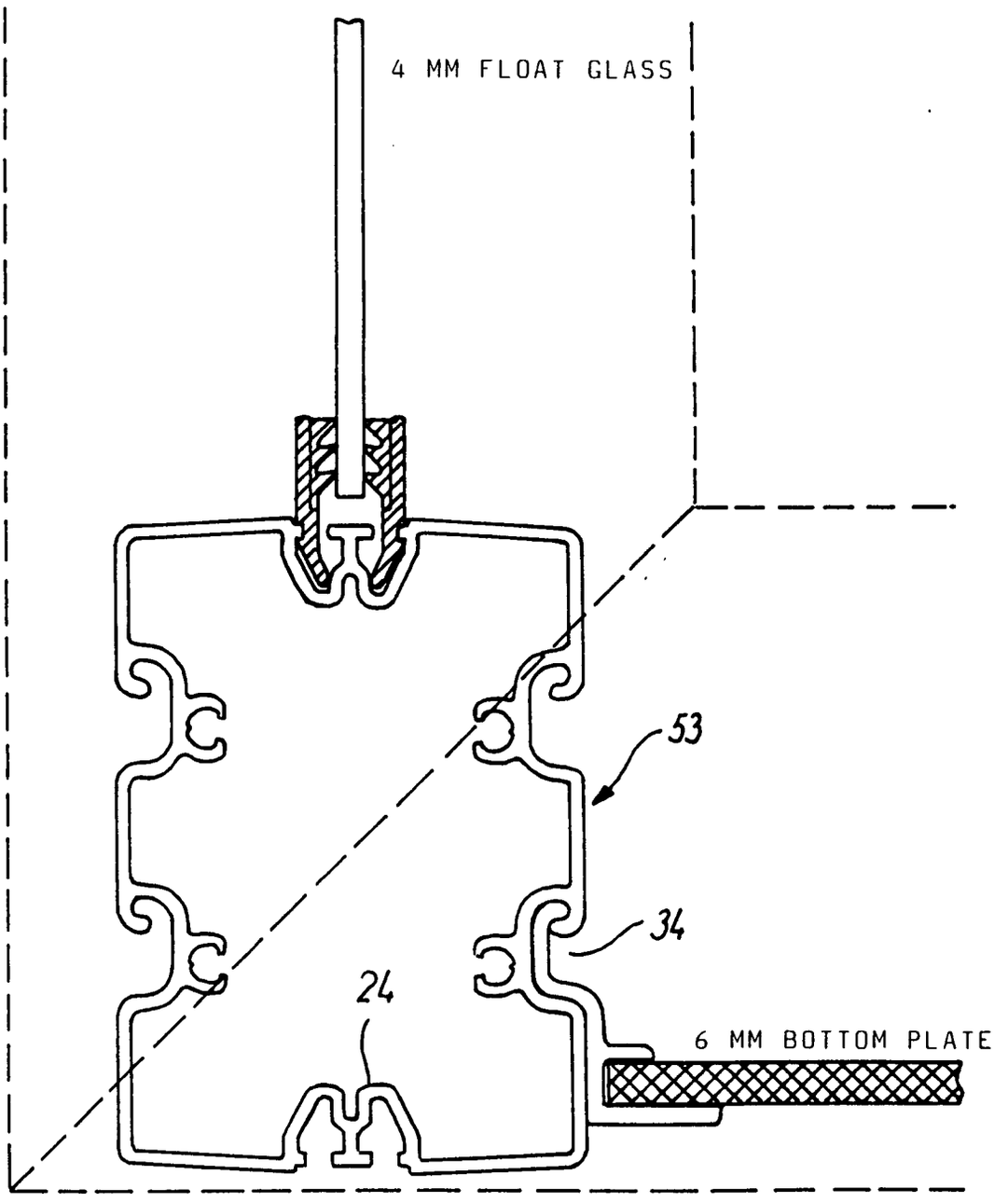

FIG. 14

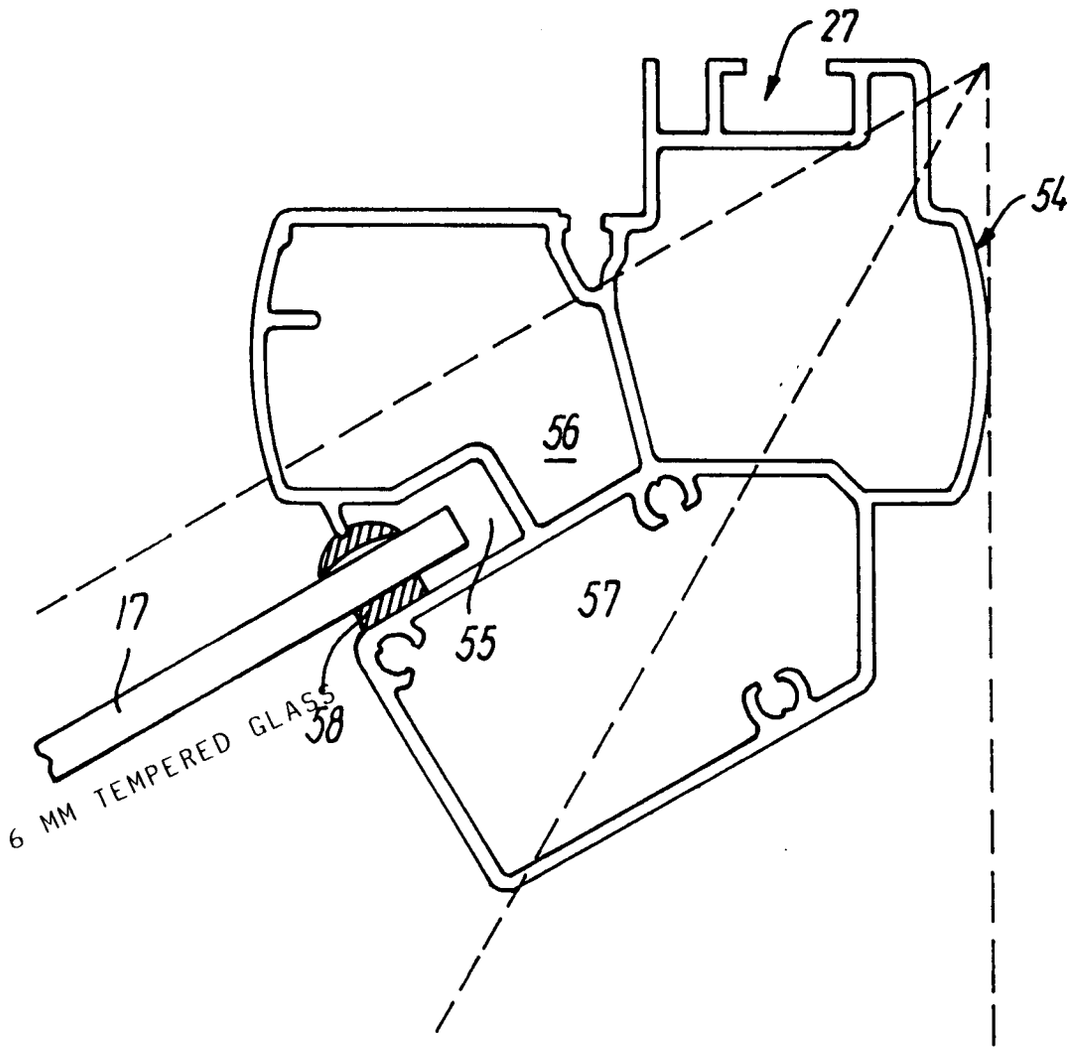

FIG. 15

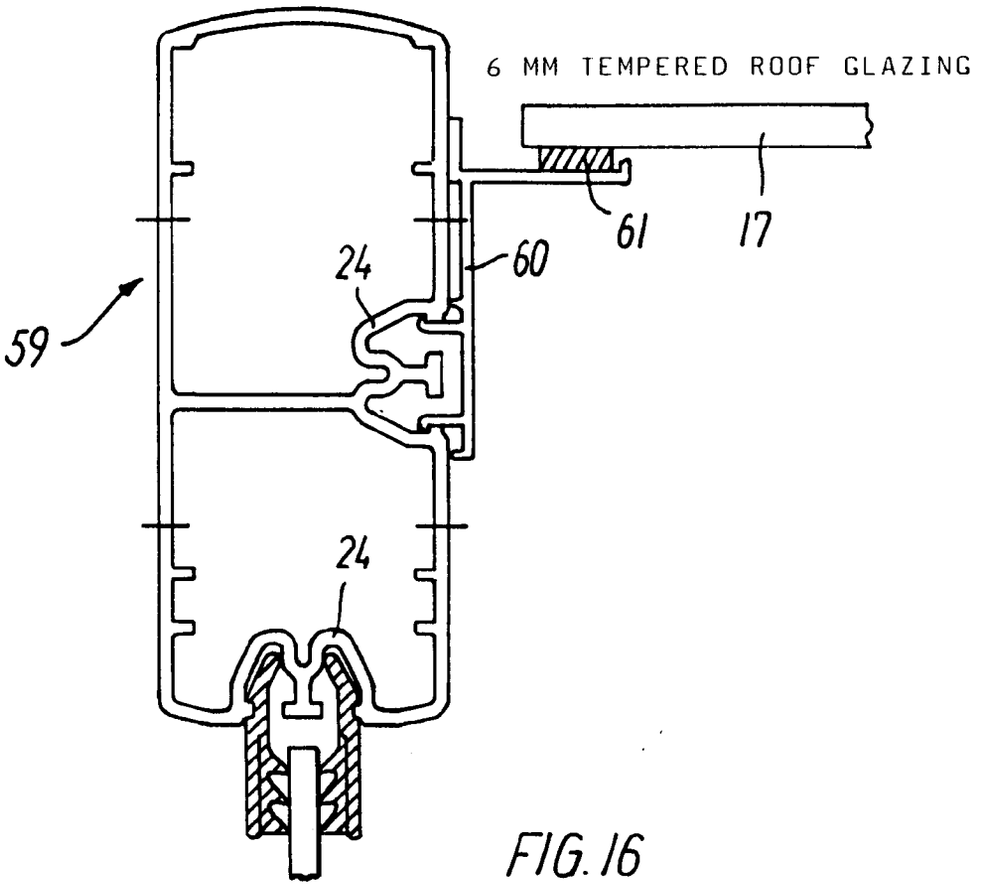

FIG. 16

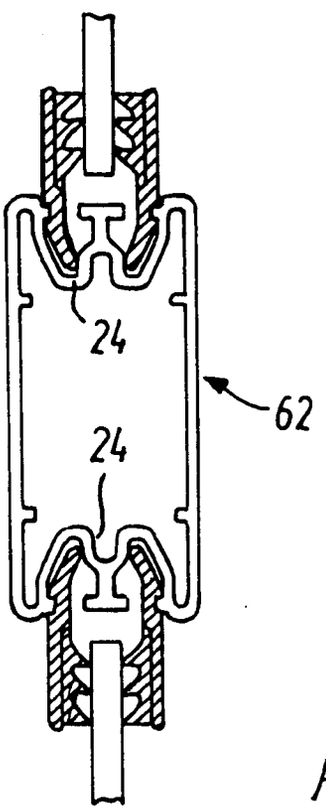

FIG. 17

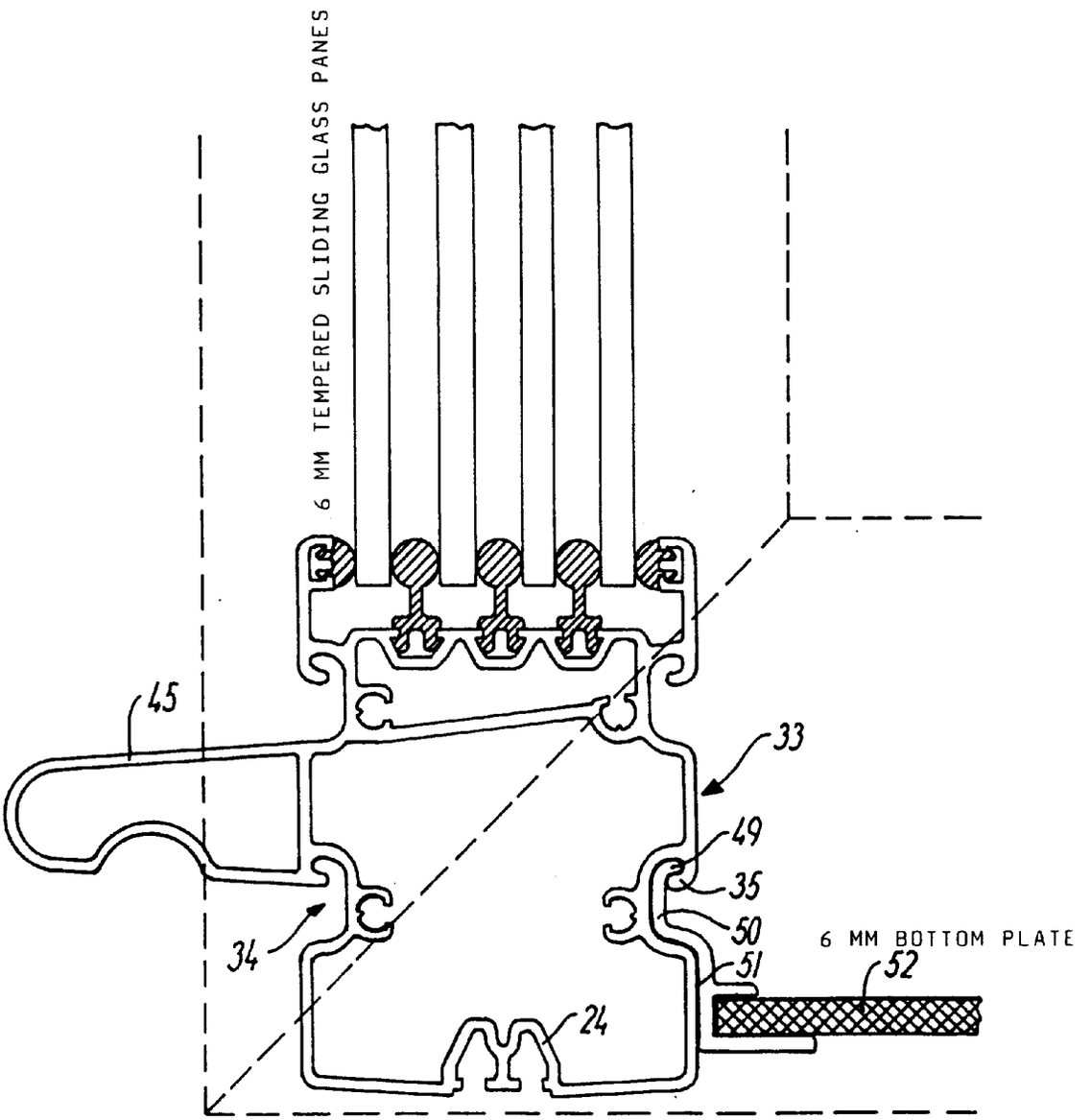
6 MM TEMPERED SLIDING GLASS PANES
45
33
49
35
50
51
52
6 MM BOTTOM PLATE
34
24

FIG.12

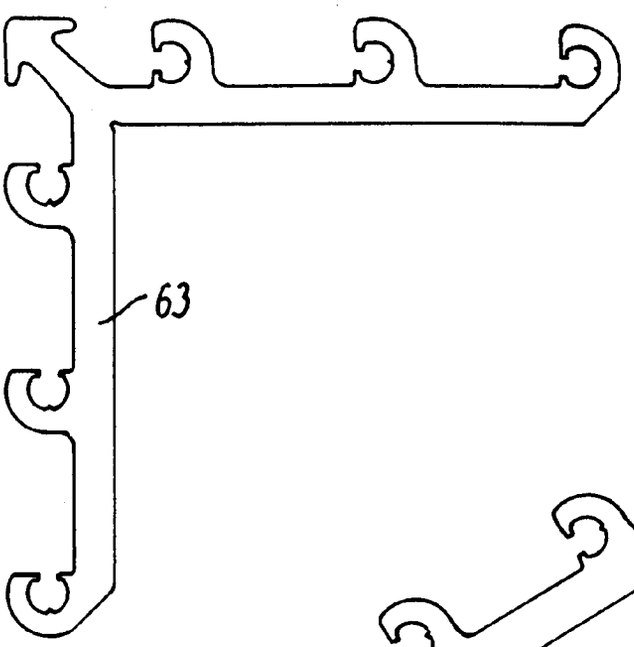

FIG. 18

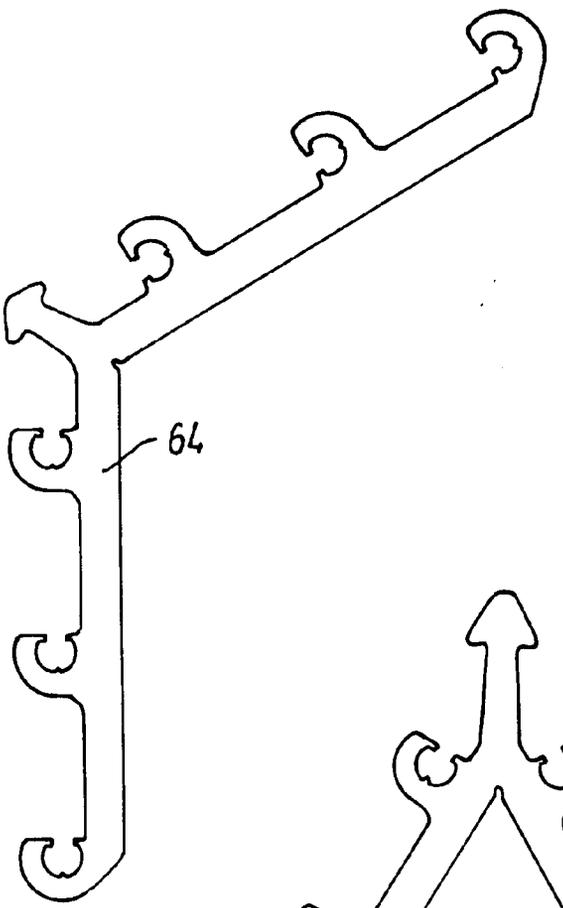

FIG. 19

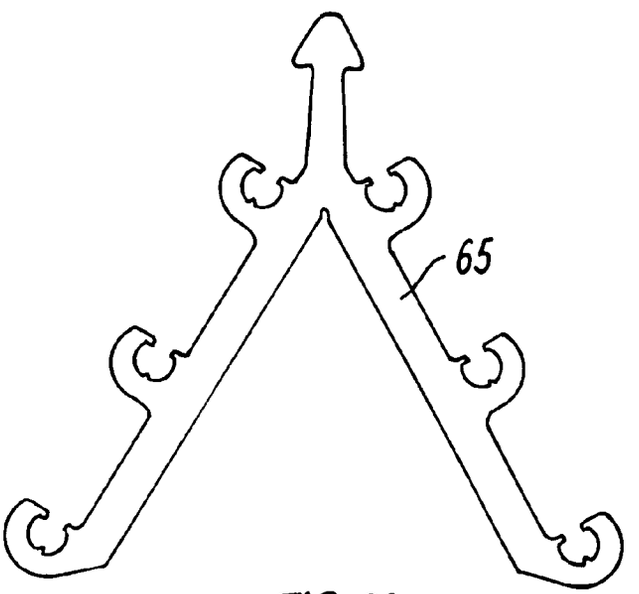

FIG. 20

European Patent Office

EUROPEAN SEARCH REPORT

Application number
EP 91610070.4

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A- 1 255 400 (RUHLMANN, H. ET AL) *Page 1, column 1, line 12 - column 2, line 24; page 2, column 1, line 10 - line 37; figures 1-3*	1	E 04 B 1/00 E 06 B 3/46
X	FR-A- 1 444 173 (ATELIERS DE CONSTRUCTION PRÉFABRIQUÉE DE MAXÉVILLE STUDAL) *the whole document*	1	
X	FR-A- 1 527 443 (PASCHE, H.) *Page 2, column 2, 1st paragraph - 5th paragraph; figures 1-3*	1	
A	DE-B2-1 659 674 (PLASTIQUES P.H. (1972) INC.) *Column 3, line 48 - column 4, line 33; figures 1, 2*	1	
A	Byggkatalogen; Svensk Byggkatalog 89/90, Häfte 20, June 1990, pages 74-89	1-11	TECHNICAL FIELDS SEARCHED (Int. Cl.5) E 04 B E 04 F E 06 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
STOCKHOLM	30-10-1991	HEDLUND I.

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
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