(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 February 2001 (01.02.2001)

PCT

(10) International Publication Number
WO 01/07724 A1

(51) International Patent Classification[7]: E04B 1/00, E06B 1/36

(21) International Application Number: PCT/GB00/02144

(22) International Filing Date: 2 June 2000 (02.06.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9917190.2 23 July 1999 (23.07.1999) GB

(71) Applicant *(for all designated States except US)*: **ULTRA-FRAME (UK) LIMITED** [GB/GB]; Enterprise Works, Salthill Road, Clitheroe, Lancashire BB7 1PE (GB).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **RICHARDSON, Christopher** [GB/GB]; 4 Willow Drive, Barrow, Clitheroe, Lancashire BB7 9FG (GB).

(74) Agent: **ROYSTONS**; Tower Building, Water Street, Merseyside, Liverpool L3 1BA (GB).

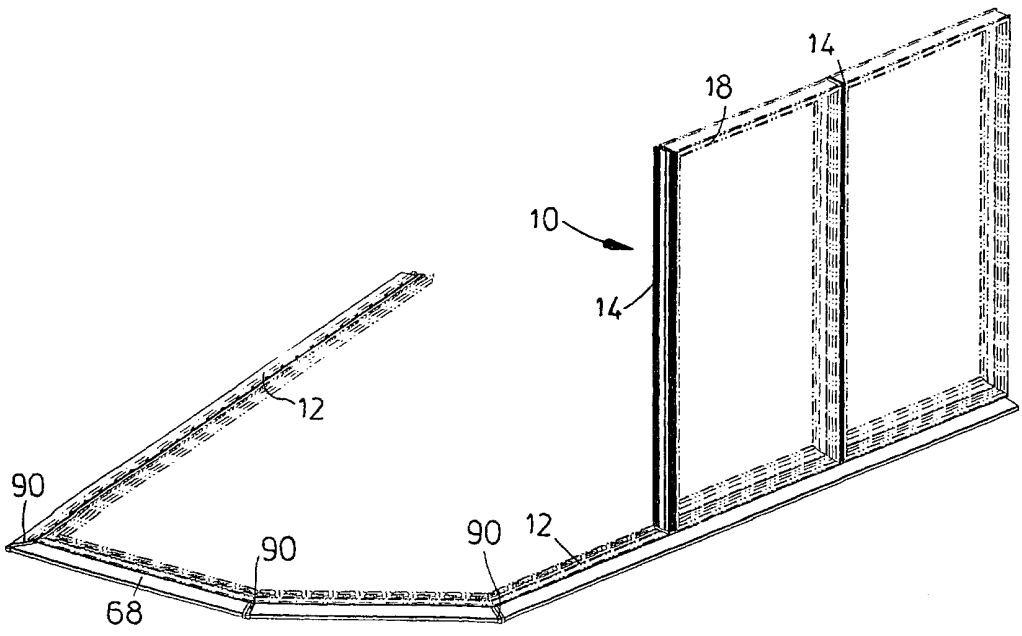
(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: GLAZED STRUCTURES



(57) Abstract: A system for forming a glazed structure (10), such as a wall of a conservatory or sun room, comprising a base member (12), support posts (14) mountable on the base member and capable of receiving on at least one side a window frame (18) and an eaves beam (16) mountable on the support posts.

WO 01/07724 A1

TITLE: Glazed Structures.

Description

This invention concerns glazed structures and, in particular, concerns glazed structures for forming walls of conservatories or sun rooms.

Conservatory or sun room walls can be formed using load-bearing window frames connected side by side and then adding the glazing to the frames. It may be desirable, however, to form such walls using pre-glazed non-load bearing windows and an object of this invention is to provide a system whereby such windows can be incorporated into glazed structures such as in the construction of conservatory walls.

According to this invention there is provided a system for forming a glazed structure, such as a wall of a conservatory or sun room, comprising a base member, support posts mountable on the base member and capable of receiving on at least one side a window frame and an eaves beam mountable on the support posts.

The base member is preferably made of aluminium or similar material, although reinforced plastics material is a possibility. The support posts may be directly mounted on the base member but for ease of construction it is proposed to mount the support posts on the base member via foot plates. The foot plates are

preferably firstly attached to the support posts and then the combination secured to the base member by means of one or more fixings through the foot plate into the base member. Preferably the base member has spaced apart locations for attachment of the foot plates, one of which is preferably a shelf into which a fixing screw or the like through the foot plate can be secured and the second is preferably a groove to receive a heel of the foot plate. With such an arrangement, the foot plate need only have a screw fixing on one side of the structure, which facilitates erection of the structure from one side only at least for the fixing of the support posts.

The foot plates are preferably attached to the support post bottom ends by means of screws or the like through the foot plates into the support posts, preferably into screw ports formed therein. The support posts are preferably aluminium extrusions. Thus, the same screw port formations may be used for fixing the eaves beam on top of the support posts by means of screws or the like through the eaves beam into said screw ports.

The support posts preferably have on opposite sides spaced flanges between which window frames can be accommodated. Between the opposed sides of the support posts, at least the intended outer ends of the support posts are channelled whereby which screw fixings into the foot plates and window frames can be concealed by cover trims that preferably snap fit over the channels, such as by means of lipped formations on intended internal faces of the trims that locate behind lips along edges of the channels. For larger scale support posts ideally said channels include angled walls through which fixing screws or the like can be

driven into adjacent window frames. Different posts may be provided for corners of glazed wall structures, so as to provide for different corner angles.

The base member preferably also has means for receiving a weather seal on which window frames will sit, i.e. to prevent drafts or water ingress, or a baffle for ventilation. It is preferred that the shelf support will be outermost and preferably the base member slopes downwardly towards a foot of the shelf. These drainage holes may be provided for water drainage from window frames. The base member may also include ventilation passages, which may be openable or closable from within the structure.

The base member is preferably arranged to receive separate cill members to suit, i.e. depending on the substrate supporting the base member, such as whether it is floor mounted, such as on decking or whether it is mounted on a low wall.

This invention will now be further described, by way of example only, and with reference to the accompanying drawings, in which:-

Figure 1 shows schematically a glazed wall structure according to the invention;

Figure 2 shows the eaves construction of the type of structure of Figure 1 using larger scale support posts;

Figure 3 shows the base construction of the type of structure of Figure 1 using smaller scale support posts;

Figure 4 shows a base member used in the base construction of the structure of Figure 1;

Figure 5 shows a plan part of the structure of Figure 3;

Figure 6 is a top view from one side of the part of the structure of Figure 2;

Figures 7 and 9 are perspective and isometric top views of a cill component connector;

Figures 9, 10 and 11 show differently angled corner constructions for the structure of Figure 1.

Referring to the accompanying drawings, a glazed wall structure 10 comprises base members 12, which may be mounted on any suitable substrate, such as decking or walls, vertical support posts 14 mounted on the base members and eaves beams 16 (not shown in Figure 1) mounted on top of the support posts fixed between the support posts 14 are pre-glazed window frames 18.

The eaves beams 16 are generally L-shaped having a base 20 and a twin walled upstand 22 with a head 24 having an arcuate top surface 26. In forming a complete structure, the glazing bars supporting glazing panels will be secured to the head of the eaves beam. The eaves beams 16 also have webs 28, 30 on th outward face for attachment of gutters or gutter brackets and webs 32, 33 on their inner face for attachment of internal cladding (not shown).

The support posts 14 for in-line securement of window frames shown in the drawings are of two types but have not been shown in both eaves and base constructions, although it will be evident that the description of one will apply to the other. Thus, Figure 2 shows the eaves construction with a larger scale support post and Figure 3 shows the base construction with a smaller scale support post.

Supports 14 of both the larger (14A) and smaller (14B) types have opposed sides 34 and ends 36. Extending from both sides at opposite ends thereof are flanges 38 to provide location channels for the window frames 18 to be supported by the support posts. The support posts 14 are formed as hollow aluminium extrusions and have internally one or more screw ports 40 that can be used from above for securement of eaves beams 16 by means of fixing screws 42 through the eaves beams into the screw ports (see Figure 2) and from below for securement of foot plates 44by means of screws upwardly through the foot plates 44 into the screw ports (see Figure 3).

The ends 36 of the support posts 14 are formed as channels whose sides have lips 46 for retaining cooperating formations 48 of cover trims 50 in a snap-fitting manner. In both types of support post the channels allow for insertion of screw fixings through the foot plates 44 into the base member 12 that are then concealed by the cover trims 50.

The larger scale support posts 14A have their end channels with a base formed by angled facets 52 which are provided to take screws 54 therethrough into the window frames 18. Again these screws are concealed by the cover trims 50.

The base members 12 are also formed as aluminium extrusions of hollow section. Along one edge is a support shelf 53 to which the foot plates of the support posts can be screw fixed. The shelf is intended to be outwards of the glazed wall structure. The shelf 53 extends outwardly from a supporting web 54 that has drainage holes 56 at intervals therealong. Along its opposite edge, the base member has a slot 58 to receive a stepped end of the foot plate 44. That

allows the support posts to be mounted on the base member by hooking the stepped end of its foot plate into the slot and then screwing down the other end of the foot plate into the shelf 53. Thus, it is only necessary to screw the foot plates down from one side of the glazed wall structure rather than from both. Thus, erection of the structure may be facilitated.

Intermediate the opposed edges of the base member is a groove 60, which is adapted to receive weather seal material and on which the window frames 18 will sit. Alternatively, the groove 60 could take baffle detail to allow ventilation beneath the window frames.

The base member 12 has a leading edge 64 extending below the shelf 53 and an overhang 66 below the shelf. These two locations are provided to receive a sill member 68 or such other trim as may be appropriate for the substrate on which the base member 12 is supported, i.e. there will be different trims required depending on whether the base member is on a supporting wall or is floor mounted, such as on patio decking.

Between the groove 60 and the slot 58 is a channel 70 with returned edges 72, 74 to provide a location for brackets (not shown) used to connect base members end to end especially for forming corners. Figures 9, 10 and 11 of the drawings show special corner support posts 14C, 14D and 14E respectively. The posts 14C, 14D and 14E embody similar principles to those of support posts 14A except that different cover trims 58C, 58'C, 58D, 58'D and 58E, 58'E are required and these are fixed by means of fir tree type connectors 80 on the posts fitting slots 82 of the trims.

Where the sill members 68 meet at corners, covers 90 are provided. These have upstands 92 at one end, which fit under a lip 94 along the base member below the shelf 53 and have hook formations 96 at their forward end to fit under the leading edges of the sill members. The covers 90 are able to accommodate thermal expansion or contraction of the sill members 68.

CLAIMS

1. A system for forming a glazed structure, such as a wall of a conservatory or sun room, comprising a base member, support posts mountable on the base member and capable of receiving on at least one side a window frame and an eaves beam mountable on the support posts.

2. A system as claimed in claim 1, wherein the support posts are directly mounted on the base member.

3. A system as claimed in claim 1, wherein the support posts are mounted on the base member via foot plates.

4. A system as claimed in claim 3, wherein the foot plates are attached to the support posts and the combination is secured to the base member by fixing means through the foot plate into the base member.

5. A system as claimed in claim 3 or 4, wherein the base member has spaced apart locations for attachment of the foot plates.

6. A system as claimed in claim 3, 4 or 5, wherein the base member has spaced apart locations for attachment of the foot plates, one of which is a shelf to which the foot plate is secured by a screw fixing or the like and the second is a groove for receiving a heel of the foot plate.

7. A system as claimed in any one of claims 3 to 6, wherein bottom ends of the support posts are attached to the foot plates by means of screws or the like through the foot plates into the support plates.

8. A system as claimed in any one of claims 3 to 7, wherein bottom ends of the support posts are attached to the foot plates by means of screws or the like through the foot plates into screw ports formed in the support plates.

9. A system as claimed in any one of claims 1 to 8, wherein the support posts have on opposite sides spaced flanges between which window frames can be accommodated.

10. A system as claimed in any one of claims 1 to 9, wherein the support posts have on opposite sides spaced flanges between which window frames can be accommodated and, between the opposed sides of the support posts, at least the intended outer ends of the support posts are channelled whereby screw fixings into the component parts can be concealed by cover trims.

11. A system as claimed in claim 10, wherein lipped formations are provided on the internal faces of the trims that locate behind lips along edges of the channels.

12. A system as claimed in claim 10 or 11, wherein the channels include angled walls through which fixing screws or the like can be driven into adjacent window frames.

13. A system as claimed in any one of claims 1 to 12, wherein different posts are provided for corners of glazed wall structures thereby providing for different corner angles.

14. A system as claimed in any one of claims 1 to 13, wherein the base member has means for receiving a weather seal on which window frames will sit.

15. A system as claimed in any one of claims 1 to 14, wherein a shelf support is provided outermost in the system.

16. A system as claimed in claim 15, wherein the base member slopes downwardly towards a foot of the shelf.

17. A system as claimed in claim 15 or 16, wherein the shelf support is provided with drainage holes.

18. A system as claimed in any one of claims 1 to 17, wherein the base member is provided with ventilation passages.

19. A system as claimed in claim 18, wherein the ventilation passages are openable or closable from within the structure.

20. A system as claimed in any one of claims 1 to 19, wherein the base member is arranged to receive separate cill members to suit.

21. A system as claimed in any one of claims 1 to 20, wherein one or more of the components of the system is an aluminium extrusion.

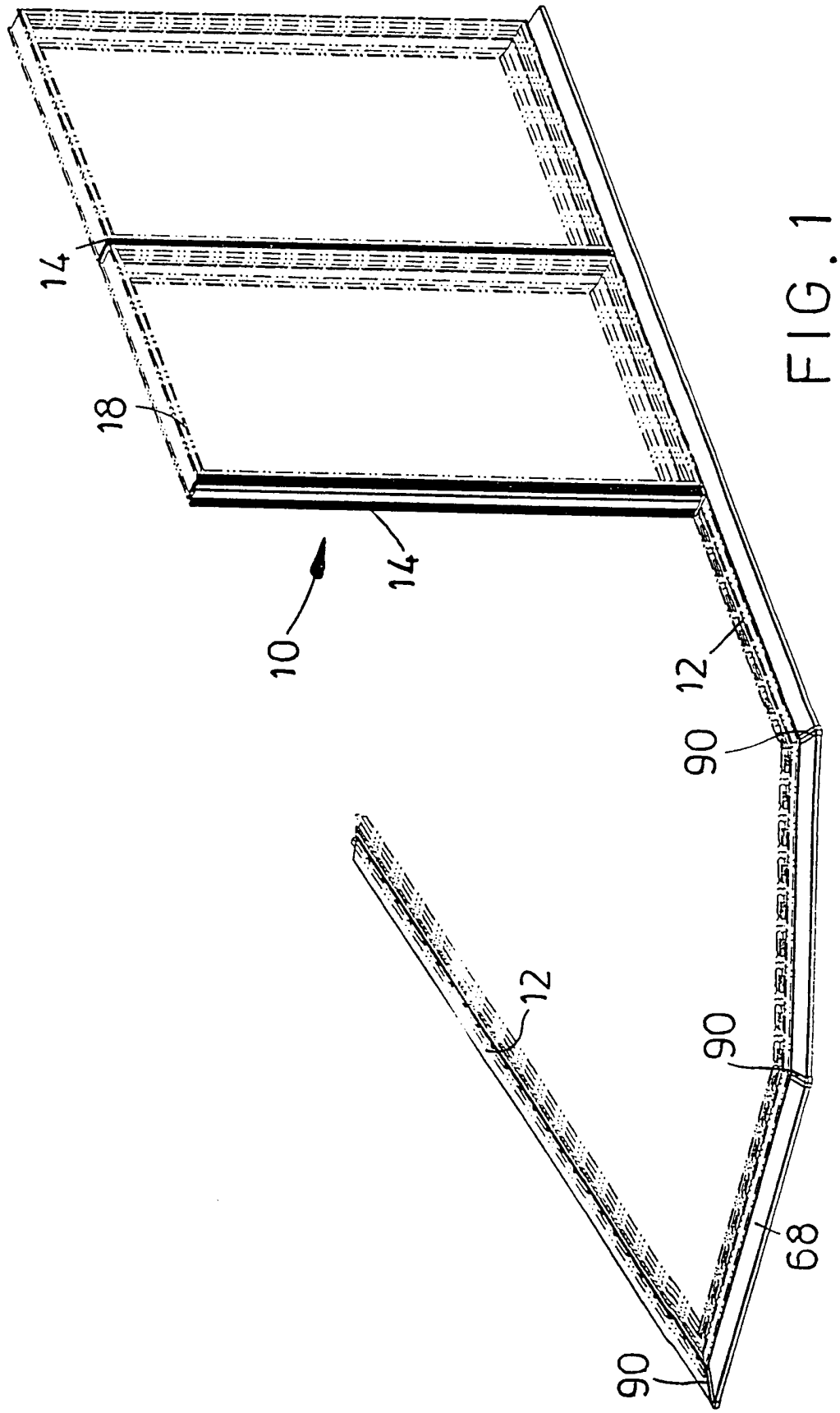


FIG. 1

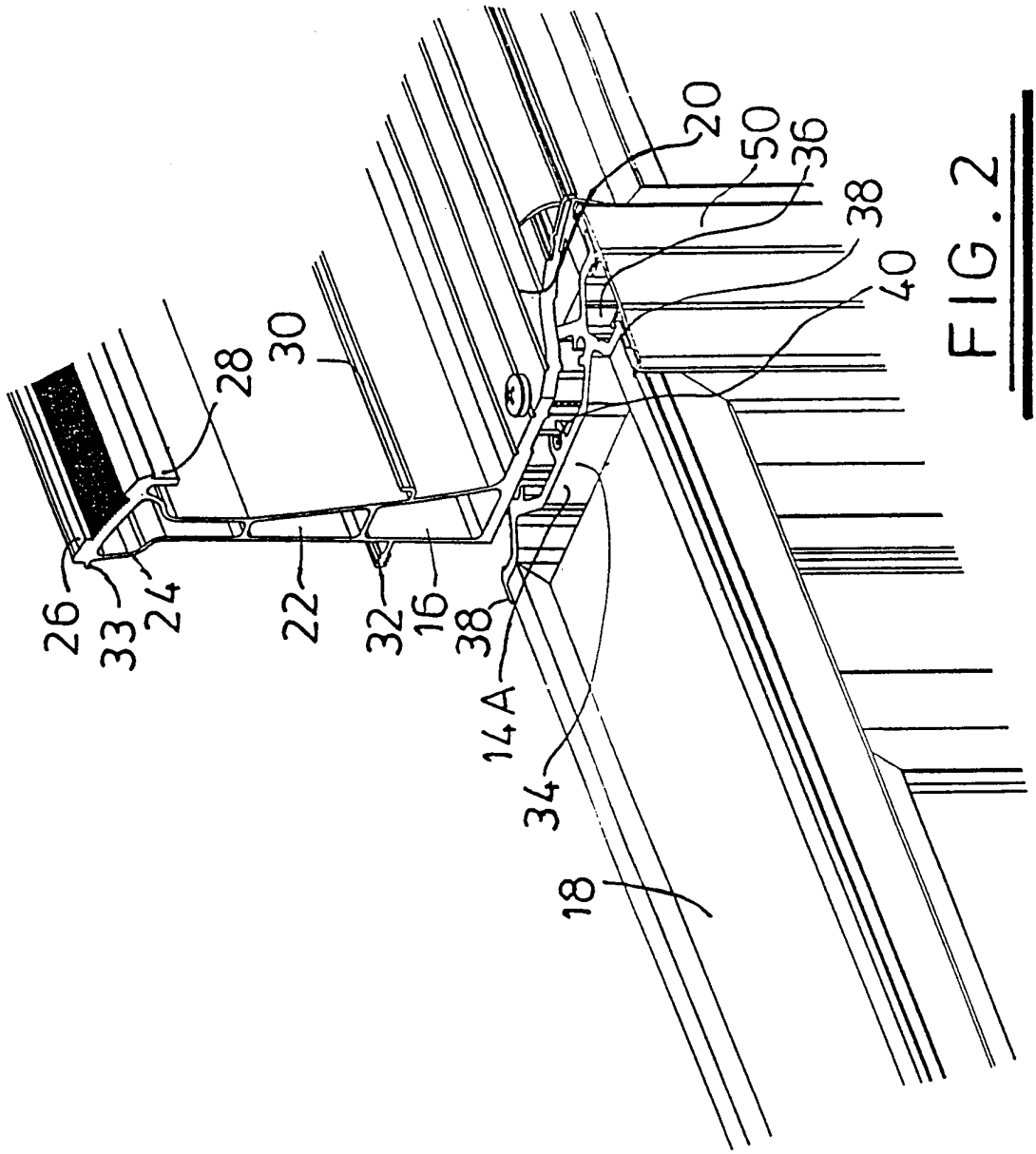


FIG. 2

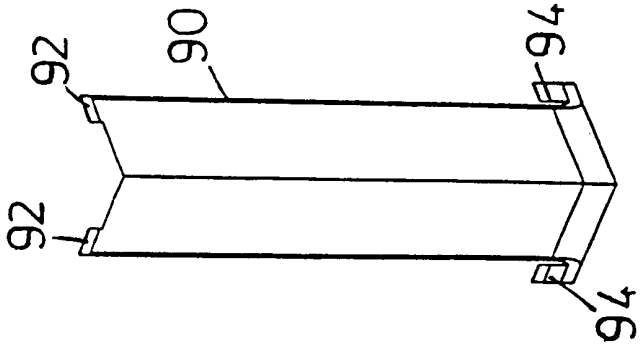


FIG. 8

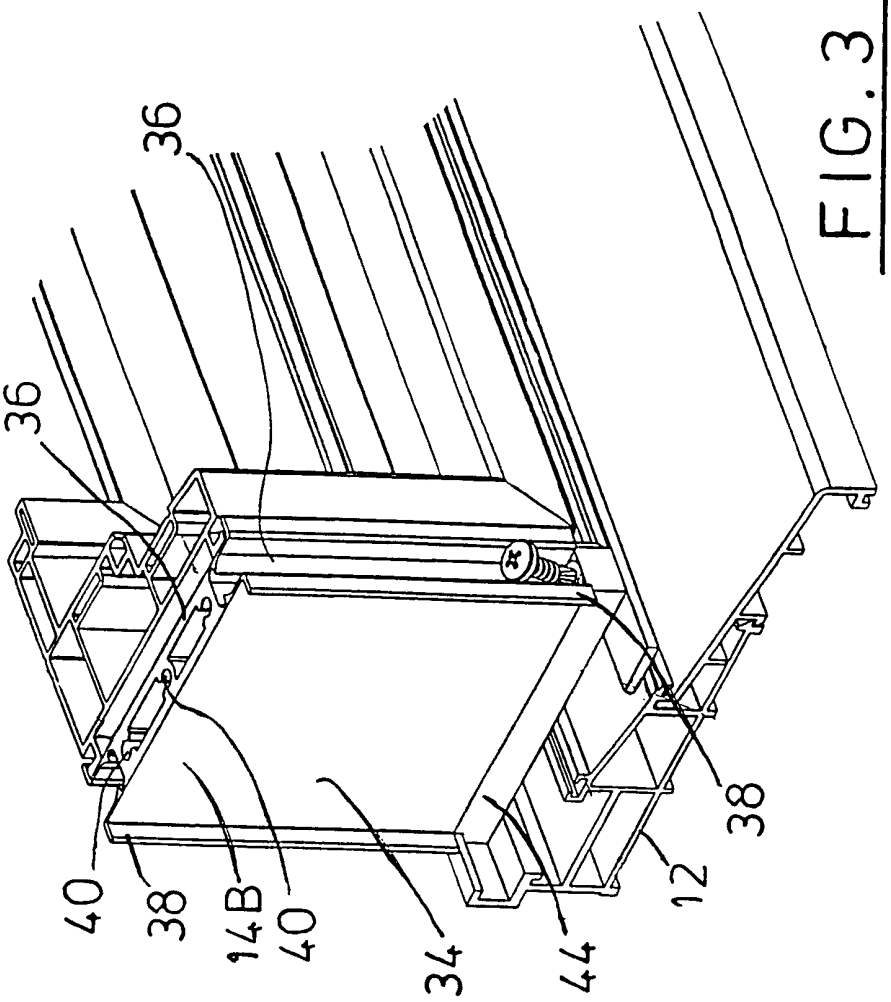


FIG. 3

FIG. 4

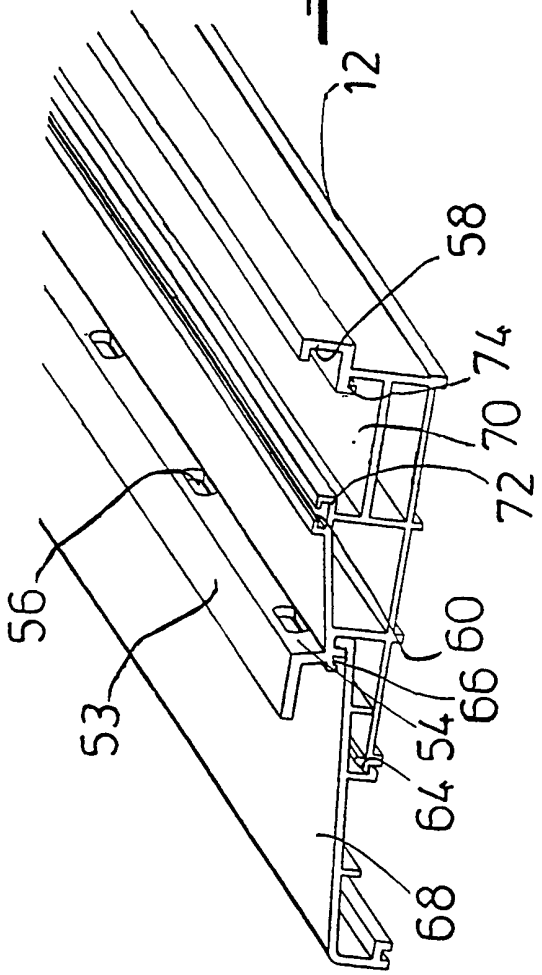
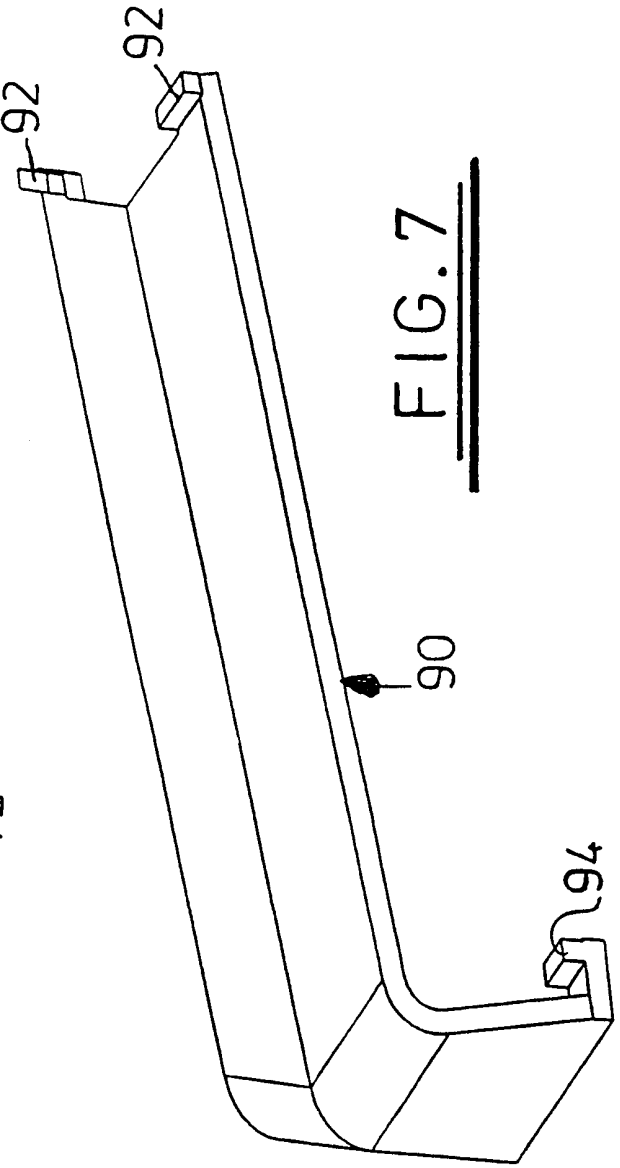


FIG. 7



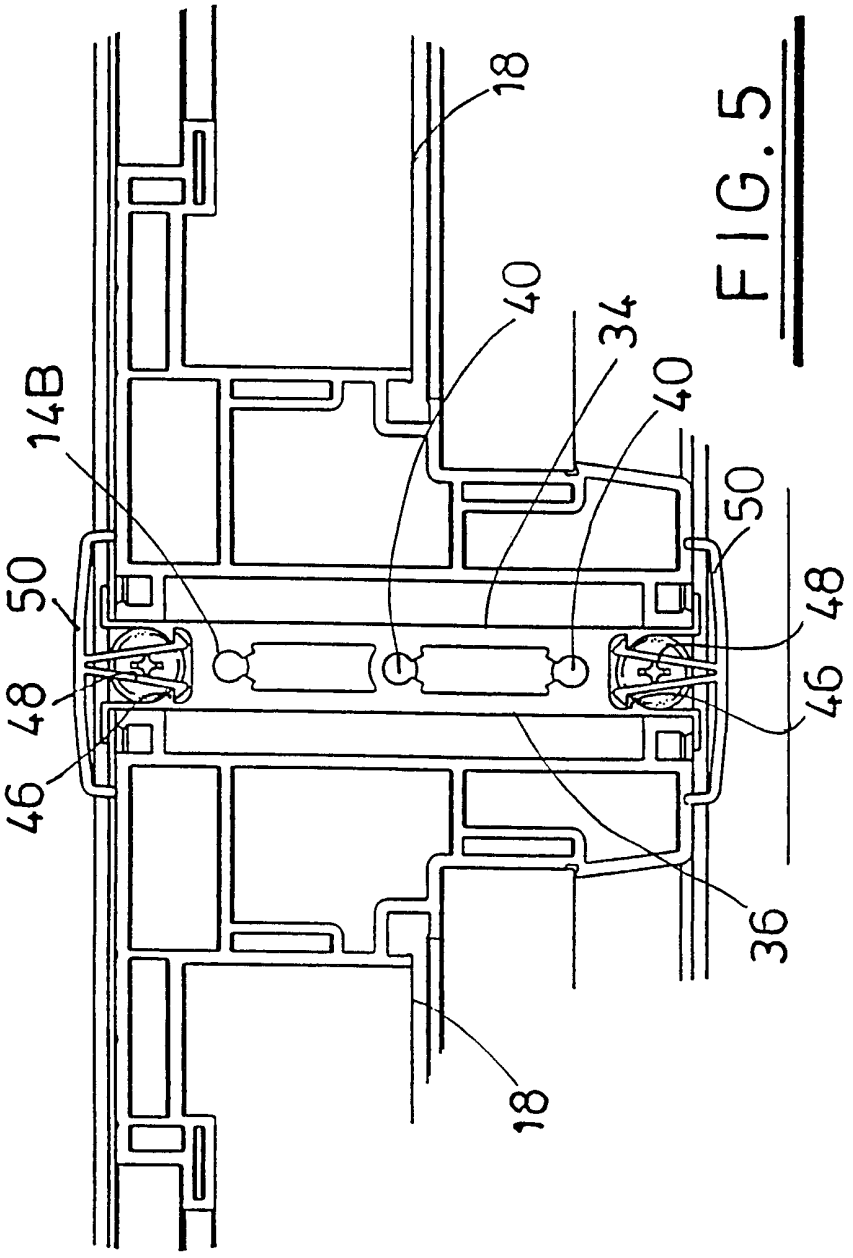


FIG. 5

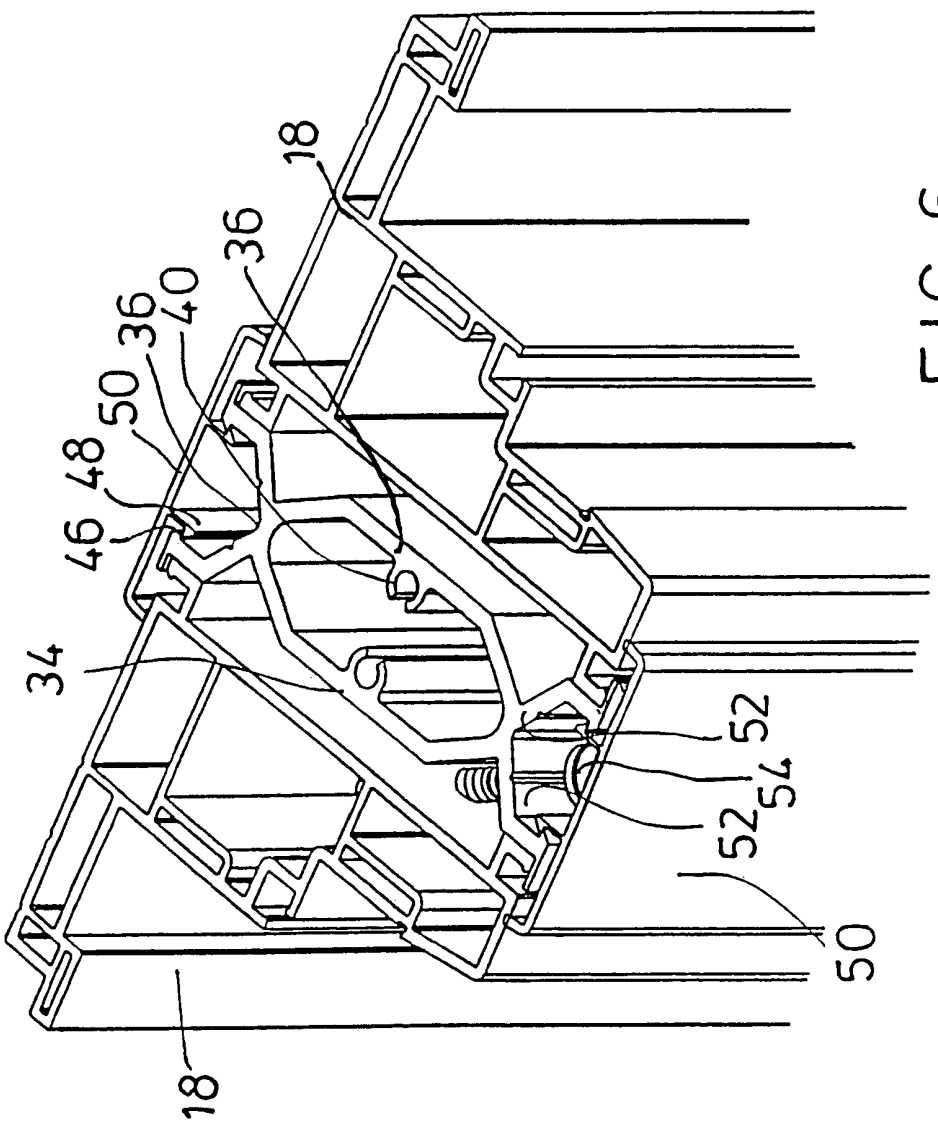


FIG.6

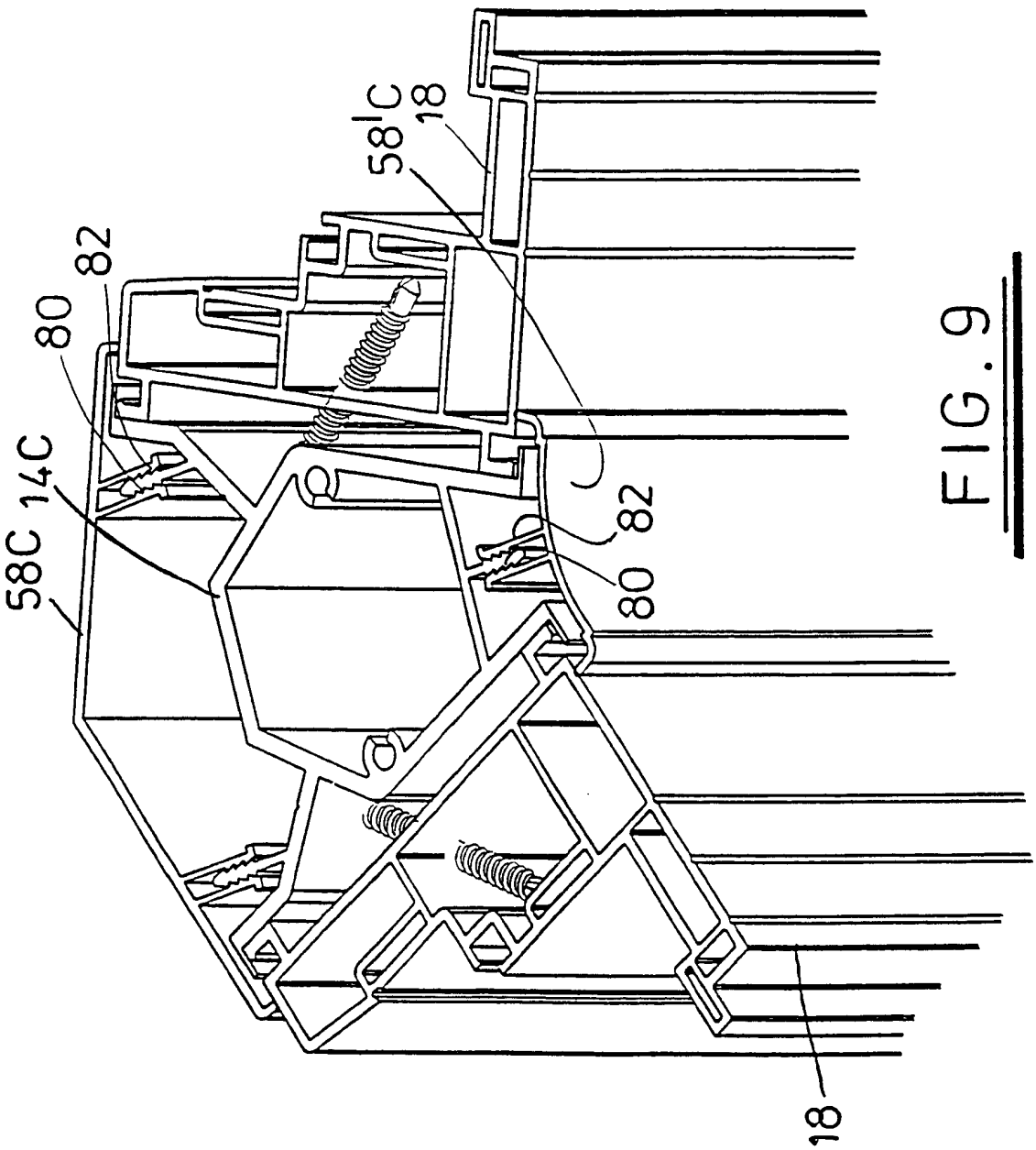


FIG. 9

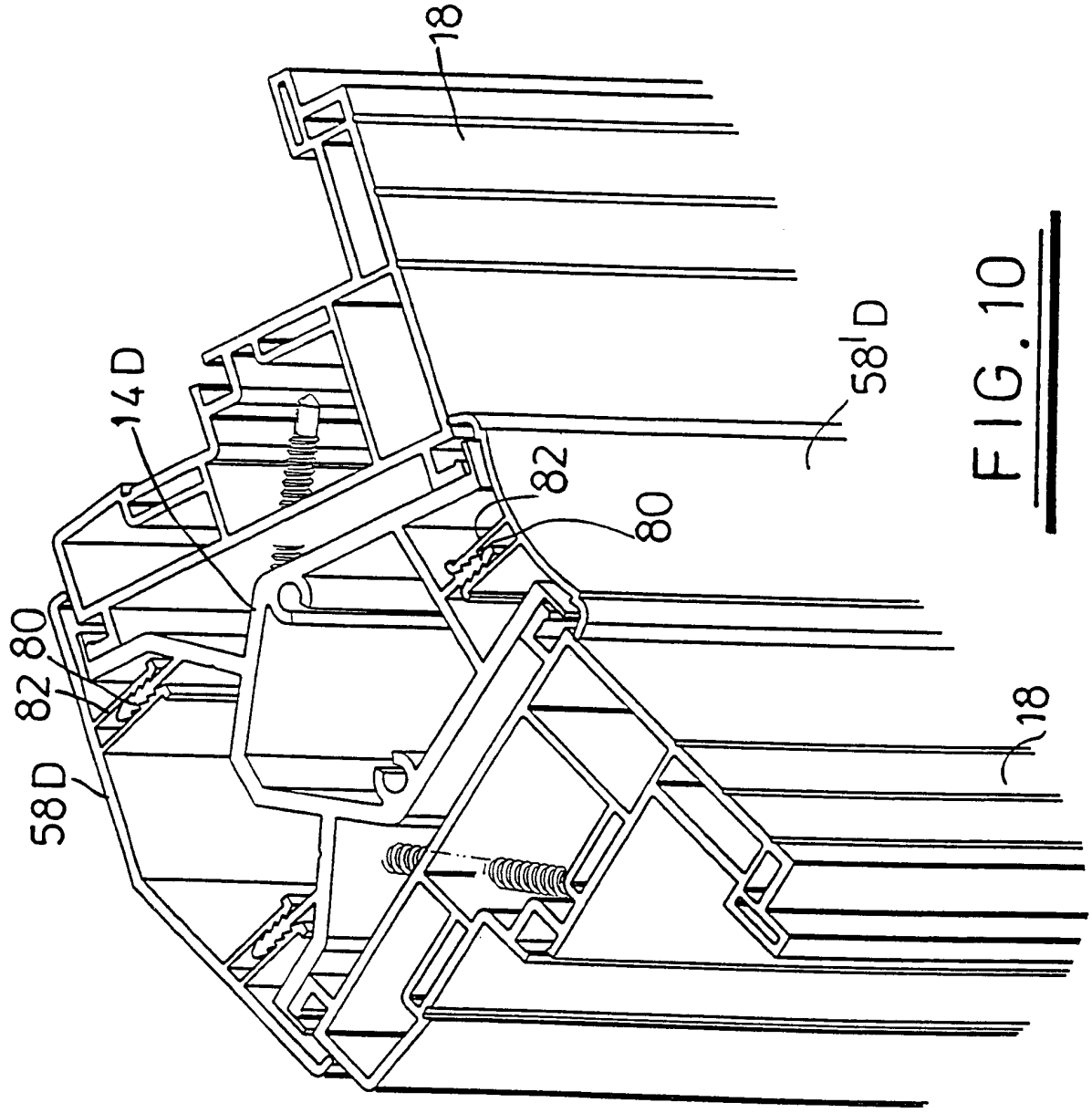


FIG. 10

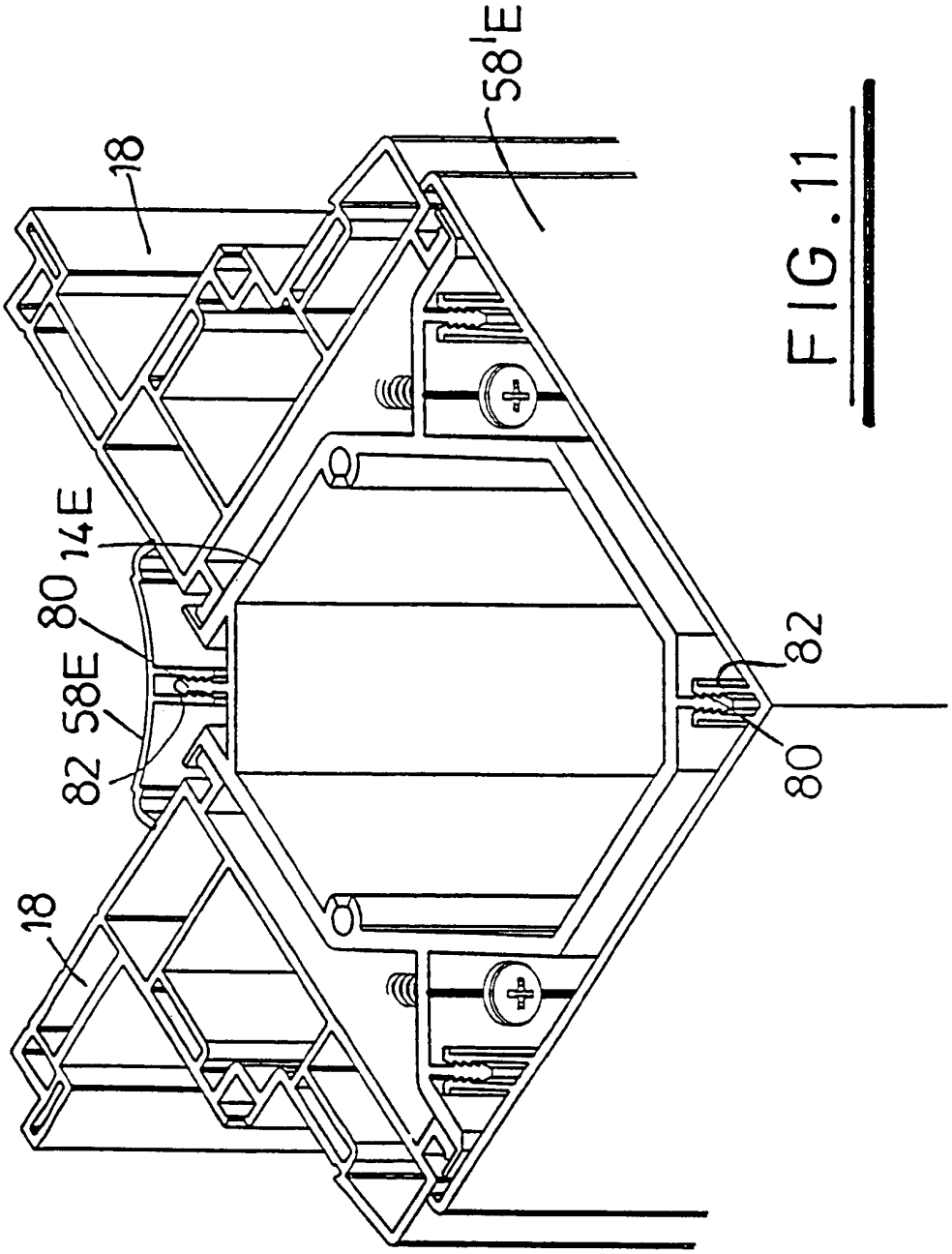


FIG. 11

INTERNATIONAL SEARCH REPORT

Interr nal Application No
PCT/GB 00/02144

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E04B1/00 E06B1/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 E04B E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 843 787 A (PIERSON ROGER G) 4 July 1989 (1989-07-04) the whole document	1,2,14, 15
A	DE 195 24 612 A (GRUNDMEIER KG) 9 January 1997 (1997-01-09) the whole document	1,3, 5-10,21
A	DE 295 03 398 U (ELLENBECK GERD) 13 April 1995 (1995-04-13) page 6, line 11 -page 9, line 5; figures 1-5	1,3,5,9, 15,16,21

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 September 2000	18/09/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Vrugt, S

1

INTERNATIONAL SEARCH REPORT

.formation on patent family members

Inter ›nal Application No
PCT/GB 00/02144

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4843787 A	04-07-1989	CA 1326407 A	25-01-1994
DE 19524612 A	09-01-1997	NONE	
DE 29503398 U	13-04-1995	NONE	