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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :		(11) International Publication Number:
E04D 3/06	A1	WO 91/01419
		(43) International Publication Date: 7 February 1991 (07.02.91)

(21) International Application Number: PCT/GB90/01094

(22) International Filing Date: 16 July 1990 (16.07.90)

(30) Priority data:

8916243.2	14 July 1989 (14.07.89)	GB
9005023.8	6 March 1990 (06.03.90)	GB

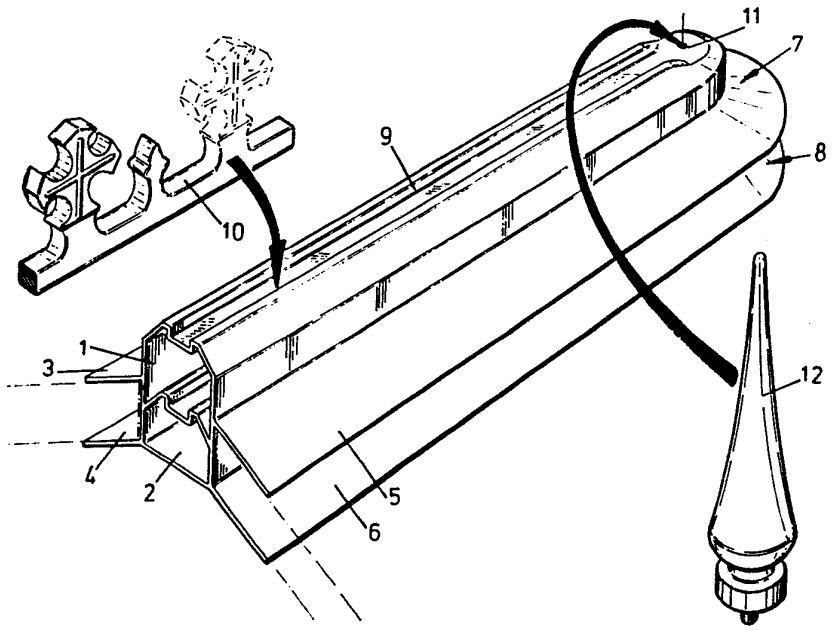
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(81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE*, DE (European patent)*, DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.

Published
With international search report.

(54) Title: CONSERVATORY ROOF SUPPORT ASSEMBLY



(57) Abstract

A support assembly for a conservatory roof comprising at least one pair of substantially parallel spaced apart members (3-6) defining a slot, the slot being dimensioned to receive the upper edge of glazing panels of a conservatory roof and the upper ends of glazing panel support struts. For a roof with a ridge, the spaced apart members extend along the length of an elongate section. For a pavilion-style roof, the slot extends around a rectangular central body. For a circular roof, the slot is defined around a generally circular structure.

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Conservatory Roof Support Assembly

The present invention relates to a conservatory roof support assembly.

There is a large market for conservatories ranging from simple single-glazed aluminium framed greenhouse-type lean-to structures to ornate double-glazed hardwood-framed structures which have the appearance of conservatories which were popular in the Victorian era. Simple aluminium structures made up from bolted-together sections are cheap to produce and assemble but require unsightly bracing and nut-and-and bolt interconnections between the various frame components. There is therefore a great preference for more ornate Victorian-type structures but these are expensive primarily because of the skill required in manufacture and assembly. The ornate structures generally require several days work by a team of skilled installers, particularly if unsightly joints between the conservatory frame members are to be avoided. Thus although some manufacturers claim that their conservatories are made from standard components in practice there is a great deal of on-site fitting out work required if an acceptable result is to be achieved.

It is an object of the present invention to provide a support assembly for a conservatory roof which obviates or mitigates the problems outlined above.

According to the present invention there is provided a support assembly for a conservatory roof, comprising at least one pair of substantially parallel spaced apart members defining a slot, the slot being dimensioned to receive the upper edge of glazing panels of the conservatory roof and the upper ends of glazing panel support struts.

The support assembly may comprise an elongate section supporting said at least one pair of substantially parallel spaced apart members, the slot defined by the spaced apart members extending along the length of the section.

Preferably the elongate section defines at least one box section to provided rigidity. The or one of the box sections may provide a concealed passageway through which for example

lighting wires can be passed. The or at least one of the box sections may be filled with for example a rigid foam to provide increased strength and rigidity. The elongate section also preferably supports on its upper surface a slot into which embellishments such as finials can be inserted.

Alternatively, the support assembly may be suitable for forming a pavilion-style roof, comprising a rectangular central body around which the slot extends, the central body being supported on and in turn supporting glazing panel support struts secured in the slot. As a further alternative, the support assembly may be a simple circular arrangement suitable for supporting the roof of the generally circular conservatory, the slot in the circular arrangement extending through 360° therearound.

The advantage of the invention is that the support assembly provides a rigid load-bearing structure to which roof spars can be easily affixed in a visually pleasing manner.

A support assembly in accordance with the invention for use as the ridge of a conservatory will comprise two pairs of spaced apart members arranged on opposite sides of the section. One end of the section may define a curved end-portion running continuously between the two pairs of spaced apart members. This is particularly advantageous as the normal complex bracket assembly required for uniting the roof spars at one end the ridge of the conservatory where the roof spars taper towards each other can be avoided.

If the support assembly is to be used as the ridge of for example a lean-to conservatory, only one pair of spaced apart members is required. A similar structure could be used as an eaves assembly.

The elongate section may be easily formed from two identical or substantially similar sections united to form a box section from the sides of which the two parallel spaced members depend.

A support assembly in accordance with the invention for use as the roof of a pavilion-style conservatory may comprise two moulded members the edges of which define respective edges

of the said slot. Corners of the rectangular central body may define curved portions arranged such that the slot runs continuously around the corners. This is particularly advantageous as the normal complex bracket assembly required for uniting the roof spars at corners of the structure can be avoided. Rigid foam or other light weight structural materials may be used to interconnect the moulded members so that the final assembly has a box-like structure.

The support assembly in accordance with the invention for use as the roof of a circular conservatory may comprise two spaced apart moulded members of generally dish-shaped form united together so as to define the 360° slot therearound. The resultant structure is sufficiently strong to reliably interconnect adjacent roof spars which taper together towards the top of the conservatory roof.

Thus the support assembly of the present invention may be easily formed from simple mouldings united to form a rigid body from the sides of which the two spaced members defining the slot depend. Thus the assembly may be formed in a simple and cheap manner from for example glass reinforced plastics sub-assemblies.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective exploded view of a support assembly in accordance with the present invention and decorative components which can be mounted thereon;

Fig. 2 is a side view of a curved end portion of the support assembly in Fig. 1;

Fig. 3 is an end view of an embodiment of the present invention fabricated from two identical components united by a glass reinforced plastic linking component;

Fig. 4 illustrates an alternative arrangement for uniting the two main components shown in Fig. 3;

Fig. 5 illustrates a further embodiment of the invention fabricated from two non-identical components,

Fig. 6 is a plan view of a support assembly in accordance

with the present invention incorporated in a pavilion style conservatory;

Fig. 7 is a perspective view of the support assembly of Fig. 1 sectioned on the line 7-7 of Fig. 6;

Fig. 8 is a perspective view of one corner of the support assembly of Fig. 6;

Fig. 9 is a plan view of the circular support assembly incorporated in a generally circular conservatory; and

Fig. 10 is a side view of the support assembly of Fig. 9.

Referring to Fig. 1, the illustrated support assembly comprises along the majority of its length a section defining a first box 1, a second box 2, a first pair of side members 3 and 4, and a second pair of side members 5 and 6. The end of the support assembly shown to the left in Fig. 1 is intended to abut the wall of a house whereas the other end is curved to define a pair of spaced apart members 7 and 8 which extend continuously between the side members 3 and 5 and the side members 4 and 6 respectively. The upper surface of the box section 1 defines a groove 9 into which a finial 10 can be secured by any convenient means, for example double-sided adhesive tape, screws or the like. The end of the upper portion of the support assembly defines a threaded hole 11 into which a decorative point 12 can be inserted.

The pairs of side members extend in a generally horizontal direction and are substantially parallel and thus define therebetween a slot into which the upper ends of roof spars can be inserted and secured by for example bolts extending through the lower of the side members. Thus a conservatory roof structure can be easily assembled by inserting roof struts between the side members, securing them in position and then mounting the full roof assembly on a pre-assembled set of solid walls. The process of assembling the conservatory roof is thus very much simplified as compared with tailor made timber or other components. Because of the box sections in the support assembly it is inherently strong and can therefore provide the necessary support for relatively heavy glazing panels. If desired however the assembly can be reinforced by any suitable means,

for example longitunally extending wooden members (not shown).

The roof spars may be inserted and fixed in position on site and glazing panels mounted thereon as a separate operation. Alternatively, glazing panels already supported in frameworks can be supplied and united together and with the ridge support assembly on site. Such an approach would additionally strengthen the ridge of the conservatory.

The support assembly illustrated in Figs. 1 and 2 has a curved end portion and therefore cannot be extruded continuously. A continuously extruded assembly could be provided however if a separate rounded end was provided which could be securely fixed to the end of the support assembly if this proved convenient. Alternatively the support assembly can be fabricated from separate components and this will be the preferred method in many cases.

Fig. 3 illustrates an arrangement which can be formed from two identical glass reinforced plastic components. Such components are already available in the form of non-load bearing covers for conservatory roofs. In the arrangement of Fig. 3 and upper component 13 defines the side members 3 and 5 and a lower component 14 defines the side members 4 and 6. The two components 13 and 14 are united by a glass reinforced plastic web 15 which is adhered therebetween. The result is in structural terms substantially identical to that illustrated in Fig. 1. Clearly the embodiment of Fig. 3 has its attractions as it can be easily fabricated from available components and subsequently manually inserted webs 15. As the webs 15 are not visible the finish which can be easily achieved by manual application is perfectly acceptable.

Fig. 4 shows an alternative arrangement similar to that of Fig. 3 but incorporating a third component 16 which serves to united the two components 13 and 14. The three components can be adhered together by conventional adhesive means. The component 16 could be formed from for example extruded aluminium or pressed steel to increase the rigidity and load bearing capacity of the assembly.

Fig. 5 shows a still further embodiment of the invention

assembled from two non-identical components. The upper component 13 is identical to that shown in Figs. 3 and 4 whereas the lower component 17 is shaped to fit snugly inside the component 13 and be secured therein by for example adhesives. Again glass reinforced plastic is an ideal material for forming the components illustrated. To improve the location of one component in the other the side walls which are shown as extending parallel to each other in Fig. 5 could be tapered slightly without materially affecting the final appearance of the product.

The box section or sections defined by the assemblies illustrated in the accompanying drawings provide weather-proof passageways which could be utilized to receive for example wiring extending to light fittings suspended from the assembly. The illustrated assembly defines two box sections. One of these can be left empty to provide a passageway for wiring whereas the other can be filled with for example a rigid foam to improve strength and rigidity.

Thus the present invention provides an easily manufactured economic component for forming ridge members in conservatories of any desirable outward appearance. The use of such assemblies significantly reduces the skill required in forming and assembling a strong and attractive conservatory roof.

Referring to Figs. 6 to 8, these illustrate a support assembly in accordance with the present invention suitable for use in a pavilion style conservatory, that is a conservatory having a central generally horizontal section 18 an edge 19 of which abuts a building (not shown) and edges 20, 21 and 22 of which are in a common plane located below the central section 18. Roof spars 23 extend downwards from the central section 18 and glazing panels 24 are supported between the roof spars. It will be appreciated that appropriate support in the ceiling devices will be provided along the edge 19 and appropriate edge details such as gutters and the like will be provided along the edges 20, 21 and 22. These details are not illustrated as they are not directly relevant to the present invention.

Referring to Fig. 7, the central section 18 comprises an upper moulded member 25 and a lower moulded member 26 which are formed as single piece mouldings and are united around their periphery by moulded strips 27. The edges of the moulded members 25 and 26 define downwardly sloping members between which a continuous slot is formed. In Fig. 6, this slot runs around the three sides of the central section 18 which extend from or are spaced from the edge 19.

The lowermost member 26 has adhered to it a plywood sheet 28 and the uppermost member 25 has adhered to it a rigid foam body 29. The body 29 and the plywood sheet 28 are interconnected by elongate rigid foam blocks 30, the blocks 30 being secured by adhesive to the adjacent foam body 29 and plywood sheet 28. Grooves 31 are formed in the upper surface 25 the grooves stopping short of the two corners remote from the side 19. A detail such as the detail 32 illustrated in Fig. 7 can be secured by adhesive or any other suitable means in the grooves 31.

At each of the corners remote from the edge 19 a flat region 33 is defined which can be used to receive a detail such as the detail 34 shown in Fig. 8.

In use, the upper ends of the roof spars 23 are inserted into the slot defined between the members 25 and 26 at appropriate locations and secured in position by appropriate means such as bolts. The resultant assembly can then be mounted on suitable vertical support walls and then glazed. The box-like reinforced structure of the central section 18 ensures that the entire roof assembly is sufficiently rigid to take the substantial loads resulting from the use of heavy glazing panels. The upper ends of the roof spars 23 are neatly received in the slot defined between the members 25 and 26 in a visually appealing manner.

The support assembly described in Figs. 6 to 8 could be made in a range of widths and simply cut to an appropriate length. The assembly could then be easily manoeuvred into position and secured to appropriate roof spars by fitter using simple techniques and tools.

Referring now to Figs. 9 and 10, these illustrate a further embodiment of the present invention. In Fig. 9, a support assembly 35 in accordance with the present invention has secured to it roof spars 36 which support between them glazing panels 37. Suitable supports will of course be provided for the radially outer edges of the glazing panels and of the roof spars but these are not shown as they are not directly relevant to the present invention.

As shown in Fig.10, the support assembly 35 comprises an upper cap-like member 38 secured to an identical lower cap-like member 39 by generally tubular insert 40 secured by flanges 41 to the adjacent structures. An upper portion of the cap-like member 38 defines a recess indicated by broken lines into which a detail such as detail 34 of Fig. 8 can be inserted.

In use, roof spars 36 are simply inserted into the slot defined between the members 38 and 39, secured in position inside the slot, and mounted on a appropriate vertical support wall. The glazing panels 37 may then be added. Thus once again a simple to manufacture and assemble arrangement is provided for building a relatively complex roof structure.

In the illustrated embodiments, the base of each slot is defined by a vertically extending wall. Assuming that roof struts are inserted the ends of which are cut-off at right-angles to their length, the depth of penetration is limited to the width of the lower side of the slot. A stronger assembly would result if the strut could be inserted to the full depth of the upper side of the slot. This can be achieved if the portion of the moulding defining the base of the slot is offset inwards so that it does not obstruct insertion of the roof struts to the full width of the upper side of the slot. The base of the slot could be inclined outwards to match the inclination of the roof strut ends. This approach would make moulding more difficult however, but this problem could be overcome by retaining a vertically extending base wall but filling the resultant space at the ends of the roof struts with a rigid foam moulding of triangular section. The triangular moulding could be inserted during assembly of the structure. Different sized triangular

mouldings could be used to determine the slot width to suit different roof strut sizes.

CLAIMS

1. A support assembly for a conservatory roof, comprising at least one pair of substantially parallel spaced apart members defining a slot, the slot being dimensioned to receive the upper edge of glazing panels of the conservatory roof and the upper ends of glazing panel support struts.

2. A support assembly according to claim 1, comprising an elongate section supporting said at least one pair of substantially parallel spaced apart members, the slot defined by the spaced apart members extending along the length of the section.

3. A support assembly according to claim 2, wherein the elongate section defines at least one box section.

4. A support assembly according to claim 3, wherein the or at least one of the box sections provides a concealed passageway extending along the length of the elongate section.

5. A support assembly according to claim 3, wherein the or at least one of the box sections is filled to enhance the strength and rigidity of the elongate section.

6. A support assembly according to any one of claims 2 to 5, wherein the elongate section defines a slot on its upper surface to receive embellishments.

7. A support assembly according to any one of claims 2 to 6, comprising two pairs of spaced apart members arranged on opposite sides of the elongate section and a curved end-portion arranged at one end of the elongate section and defining a slot running continuously between the slots defined between the said two pairs of spaced apart members.

8. A support assembly according to claim 1, comprising a rectangular central body around which the slot extends, the central body being supported on and in turn supporting glazing panel support struts secured in the slot.

9. A support assembly according to claim 8, comprising two moulded members the edges of which define respective edges of the said slot.

10. A support assembly according to claim 9, comprising

curved portions arranged at corners of the rectangular central body such that the slot runs continuously around the corners.

11. A support assembly according to claim 9 or 10, wherein the two moulded members are interconnected by bodies of structural material.

12. A support assembly according to claim 11, wherein the structural material is rigid foam.

13. A support assembly according to claim 1, comprising a circular arrangement around which the said slot extends for 360

14. A support assembly according to claim 13, wherein the circular arrangement comprises interconnected upper and lower cup-like members.

15. A support assembly substantially as hereinbefore defined with reference to Figs. 1 to 5, Figs. 6 to 8, or Figs. 9 and 10 of the accompanying drawings.

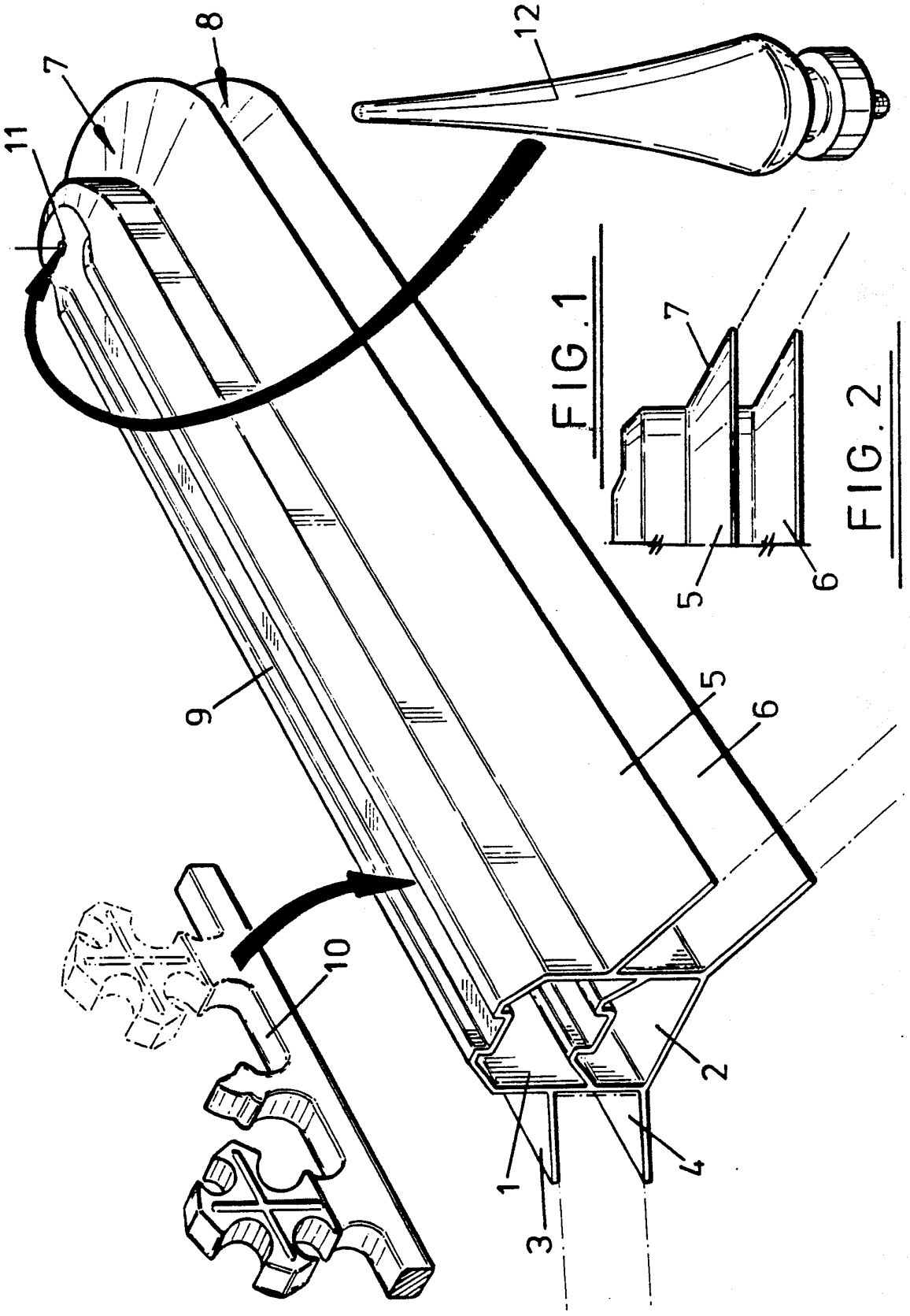


FIG.1

FIG.2

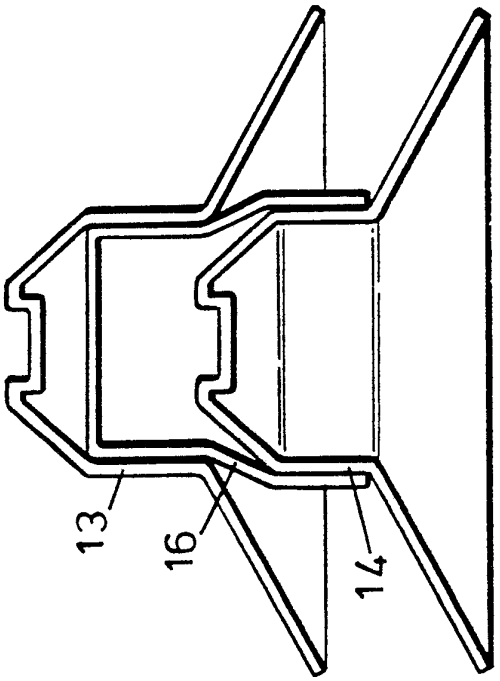


FIG. 4

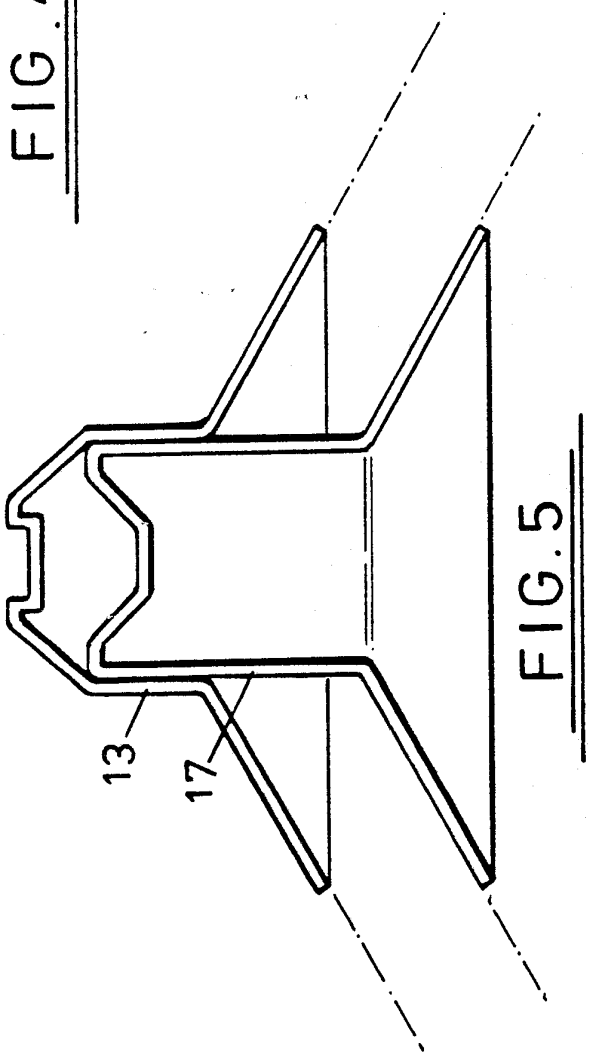


FIG. 5

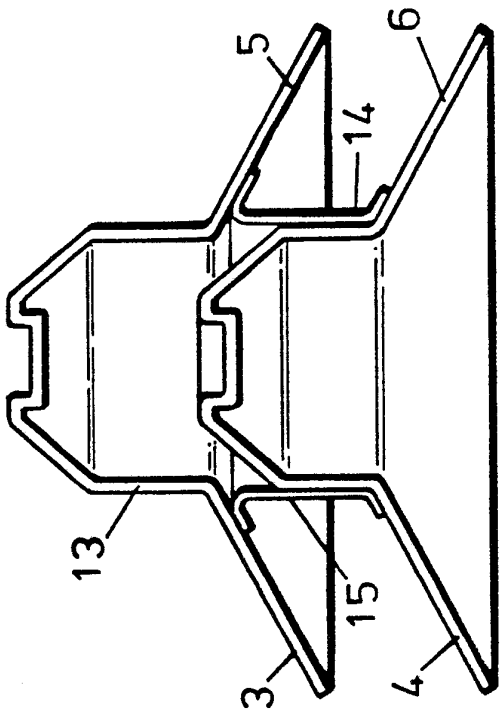


FIG. 3

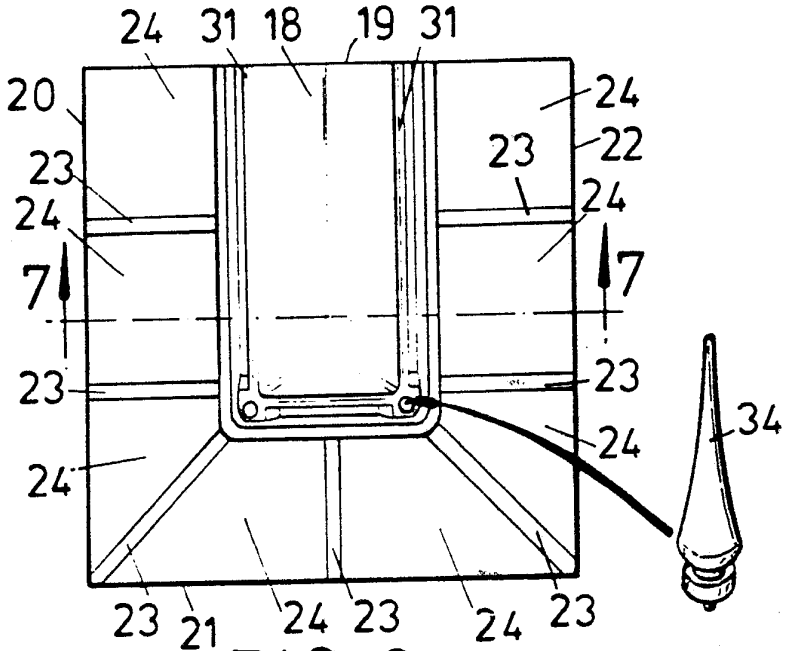

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FIG. 6

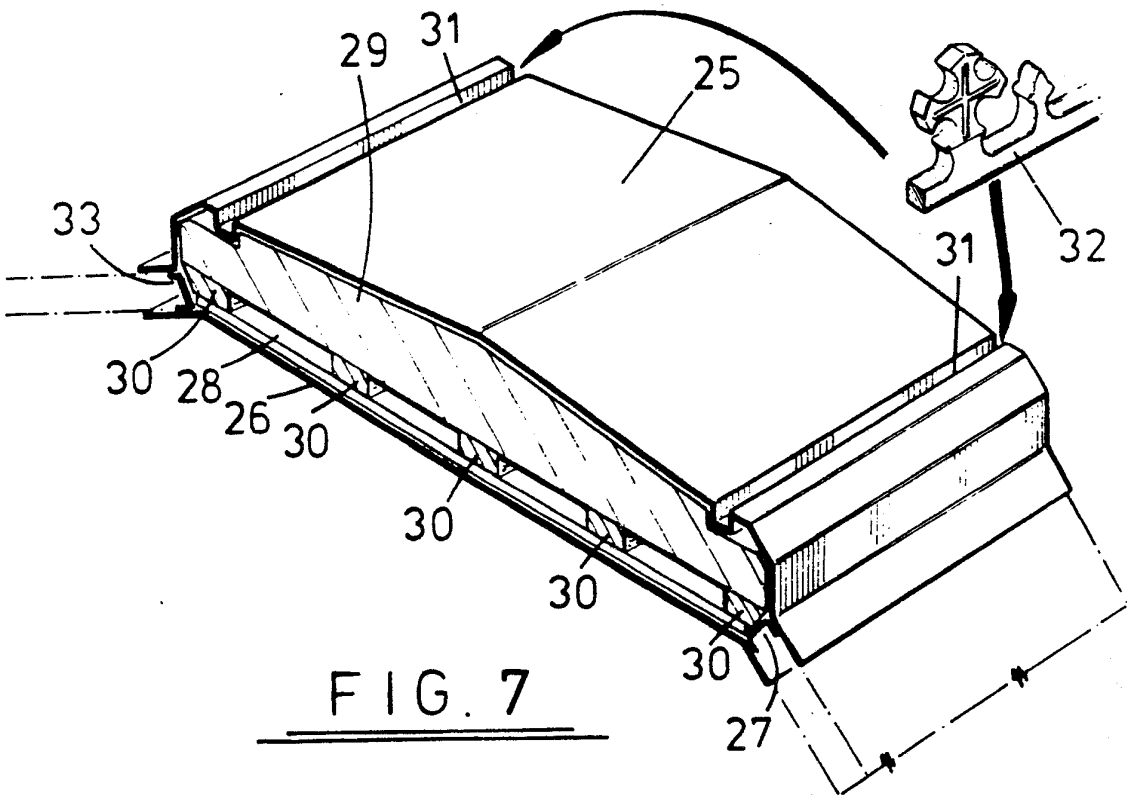

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FIG. 7

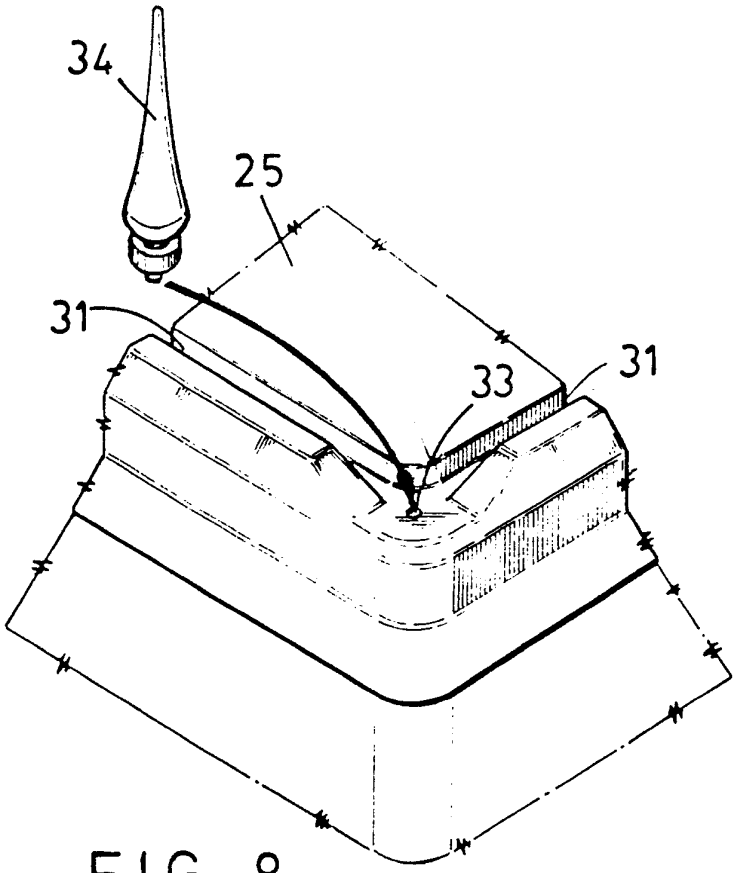


FIG. 8

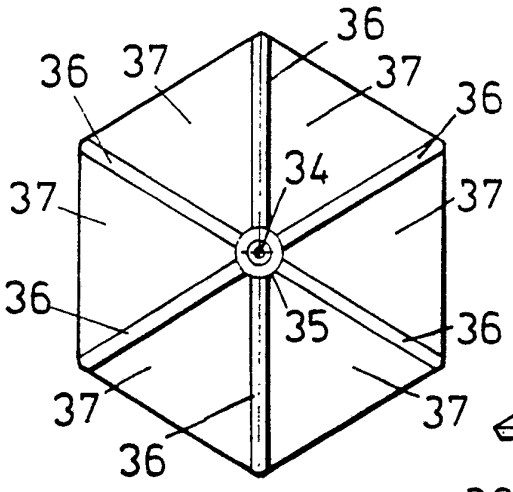


FIG. 9

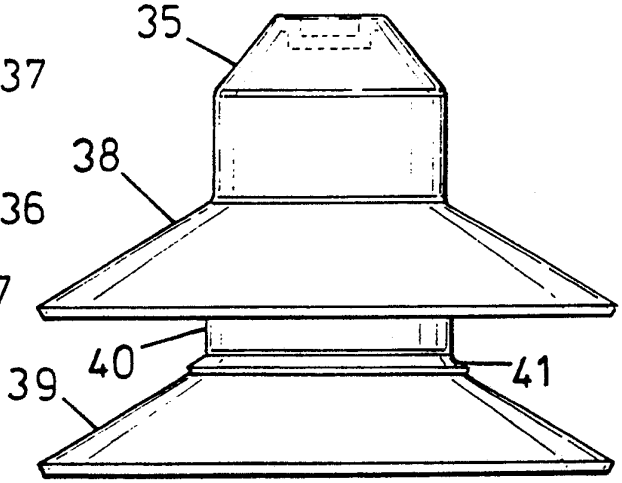


FIG. 10

INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 90/01094

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[5]: E 04 D 3/06

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC[5]	E 04 D, E 04 B

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
P,X	GB, A, 2212183 (UNIVERSAL COMPONENTS) 19 July 1989 see page 1, line 1 - page 2, line 17; figures 1,2,7-11	1-4,8
P,A	--	6,13
A	US, A, 4671027 (C. ESPOSITO) 9 June 1987 see abstract; figures 1,3,5	1,2,8,9,11
	--	
A	WO, A, 88/01324 (DUNHILL) 25 February 1988 see page 1, line 1 - page 3, line 9; figures 1-3,7	1-4,7-10,13
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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
25th October 1990	14 NOV 1990
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	Mme N. KUIPER

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	US, A, 4565723 (HIRSCH) 21 January 1986 see abstract; figures 1,2	5
A	EP, A, 0092078 (GEBHARDT) 26 October 1983 see page 2, line 11 - page 3, line 10; figures 1-4	9-12
A	DE, A, 3640489 (ERBSLÖH GmbH) 9 June 1988 see abstract; figures 1,2,4	13,14
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. GB 9001094 SA 38605

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 07/11/90
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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FR-A- 1277074		None	