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**E04D 3/08 3/36 , E06B 3/68**

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**E1R RRH RR24**

(56) Documents Cited

**GB 2314875 A** **GB 2275958 A** **GB 2259937 A**  
**GB 2165878 A** **WO 93/25779 A1** **WO 91/14056 A1**

(58) Field of Search

UK CL (Edition P ) **E1R RF RRF RRH RRV RRX**  
INT CL<sup>6</sup> **A01G 9/14 , E04B , E04D 3/06 3/08 3/36 ,**  
**E06B 3/54 3/64 3/68**  
Online: **WPI, EPODOC, PAJ**

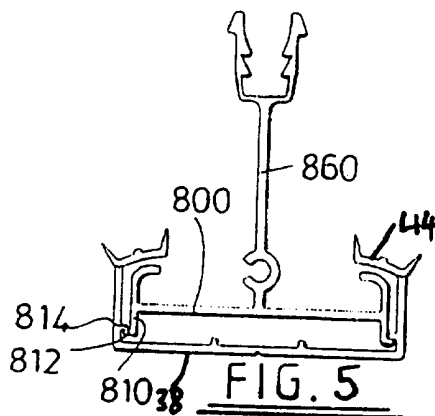
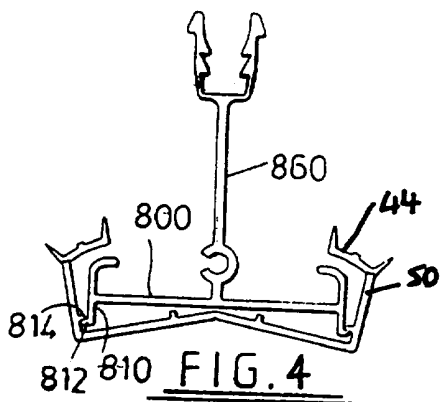
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(54) Abstract Title

**Roof beam glazing bar**

(57) A roof beam for use in forming a conservatory roof comprises a glazing bar and upper and lower cappings fitted thereto, the glazing bar being of generally inverted T-section providing a cross bar 800 and an upstanding limb 860, the cross bar having a central section and edges in the form of side walls 810 extending above and below the central section to form a recess in the underside of the glazing bar and the side walls having formations 812 thereon for positive engagement with the lower capping 38, the lower capping comprising a channel section with coextruded gaskets 44 along edges thereof fitted over upper parts of the side walls. The lower capping has a flexible central strip allowing it to bend as in figure 4.



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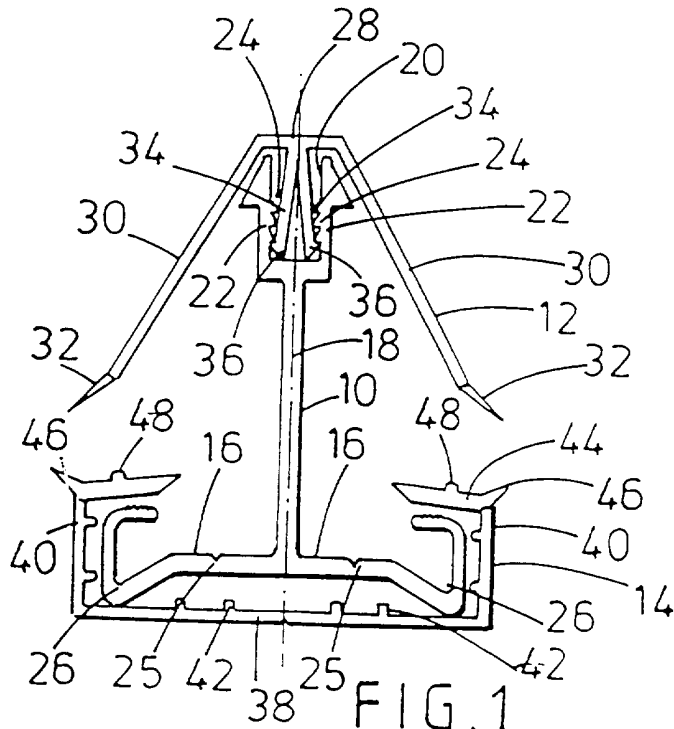


FIG. 1

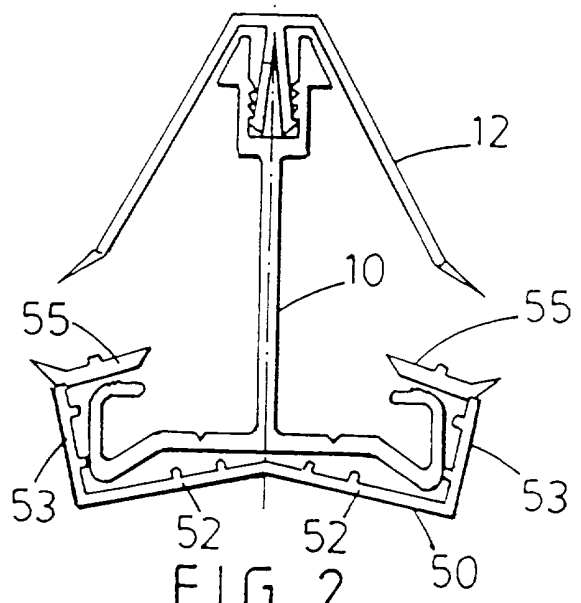


FIG. 2

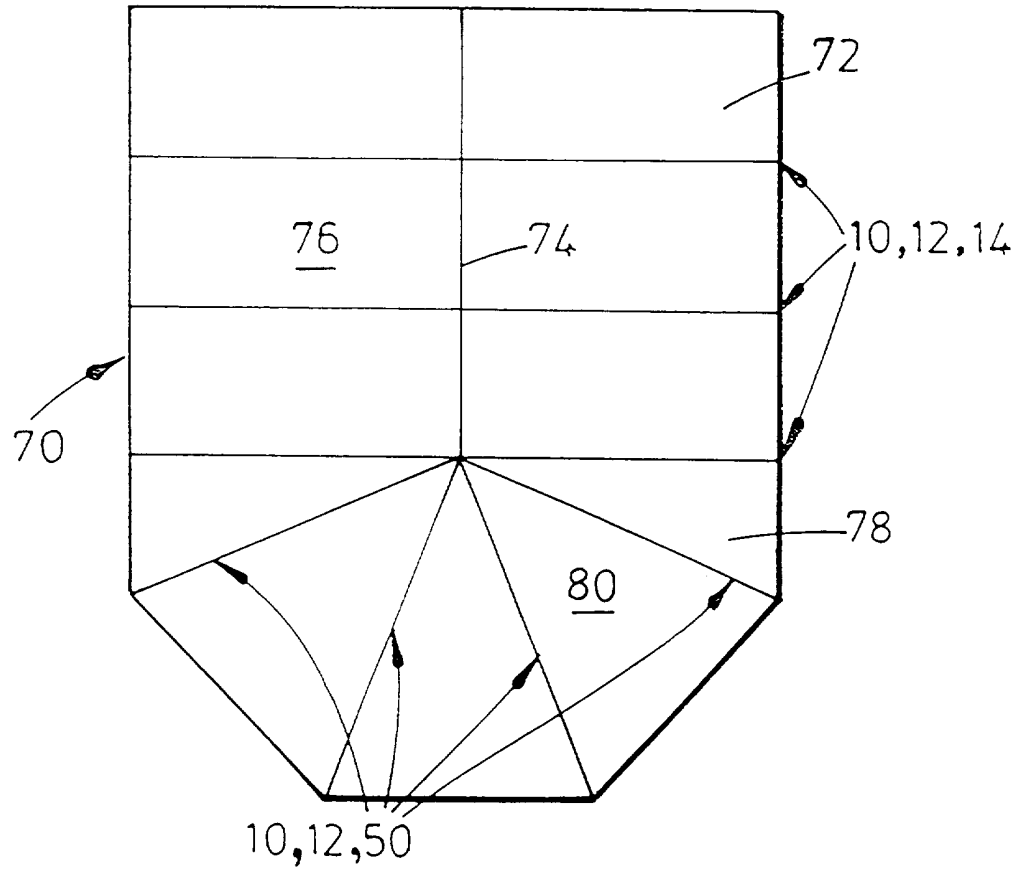
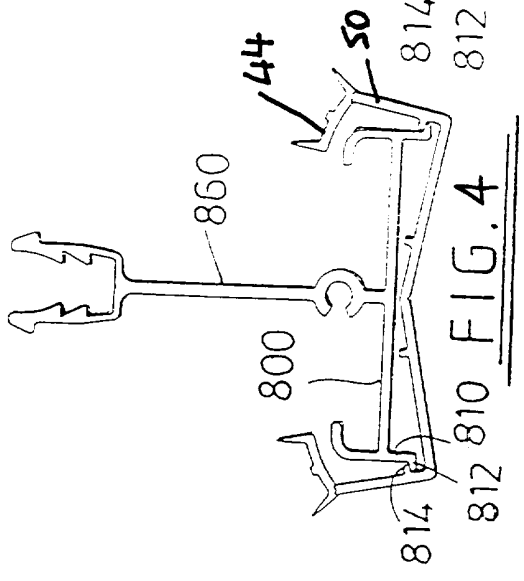
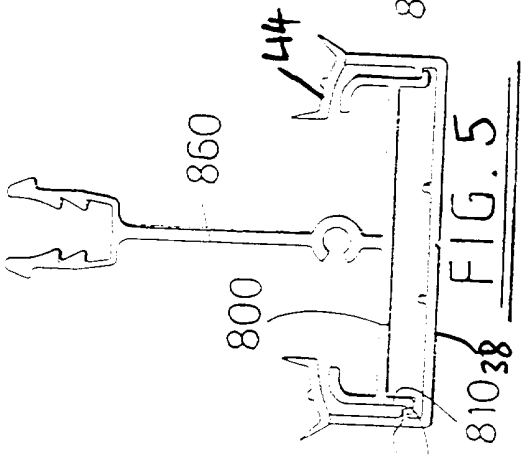


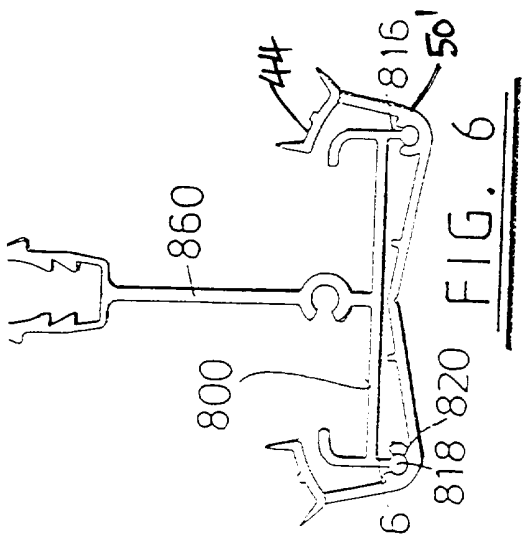
FIG. 3



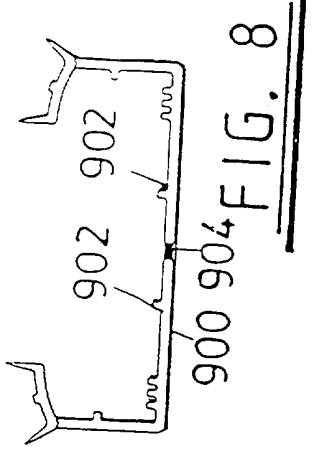
812 810 FIG. 4



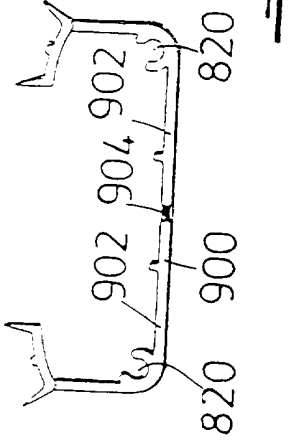
810 38 FIG. 5



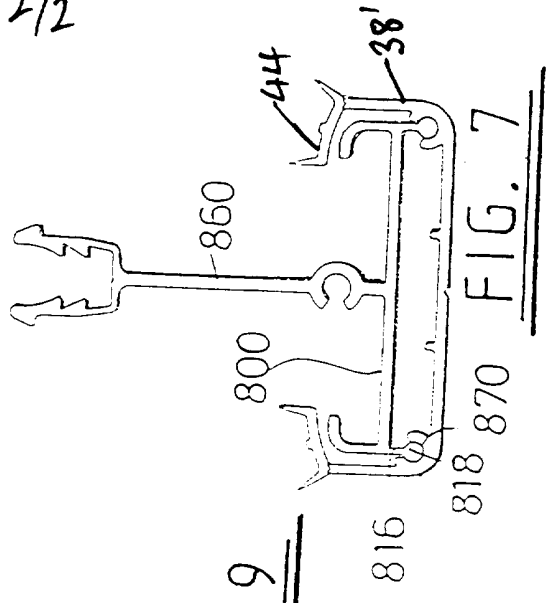
818 820 FIG. 6



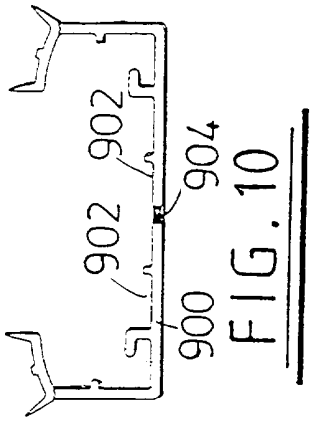
900 904 FIG. 8



820 FIG. 9



818 870 FIG. 7



900 904 FIG. 10

TITLE: Roof Beams

DESCRIPTION

This invention concerns roof beams, especially for use in constructing conservatories and like structures having roofs comprising panels usually of translucent material supported between roof beams.

Translucent panels for conservatory roofs are generally sandwiched at their edges between upper and lower roof beam forming extrusions or cappings coupled to a glazing bar, usually of aluminium. To provide a good seal above and below the translucent panels, provisions are made for the roof beam to retain gaskets in suitable positions.

Upper roof beam forming extrusions or cappings may have gaskets formed integrally with panel contacting edges thereof and gaskets for the underside of the panels are usually retained in special formations of the aluminium glazing bars. These gaskets have to be fitted to the extrusions on site which takes up time. Also, the extrusions are more expensive to produce because of the additional gasket retaining formations required.

Furthermore, in order to retain the lower beam forming cappings, the aluminium glazing bars require further formations on which the lower beam cappings can locate.

In our co-pending British Patent Application No. 2275958A it was proposed to provide a roof beam construction for use in constructing conservatory roofs comprising a glazing bar and upper and lower cappings

therefor having gaskets formed integrally on edges thereof between which a roofing panel is to be retained and means for locating the cappings on said glazing bar, wherein the means for locating the lower capping on the glazing bar comprises the integrally formed gaskets, which in use are trapped between the glazing bar and roofing panel.

The lower cappings are formed with either a flat base or with a base having a pair of angled longitudinal facets. For each type of capping the glazing bar, generally an inverted T in section, has its cross bar correspondingly shaped, i.e. either flat or with two angled facets. In forming Victorian style conservatories, both types of glazing bar will usually be used. The glazing bars with the flat base and corresponding cappings are usually used as transom bars extending from opposite sides of a ridge of the conservatory to the eaves and the angled base glazing bars with corresponding cappings are used for forming the Victorian roof end, which is formed with triangular section roofing panels. Thus, in forming a Victorian style conservatory, two different types of glazing bar and lower cappings are required, which adds to the cost. Furthermore, care has to be taken when erecting such a conservatory to ensure that glazing bars are installed in the correct positions.

An object of this invention is to provide a roof beam for conservatories, which may have universal application for transom and Victorian situations as defined above.

According to the invention there is provided a roof beam for use in forming a conservatory roof, comprising a glazing bar and upper

and lower cappings fitted thereto the glazing bar being of generally invented T-section providing a cross bar and an upstanding limb, the cross bar having a central section and edges in the form of side walls extending above and below the central section to form a recess in the underside of the glazing bar and the side walls having formations thereon for positive engagement with the lower capping, the lower capping comprising a channel section with coextruded gaskets along edges thereof fitted over upper parts of the side walls.

Upper parts of the glazing bar side walls preferably have inward returns. The side walls are preferably in planes parallel to the plane of the upstanding limb. The inward returns of the side walls preferably have arcuate top surfaces.

The overall height of the cross bar side walls may be chosen to receive transom and Victorian style lower cappings of the same or a similar depth, whilst the recess on the underside of the cross bar can accommodate the angled facets of the Victorian lower capping base. The glazing bars of the invention may also accommodate glazing panels at a variety of angles. Furthermore, as the same glazing bars may be used for transom situations and for roof end situations where glazing panels are angled relative to each other, it may be possible to use the same size top cappings on both rather than having to use a larger size top capping on the roof end glazing bars.

Formations for positive engagement of the glazing bar and lower capping may comprise, for example, corresponding hook like formations or may comprise ribs that snap fit into channels. Such channels are preferably

formed internally of the lower cappings.

Thus, with this type of formation for the cross bar, a capping having either a flat base or an angled facet base can be accommodated thereon, so that the need for two different formations of glazing bar can be eliminated. By having the top surfaces of the inward returns of the side walls arcuate or curved, the integral gaskets on top edges of the capping can be accommodated irrespective of the angle of the co-extruded gasket.

The inward returns of the side walls preferably also have top surfaces that are profiled or roughened in order to provide improved grip for the capping on the underside of the cross bar for co-extruded gaskets on edges of cappings, which in use are sandwiched between the glazing bar and glazing panels.

Glazing bars of the invention may be secured to other components of a roof system by means of screws, bolts or the like through the cross bars thereof. However, for some situations end fixing of glazing bars may be desirable. For that purpose the upstanding limb of a glazing bar may be formed with a screw or bolt port to receive same in a longitudinal direction of the glazing bar. As the glazing bars of the invention will normally be formed as extrusions, the port will run the length of a glazing bar section and be available, therefore, at opposite ends of the glazing bar to receive a screw, bolt or other suitable fixing.

For glazing bars used in the present invention the screw port will conveniently be situated just above the junction of the upstanding limb with

the cross bar or at the intersection of the upstanding limb and cross bar.

A preferred lower capping is of extruded plastics material, such as PVC, and is preferably formed as a channel section with either a flat base or with a base having a pair of angled longitudinal facets. The gasket material is preferably co-extruded onto the capping and is preferably of rubber or a synthetic elastomeric material. The gaskets preferably extend inwards from opposite sides of the channel and may have deformable resilient ribs or the like, especially at edges and also possibly centrally thereof to provide a good seal when compressed. Preferred gaskets are generally arcuate in section, so that they are concave on their underside. This feature may be of advantage in fitting the cappings to glazing bars by allowing more room for the gaskets to be slipped over edges of the glazing bar cross bar. Internally of the lower cappings are preferably one or more spaced projections or ribs to ensure correct alignment of the glazing bar and capping when fitted together.

The lower cappings may have their bases formed with a relatively flexible mid-section, which may facilitate fitting thereof to glazing bars. In one preferred form the lower capping base is formed with a co-extruded rubber or elastomeric strip centrally thereof along its length.

The upper capping may be of any desired cross-section provided that it has at least one depending edge on which a gasket is formed. The preferred upper capping is formed by extrusion of plastics material, such as PVC, and has gaskets co-extruded onto its depending edge or edges, again preferably of rubber or of synthetic elastomeric material. Internally of the upper capping there is preferably a means for coupling the capping to the



glazing bar. Preferably resilient formations depend from the inside of the capping, which formations have outward projections thereon and these formations locate in an upwardly open channel of the glazing bar which has a series of internal recesses or notches for receiving said projections. The provision of a series of recesses or notches for receiving the projections allows the resilient depending formations of the capping to be pressed down into the glazing bar any desired distance depending on the thickness of the roofing panel or panels which is or are being secured in place by the capping and make a snap fit.

The upwardly open channel preferably has converging sides leading to first notches. The converging sides may be planar or curved. The channel is preferably sufficiently deep with sufficient notches or recesses to receive a single size capping irrespective of the depth of the glazing panels being accommodated. A series of two notches or recesses on each side of the channel, may be sufficient for most purposes provided the channel is deep enough.

A roof beam according to the invention may be formed for locating the roofing panel on one side thereof, such as when the other side of the beam is to be secured to a wall or may be formed for locating roofing panels on opposite edges thereof for use intermediate edges of the roof structure.

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

Figure 1 shows a first roof beam arrangement not according to the invention;

Figure 2 shows a second roof beam arrangement not according to the invention;

Figure 3 shows a schematic plan view of a typical Victorian style conservatory;

Figures 4 to 7 show various forms of glazing bar according to the invention and lower cappings therefor for forming roof beams; and

Figures 8, 9 and 10 show variations on lower cappings for roof beams according to the invention.

Referring to Figures 1 and 2 of the accompanying drawings including herein by way of explanation, a roof beam arrangement for forming conservatory or like roofs comprises a glazing bar 10, an upper capping 12 and a lower capping 14. In use roofing panels, such as of translucent plastics material, for example polycarbonate, will have their edges sandwiched between the upper capping 12 and the lower capping 14 on opposite sides of the roof beam arrangement.

The glazing bar 10 is extruded from aluminium and is generally of T-section but inverted in use. Thus, the glazing bar 10 has a pair of flanges 16, which are turned back on themselves at their remote ends, and an upstanding limb 18 which is bifurcated to form an upwardly open channel 20 having generally parallel sides 22. On the inside of each side 22 is a series of notches 24 forming downwardly open recesses.

Each flange 16 has a first part 25 generally perpendicular to the upstanding limb 18 and a second part which forms a trough 26 remote from the upstanding limb 18. The upper capping 12 is extruded from PVC and is

generally of inverted V-section but comprises a flat top 28 and depending sides 30. The remote edges of the sides 30 have gaskets 32 formed thereon by co-extrusion of rubber or synthetic elastomeric material. Internally of the capping 12 and depending from its flat top 28 are a pair of resilient divergent flaps 34 having outwardly projecting lips 36 at their ends.

The lower capping 14 is also extruded from plastics material, such as PVC, and is generally formed as a channel section having a flat base 38 and upstanding side walls 40. Internally of the channel on the base 38 and on the side walls 40 are spacing projections 42. The free edges of the side walls 40 have co-extruded thereon, from rubber or synthetic elastomeric material, gaskets 44 which extend inwardly and are inclined slightly upwardly. The gaskets 44 include resilient deformable projections 46 and 48 on their upper surface along their outermost edge and centrally thereof respectively.

Figure 1 illustrates a typical transom roof beam but the same glazing bar and upper capping can be used with a different lower capping to form a Victorian style roof beam, in which the lower capping 50 has its base formed from a pair of longitudinal facets 52 angled relative to each other to form a concave surface when viewed from below. The capping has side walls 53 each perpendicular to its adjoining facet 52. Atop each side wall is a co-extruded gasket 55 extending inwardly and upwardly. As can be seen by comparison of Figures 1 and 2, both the flat base lower capping 14 and the faceted lower capping 50 can be accommodated on the same glazing bar 10. That is because for both lower cappings the distance between the co-

extruded gasket and the base is the same, whilst the longitudinal central recess formed underneath the cross bar of the glazing bar lower capping accommodates the angled facets 52 of the base of the Victorian style lower capping 50.

Figure 3 of the accompanying drawings shows where the different types of roof beam illustrated in Figures 1 and 2 may be used in forming a Victorian style conservatory 70. Typically a Victorian style conservatory 70 has a first part 72 having a central 74 ridge with rectangular roofing panels 76 sloping down from the ridge and supported between roof beams of the type of Figure 1 of the accompanying drawings, which have the lower cappings 14 with flat bases. One end of the ridge 74 will usually be abutted against another building and at the opposite end of the ridge is a bow end 78 having its roof formed of triangular section roofing panels 80 sloping down to the eaves. In this section of the conservatory the roof beams will be of the type shown in Figures 2 of the accompanying drawings which are generally known as Victorian style roof beams.

Figures 4 to 8 show glazing bar and lower capping combinations for forming roof beams. The glazing bar has a cross bar 800 that is flat but at each end are flanges extending upwardly and downwardly. Upper flanges 802 have inward returns 806 that are ribbed on their top surface for providing grip with the underside of the co-extruded gaskets 44 of the lower cappings 38, 50, 38', 50' respectively.

Lower flanges 810 in the embodiments of Figures 4 and 5 have outwardly projecting lips 812 engaged below complementary ribs 814

internally of the lower capping 38, 50 respectively.

Lower flanges 816 of the embodiments of Figures 6 and 7 end with a bead 818 that is a snap-fit into complementary slots 820 in corners of the lower capping 38' 50' respectively.

In Figures 4 to 7 the glazing bars have a single web stem 860.

Finally in Figures 8, 9 and 10, variations of the lower capping are shown. The main difference between these cappings and the previously described cappings is that each capping has a base 900 that is formed in three co-extruded parts i.e. between outer parts 902 of the cappings is a co-extruded strip of flexible material 904, such as of rubber or of other elastomeric material, whereby the cappings can be opened out to facilitate fitting thereof to glazing bars.

The roof beam arrangements of Figures 4 to 7 are used in the following manner. The glazing bar is fixed between lateral beams of a roof under construction, such as between the ridge and the eaves, and the lower capping fixed onto the glazing bar. The roofing panels are laid on opposite sides of the reinforcing bar on top of the gaskets of the lower capping. Then the upper capping is pressed into place onto the reinforcing bar to hold the roofing panels in place, the gaskets of the upper and lower cappings providing good seals above and below the roofing panels.

By providing sealing gaskets on the capping and the lower cappings instead of separately therefrom, the number of procedural steps for constructing a roof are reduced, so that the construction can be simpler and quicker than hitherto. Furthermore, as the same type of glazing bar can be

used in different situations in the same conservatory, i.e. without the need for two different styles of glazing bar, cost may be reduced and erection of the conservatory may be simplified.

Attention is directed to our copending British Patent Application No. GB2315800A concerning roof beam glazing bars and from which the present application has been divided.

## CLAIMS

1. A roof beam for use in forming a conservatory roof, comprising a glazing bar and upper and lower cappings fitted thereto the glazing bar being of generally inverted T-section providing a cross bar and an upstanding limb, the cross bar having a central section and edges in the form of side walls extending above and below the central section to form a recess in the underside of the glazing bar and the side walls having formations thereon for positive engagement with the lower capping, the lower capping comprising a channel section with coextruded gaskets along edges thereof fitted over upper parts of the side walls.
2. A roof beam as claimed in claim 1, wherein the upper parts of the glazing bar side walls have inward returns.
3. A roof beam as claimed in claim 1 or 2, wherein the side walls of the glazing bar are parallel to the plane of the upstanding limb.
4. A roof beam as claimed in claim 1, 2 or 3, wherein the inward returns of the side walls of the glazing bar have arcuate top surfaces.
5. A roof beam as claimed in claim 2, 3 or 4, wherein the inward returns top surfaces of the side walls of the glazing bar are profile or roughened.
6. A roof beam as claimed in any one of claims 1 to 5, wherein the upstanding limb of the glazing bar includes a port for receiving a fixing screw or bolt.
7. A roof beam as claimed in claim 6, wherein lower parts of the side walls of the glazing bar have lateral ribs that engage under cooperating ribs of the lower capping.

8. A roof beam as claimed in claim 7, wherein the ribs extend outwards and cooperating ribs of the lower capping extend inwards from sides thereof.
9. A roof beam as claimed in claim 7, wherein the ribs extend inwards and the cooperating ribs of the lower capping extend upwardly and outwardly from its base.
10. A roof beam as claimed in claim 6, wherein bottom edges of the glazing bar side walls have beads thereof that snap-fit into corresponding slots of the lower capping.
11. A roof beam as claimed in anyone of claims 1 to 10 wherein the lower capping has lengthwise a flexible central strip.
12. A roof beam as substantially as hereinbefore described with reference to and as illustrated in any one of Figures 4 to 7 of the accompanying drawings.





Application No: GB 9816204.3  
Claims searched: 1-12

Examiner: John Rowlatt  
Date of search: 25 November 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): E1R: RF, RRF, RRH, RRV, RRX.

Int CI (Ed.6): A01G: 9/14.  
E04B  
E04D: 3/06, 3/08, 3/36.  
E06B: 3/54, 3/64, 3/68.

Other: Online: WPI, EPODOC, PAJ.

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB2314875A (THERMAL PROFILES & ACCESSORIES) - see figure 1	1-3, 6, 10 & 11.
Y	GB2275958A (ULTRAFRAME) - see figure 1.	1-3, 6-11
Y	GB2259937A (SCHOLES) - see figure 4.	1-3, 6-11
Y	GB2165878A (ANGLIAN WINDOWS) - see figure 2.	1-3, 6-11
Y	WO93/25779A1 (SCHOLES) - see figure 2.	1-3, 6-11
Y	WO91/14056A1 (RUDOLF STROBEL) - see figure 1.	1-3, 6-11

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.