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(54) Panel support bar

(57) The invention relates to a glazing system comprising a first and a second glazing panel, each made from a plastics material, one of said panels having at least one edge region adapted to be juxtaposed with the edge region of the other of said panels, said glazing system further comprising a glazing bar having a primary part and a secondary part, the primary part and having a central section, a first edge region having a slot to receive an edge region of the first panel on one side of the central region and the secondary part having a slot to receive an edge region of the second panel, said primary and secondary parts having inter-engaging formations so that said secondary part is located and engaged with said primary part and wherein the surface of the primary part and the surface of the secondary part which provide upper members partly defining said slots, overlie an upper surface of said panels and the upper surface of said central section is substantially co-planar with the upper surface of said upper members.

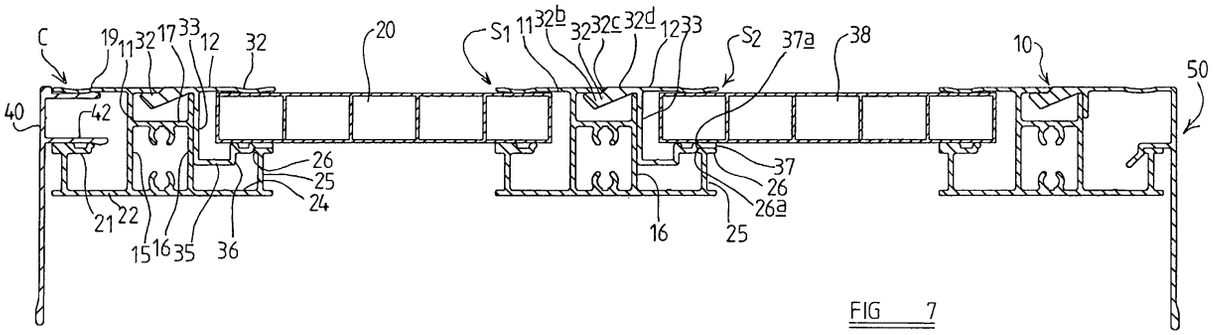

FIG 7

EP 1 111 152 A2

Description

[0001] The present invention relates to bars for supporting panels for example, glazing panels and relates primarily but not exclusively to bars for supporting sheets of plastic material such as polycarbonate which may be transparent, translucent or opaque. For the sake of convenience, such bars will hereinafter be referred to as glazing bars.

[0002] Glazing bars for supporting sheets of plastic material have two premium functions. First to support the panel and secondly to provide a weather proof seal between one panel and an adjacent panel or an adjacent part of a wall or roof system. Hopefully the glazing bars should be capable of being assembled with the panels which they have to support without undue difficulty.

[0003] Glazing bars have been proposed in the past sometimes incorporating a two part system wherein a lower part is secured to rafters, purlin and the like. Panels are then placed in position and an upper part is then secured by fasteners passing through the upper part into the lower part. The resultant structure depends at least in part on the skill of the installer and also sometimes weather proofing around the fasteners securing the upper and lower parts may be troublesome.

[0004] Another known system comprises a glazing bar which is split into two parts, one part is secured along the edge of one panel and the other part is secured along the edge of another panel. However both parts incorporate an upwardly extending part and it is tile upwardly extending parts that are secured to each other in assembly. The height of the upwardly extending part can provide difficulty for weather proofing around the perimeter of such a glazed area.

[0005] It is an object of the present invention to provide a new or improved glazing bar.

[0006] According to one aspect of the present invention we provide a glazing bar having a primary part and a secondary part, the primary part having a central section, a first edge region having a slot adapted to receive an edge region of a panel on one side of the central region, the secondary part having a slot adapted to receive an edge region of a panel; said primary and secondary parts having inter-engaging formations so that said secondary part may be located with and engage said primary part and wherein the surface of the primary part and the surface of the secondary part which provide upper members defining said slots are adapted to overlie an upper surface of said panels and the upper surface of said central section is substantially co-planar with said upper members.

[0007] The central section may be of a form adapted to provide stiffness to the glazing bar.

[0008] Preferably said central section comprises a box like formation that provides stiffness to the glazing bar which may be both vertical and lateral stiffness.

[0009] By providing said glazing bar with a primary part and a secondary part which are inter-engageable, access to the primary part before said secondary part is inter-engaged therewith permits of securing the primary part to a rafter, purlin or the like. After which, said secondary part may be located therewith not only closing access to the fixing but also providing a weather proof sealing to said fixing.

[0010] Thus, the primary part may be provided with a fixing means access to which is prevented when the secondary part is located and engaged with the primary part.

[0011] Conveniently said primary and secondary parts may be made from aluminium and may be made by an extrusion process.

[0012] The upper member of the secondary part may be provided with a downwardly stepped portion which is disposed beneath an upper part of the primary part and has an end part and/or a shoulder for engagement with a part of said central section or said upper part of the primary part respectively to limit movement of the secondary part towards the primary part and wherein said upper part of the secondary part is provided with a downwardly extending projection for engagement with said primary part to limit movement of the secondary part away from the primary part.

[0013] Alternatively, the secondary part may be provided with a downwardly extending portion having a surface which is adapted to lie adjacent to or abut a downwardly extending portion of the central part to limit movement of the secondary part towards the primary part and is also provided with an abutment which is adapted to engage an abutment provided on the primary part to limit movement of the secondary part away from the primary part.

[0014] The upper part of the primary part and of the secondary part may each be provided with a portion of shallow channel configuration to provide a reduced cross-section mouth to said slots and a groove in the upper surface of the upper members.

[0015] According to a second aspect of the invention we provide a glazing bar having a central section and a first edge region having a slot in which is received an edge region of a panel on one side of the central region.

[0016] A glazing bar sub-assembly of the second aspect of the invention may be used in a glazing bar assembly incorporating a glazing bar according to any one of the preceding statements of invention.

[0017] According to a third aspect of the invention we provide a glazing system comprising a first and a second glazing panel, each made from a plastics material, one of said panels having at least one edge region adapted to be juxtaposed with the edge region of the other of said panels, said glazing system further comprising a glazing bar having a primary part and a secondary part, the primary part having a central section, and a first edge region having a slot to receive an edge region of the first panel on one side of the central region and the secondary part having a slot to receive an edge region of the

second panel, said primary and secondary parts having inter-engaging formations so that said secondary part is located and engaged with said primary part and wherein the surface of the primary part and the surface of the secondary part which provide upper members partly defining said slots, overlie an upper surface of said panels and the upper surface of said central section is substantially co-planar with the upper surface of said upper members.

[0018] The glazing system may incorporate a glazing bar according to the preceding statements of invention.

[0019] Considerable benefit is achieved by providing the two part glazing bar. The primary part can be preassembled to a panel and secured thereto before bringing to a work site. It may thereafter be fitted to the panel in a manner in controlled conditions to ensure that there is a proper seal between the panel and the primary part of the glazing bar and conveniently the secondary part may likewise be secured to an edge region of a panel prior to assembly of the assembly on site thus ensuring that the secondary part is properly secured to and sealed with the panel and the two parts, together with their associated panels may then be located together in a simple and rapid manner.

[0020] The provision of a central section of a glazing bar to give adequate strength and stiffness to the glazing bar enables the upper members providing both the slots for the primary part and the secondary part to be substantially planar so that they overlie adjacent panels to provide not only a firm location of the panels but also satisfactory weather proofing and, at the same time, provide the upper surface of a panelled surface with a substantially planar surface thereby considerably facilitating weather proofing by flashing, roofing felt or other substances to a surrounding structure without difficulty.

[0021] One example of the present invention will now be described in more detail by way of example only with reference to the accompanying drawings wherein:

FIGURE 1 is a sectional view of one embodiment of the present invention,

FIGURE 2 shows a glazing bar similar to that shown in Figure 1 but disposed at one end of an assembly with an end cap secured thereto in the place of one of the panels,

FIGURE 3 illustrates the method of assembly on site of the embodiment shown in Figures 1 and 2,

FIGURE 4 shows an end assembly similar to Figure 2 but illustrating a glazing bar at an opposite end of the assembly,

FIGURE 5 illustrates how the panels at the ends of the assembly are supported,

FIGURE 6 is a fragmentary perspective view of part of an assembled structure,

FIGURE 7 is a cross-sectional view of an assembly incorporating a second embodiment of the invention,

FIGURES 8 and 9 are a cross-sectional views of the assembly of Figure 7 showing panels at the ends of the assembly.

[0022] Referring first to Figure I, a glazing bar 10 comprises a primary part 11 and a secondary part 12. The primary part 11 may be made as an extrusion in an aluminium alloy and includes a central section which is indicated at 13 and which comprises a lower member 14, side walls 15, 16, perpendicular thereton, an intermediary transverse member 17 and an upper member 18 parallel to the lower member 14.

[0023] The upper member 18 has an extension portion 19 that forms an upper limb of a channel-like slot S_1 adapted to receive a panel 20. A lower limb of the slot is provided by lip member 21a of a vertical flange 21 of a tranverse lower member 22 extending from the central part 13 and adapted to bear on the upper surface of a rafter or other support 23.

[0024] Extending from the central portion 13 in the opposite direction to the lower member 22 is a lower member 24 which is the same as the lower member 22 and has a vertical flange 25 which terminates in a lip 26.

[0025] The lower member 24 may be provided with a through bore to enable fasteners such as the fastener shown at 27 to pass through and secure the glazing bar 10 to the support 23. The glazing bar 10 may, for example, be provided with a plurality of holes along its length in the lower member 24 so that it may be secured at spaced intervals to the support 23.

[0026] The secondary part 12 of the glazing bar 10 may also be made as an extrusion in aluminium alloy. The secondary portion 12 has an upper part 31 having an upper limb portion 32, a downwardly extending portion 33 provided with spacer members 34, a transverse portion 35, an upwardly extending section 36 and lower transverse limb portion 37.

[0027] The upper limb portion 32 and the lower limb portion 37 together define upper and lower limbs of a channel like slot S_2 to receive a panel 38.

[0028] The upper members 18 and 32 each have an end portion of shallow channel configuration C to provide a reduced cross-section mouth to said sheet and a groove in the upper surface of the upper member. The panel 38 and the panel 20 may, for example, each comprise a multi-wall translucent panel made from polycarbonate.

[0029] The lower portion 35 and vertical portion 36 together with the lower part of the downwardly extending part 33 form a channel which may be used to transport any moisture to a drainage channel to further enhance the weatherproofing of the system. The spacers 34 may be intermittent and prevent the end of the panel 38 from abutting the surface of the downwardly extending part 33.

[0030] Referring now in addition to Figure 2, the glazing bar shown is the same as the glazing bar referred to above and shown in Figure 1. However, in this case the glazing bar is at the edge of a glazed area and so the

panel 20 shown in Figure 1 is replaced by a closure part 40 which is secured to the upper limb 19 by a fastener 41. The closure part 40 has a transverse lower limb 42 which engages round the lower limb 21 of the slot like recess and has a downwardly depending part 43 that engages at 44 with the primary part of the glazing part so as to effect a weatherproof seal. A water deflecting guide 45 can be inserted between the glazing bar 10 and the rafter 46 to deflect water away from the building or other enclosure provided with the glazing. The glazing bar may be provided with an additional sealing member 47 as a further barrier to prevent moisture entering the enclosure.

[0031] Referring now in addition to Figures 3 and 4, Figure 3 illustrates how the glazing system may be assembled on site. A panel 20 together with the primary part 11 of the glazing bar 10 may be inserted in position and secured to a support 23 by a fastener 27. The primary part 11 may be supplied already secured or fitted to the panel 20. After insertion of the fastener 27 to secure the glazing bar 10 to the support 23, a panel 38 together with the secondary part 12 of the glazing bar 10 may be inserted and located with the primary part 11 in a manner as shown in the drawing. Downwards movement of the panel 38 will then cause the panel 38 and the secondary part 12 to take up the position as shown in Figure 1.

[0032] When the primary and secondary parts are thus assembled a glazing bar as shown in Figure 1 or Figure 4 will be provided in which a downwardly stepped part 32 of the upper limb portion 32 is disposed beneath the upper part 18 and has an end part 32b and a shoulder 32c either or both of which may engage a co-operating part of said central section or said upper part of the primary part respectively to limit movement of the secondary part towards the primary part. In addition said upper part of the secondary part is provided with an downwardly extending projection 32d for engagement with the side wall 16 of the primary part 11 to limit movement of the secondary part away from the primary part.

[0033] The shoulder 32c and the co-operating end surface of the upper member 18 are inclined to the vertical in the present example at an angle of 45° but if desired the shoulder and the co-operating end surface may be of other inclination or configuration if desired.

[0034] The other side of the panel 38 may be provided with a primary portion 11 of another glazing bar 10 and the assembly procedure repeated. Thus a complete roof or wall may be assembled and secured in position very rapidly.

[0035] Referring now in addition to Figure 4 a further glazing bar 10, is identical with that which has been described with reference to Figures 1,2 and 3 is fitted to the panel at the opposite end of the assembly to that shown in Figure 2. A glazing member 50, which is precisely the same as the closure member 40, but may differ if desired, is fitted to the glazing bar 10. However, in this case it is shown completing the other end of a glazed area. Once again a rain or moisture deflecting panel 51 may be provided and secured in position by sandwiching between the glazing bar 10 and the rafter 52.

[0036] The glazing bar 10 is normally provided along the elongate edge of each panel 10, 20 or 38 and to complete the system, in the case of a pitched roof, for example, the end portions may be provided with end members as shown in Figure 5. The end members are identical to each other and comprise an upwardly extending portion 55 an upper transverse limb 56 and a lower stepped portion generally indicated at 57 which may incorporate a seal 58. The lower portion 57 includes an upper transverse member 59 that supports a panel 60. The upwardly extending member 55 may include spacers 61 to prevent the end of the panel 60 from abutting the inner surface of the upwardly extending part 55.

[0037] The upper limb 56 may be substantially the same thickness as the upper limbs 18,19,31 and 32 and may be mitred so as to form a close fitting surface with a similarly mitred surface on limbs 19 or 32. Thus considerably facilitating any weatherproofing that is necessary with an enjoining structure.

[0038] Figure 6 shows part of a roofing system incorporating a glazing bar embodying the invention and also tile end members as shown in Figure 5. The mitred joint referred to above is shown at 70, however at the end 71 of the glazing bar Figure 6 shows a section, to show the glazing bar in more detail.

[0039] Referring now to Figure 7 there is shown a cross-sectional view of an assembly incorporating a second embodiment of the invention. In this figure the same parts have been designated with the same reference numerals as used in Figures 1 and 6. The manner of use of the glazing bar is the same as the first embodiment and there is shown at the left and right hand ends of Figure 7 figures which correspond to Figure 2 and Figure 4 of the first embodiment although the screw 27 and support 46 and water deflecting guide 45 are omitted.

[0040] It will be seen that details of the glazing bar construction both of the primary part and the secondary part differ from that of the first embodiment for example the base of the primary part is now planar and does not include a central recess. In addition tile shape of the under surface of the downwardly stepped portion 32b differs in that the under surface is now generally asymmetrical V configuration and no separate downwardly extending rib 32d is provided. Further, in this embodiment the surface 37 of the secondary part generally abuts the limb 16 of the primary part to limit alone or together with the shoulder 32c to limit movement of tile secondary part towards the primary part. Furthermore, the lower transverse limb portion 37 on its lower surface is of stepped configuration having a shoulder 37a therein for engagement with an end surface 26a of the lip 26 of the vertical flange 25 of the primary part 11 to limit movement of tile secondary part away from the primary part.

[0041] It will be appreciated that the glazing bars de-

scribed above is merely two example of glazing bars of the present invention and variations in the sections may be provided depending on the strengths necessary and also the panel with which it has to be used.

[0042] It is in further envisaged that the interlocking between the primary and the secondary portions for the glazing bar may be altered as desired and may depend on the conditions to which the glazing system is to be subjected. The important feature being that the projection of the glazing bar above the panels which it is intended to support is minimal so is to enable satisfactory weatherproofing from its surrounding structures.

[0043] Furthermore by virtue of providing the under surface of the glazing bar as a one piece element on the primary part it is relatively simple to apply a suitable element thereto to improve the thermal properties of the assembly as a one piece member and for example such an element may be "snapped-on".

[0044] In the present specification "comprise" means "includes or consists of and "comprising" means "including or consisting of".

[0045] The features disclosed in the foregoing description, or the following claims, or the accompanying drawings. expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

Claims

1. A glazing bar having a primary part and a secondary part, the primary part having a central section, and a first edge region having a slot adapted to receive an edge region of a panel on one side of the central region, the secondary part having a slot adapted to receive an edge region of a panel; said primary and secondary parts having inter-engaging formations so that said secondary part may be located and engage with said primary part and wherein the surface of the primary part and the surface of the secondary part which provide upper members partly defining said slots are adapted to overlie an upper surface of said panels and tile upper surface of said central section is substantially co-planar with the upper surface of said upper members.

2. A glazing bar according to Claim 1 wherein the central section is of a form adapted to provide stiffness to the glazing bar.

3. A glazing bar according to Claim 1 or Claim 2 wherein the central section comprises a box-like formation that provides stiffness to the glazing bar.

4. A glazing bar according to Claim 3 wherein said box-like formation provides both vertical and lateral stiffness to the glazing bar.

5. A glazing bar according to any one of tile preceding claims wherein the primary part is provided with fixing means access to which is prevented when the secondary part is located and engaged with the primary part.

6. A glazing bar according to any preceding claim wherein said primary and secondary parts are made from an aluminium alloy.

7. A glazing bar according to any one of the preceding claims wherein said primary and second parts are made by an extrusion process.

8. A glazing bar according to any one of the preceding claims wherein the upper member of the secondary part is provided with a downwardly stepped portion which is disposed beneath an upper part of the primary part and has an end part and/or a shoulder for engagement with a part of said central section or said upper part of the primary part respectively to limit movement of the secondary part towards the primary part and wherein said upper part of the secondary part is provided with a downwardly extending projection for engagement with said primary part to limit movement of the secondary part away from the primary part.

9. A glazing bar according to any one of Claims 1 to 7 wherein the secondary part is provided with a downwardly extending portion having a surface which is adapted to lie adjacent to or abut a downwardly extending portion of the central part to limit movement of the secondary part towards the primary part and is also provided with an abutment which is adapted to engage an abutment provided on the primary part to limit movement of the secondary part away from the primary part.

10. A glazing bar according to any one of the preceding claims wherein the upper part of the primary part and of the secondary part are each provided with a portion of shallow channel configuration to provide a reduced cross-section mouth to said slots and a groove in the upper surface of the upper member.

11. A glazing bar sub-assembly comprising a primary part of a glazing bar having a central section and a first edge region having a slot in which is received an edge region of a panel on one side of the central region.

12. A glazing bar sub-assembly according to Claim 11 when used in a glazing bar assembly incorporating a glazing bar according to any one of Claims 1 to 10.

13. A glazing bar sub-assembly substantially as hereinbefore described with reference to the accompany drawings.

14. A glazing system comprising a first and a second glazing panel, each made from a plastics material, one of said panels having at least one edge region adapted to be juxtaposed with the edge region of the other of said panels, said glazing system further comprising a glazing bar having a primary part and a secondary part, the primary part and having a central section, a first edge region having a slot to receive an edge region of the first panel on one side of the central region and the secondary part having a slot to receive an edge region of the second panel, said primary and secondary parts having inter-engaging formations so that said secondary part is located and engaged with said primary part and wherein the surface of the primary part and the surface of the secondary part which provide upper members partly defining said slots, overlie an upper surface of said panels and the upper surface of said central section is substantially co-planar with the upper surface of said upper members.

15. A glazing system according to Claim 14 and incorporating a glazing bar according to any one of Claims 2 to 10.

FIG 1

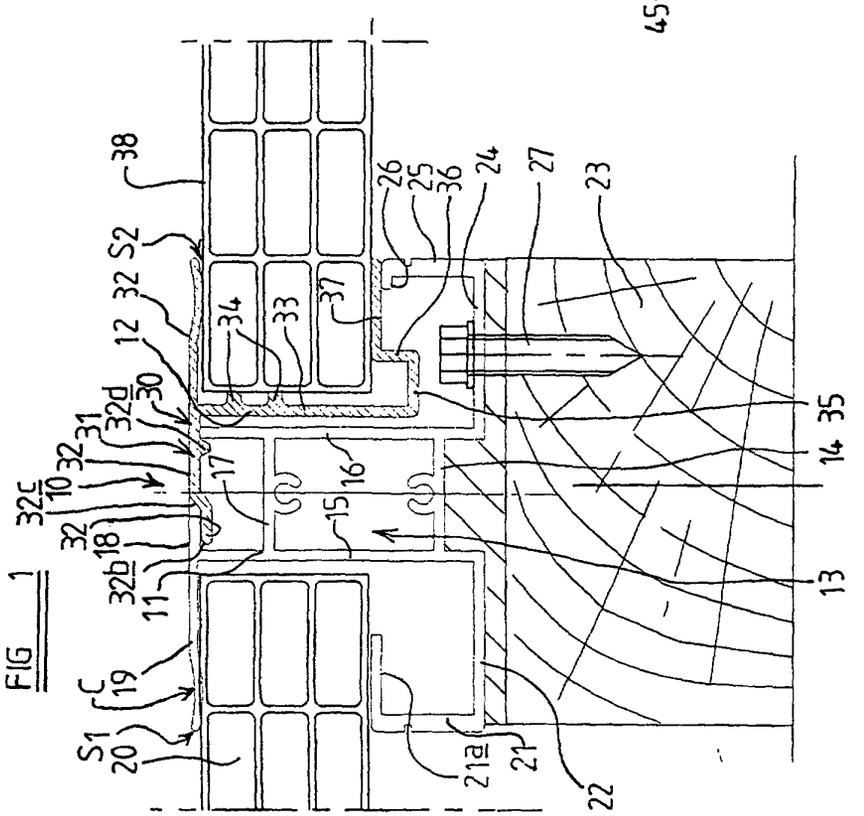
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FIG 2

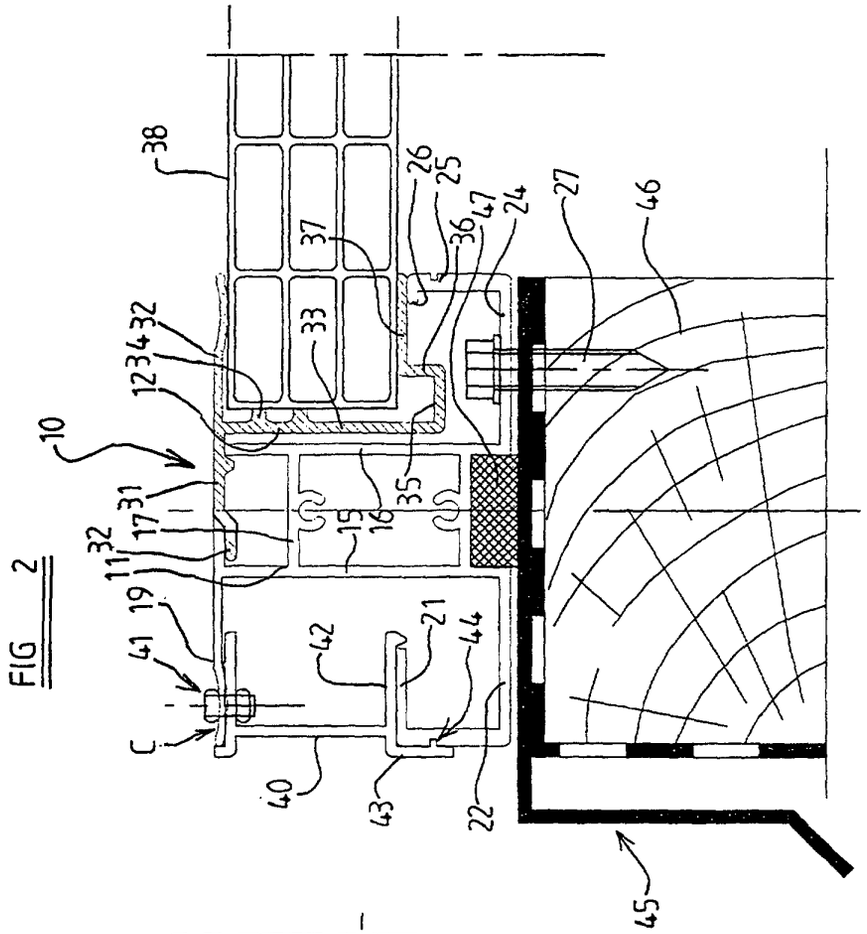
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FIG 4

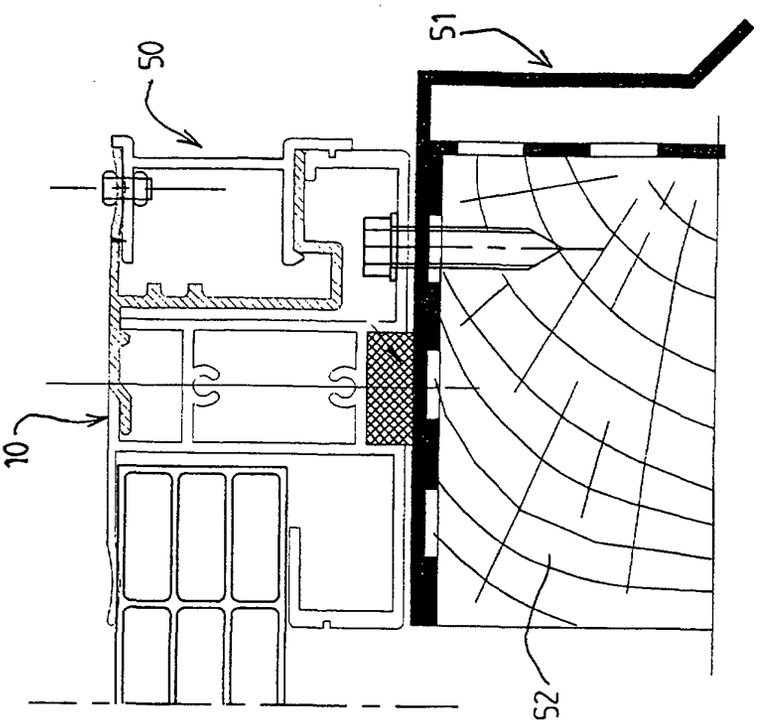
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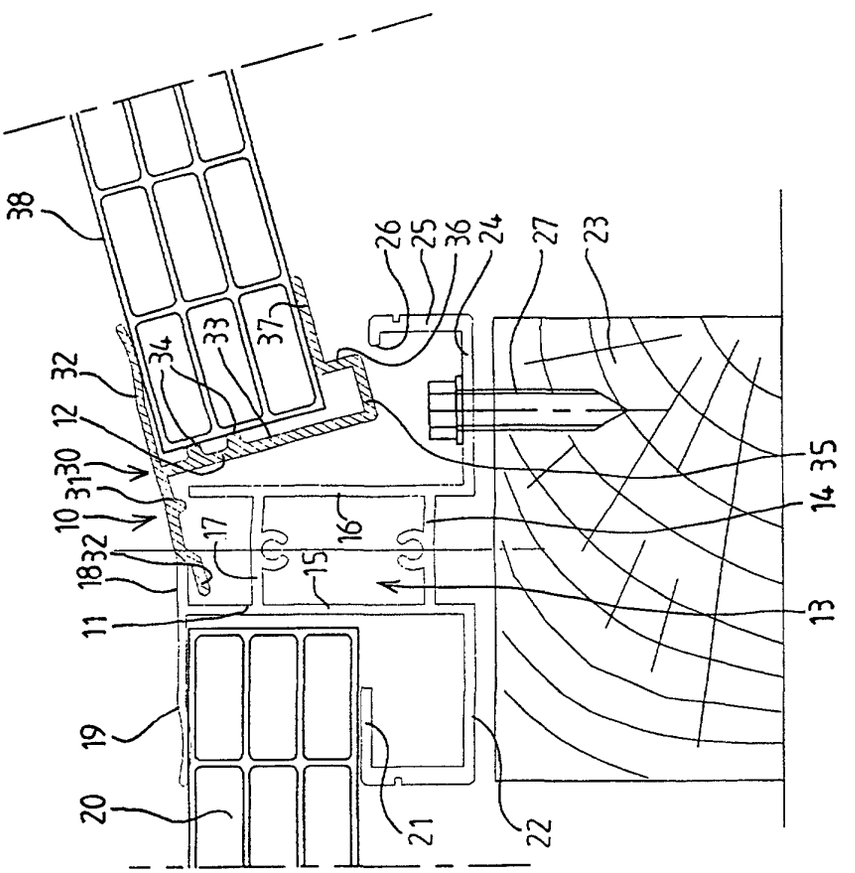
FIG 3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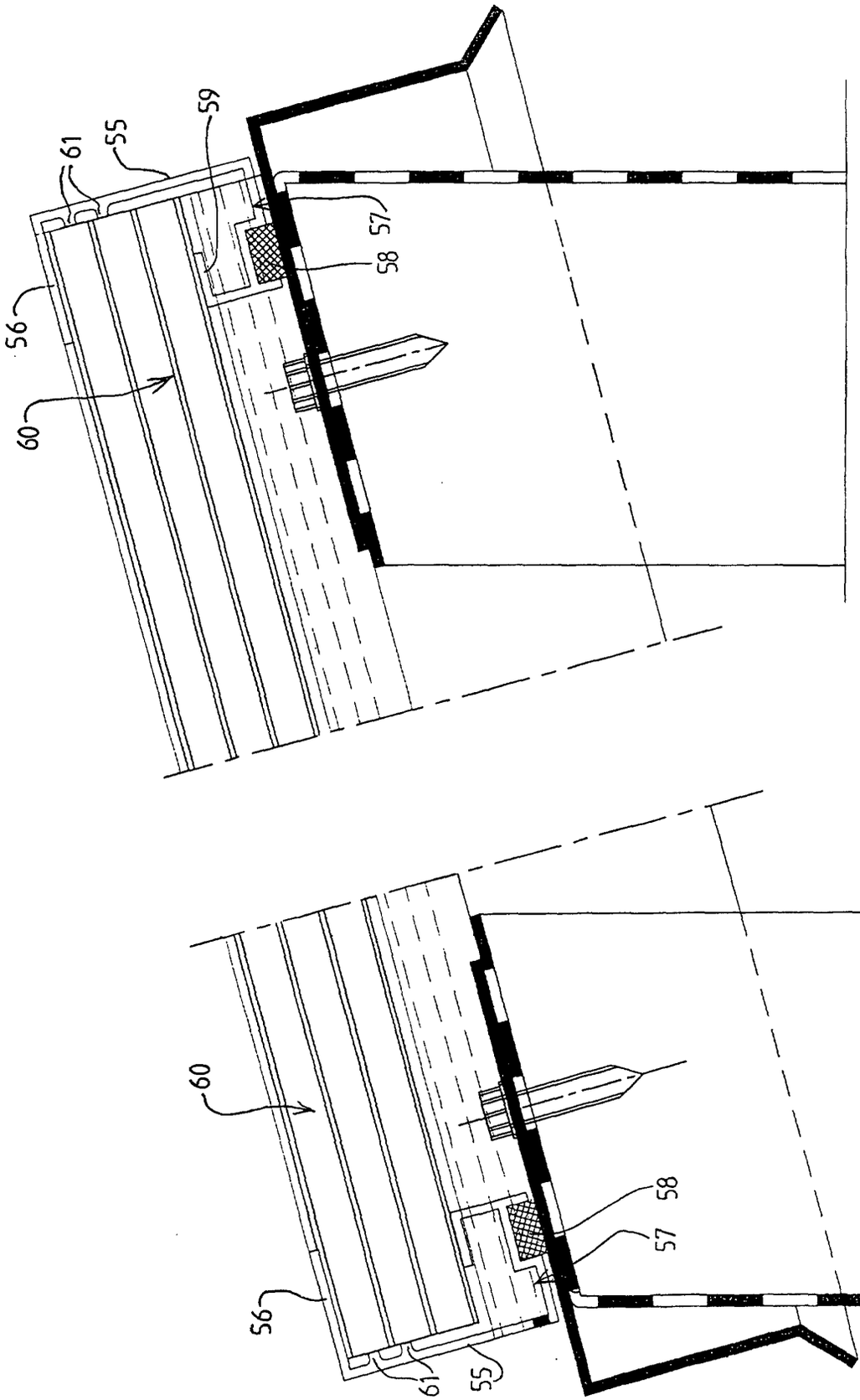

FIG 5

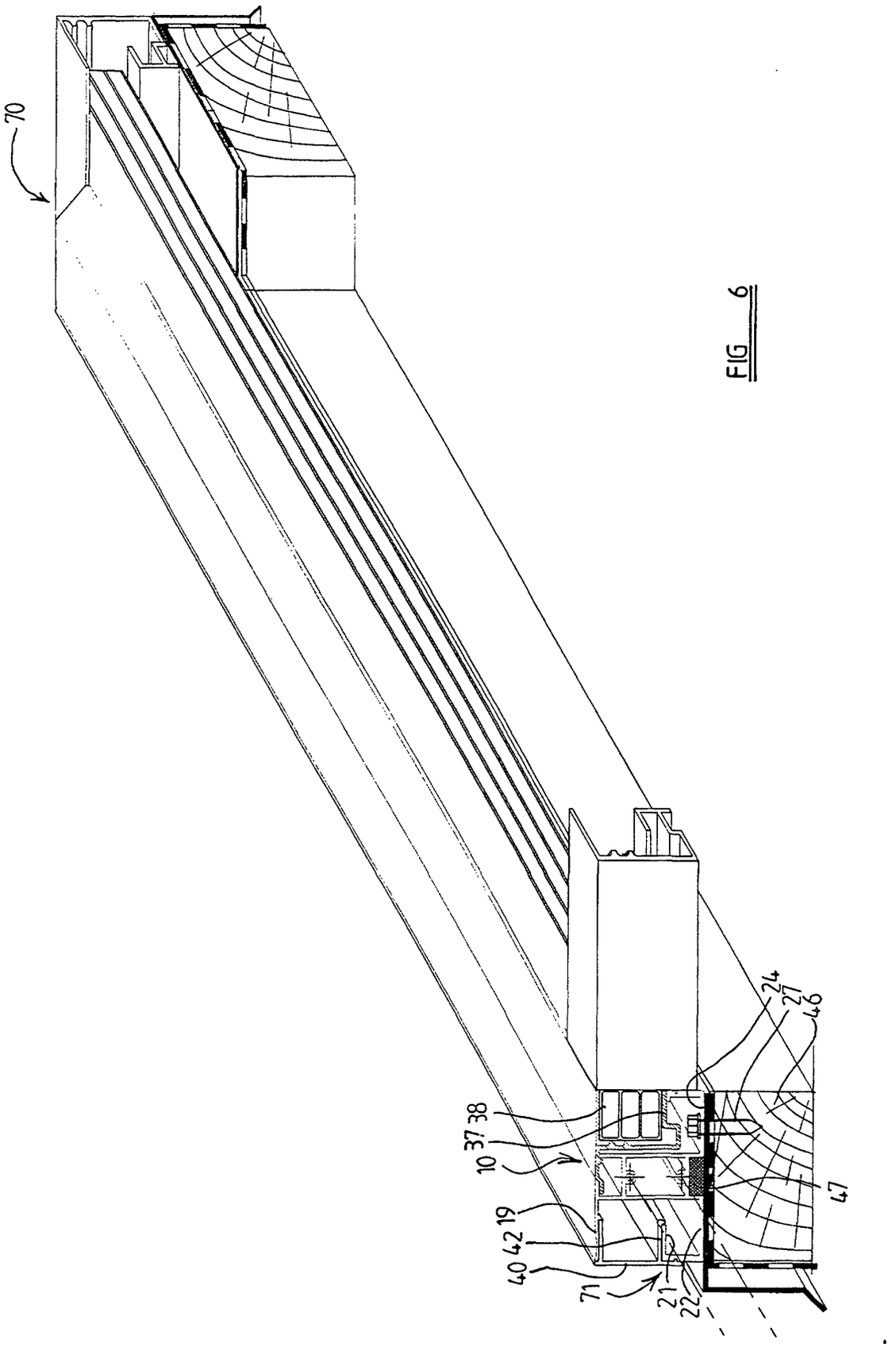

FIG 6

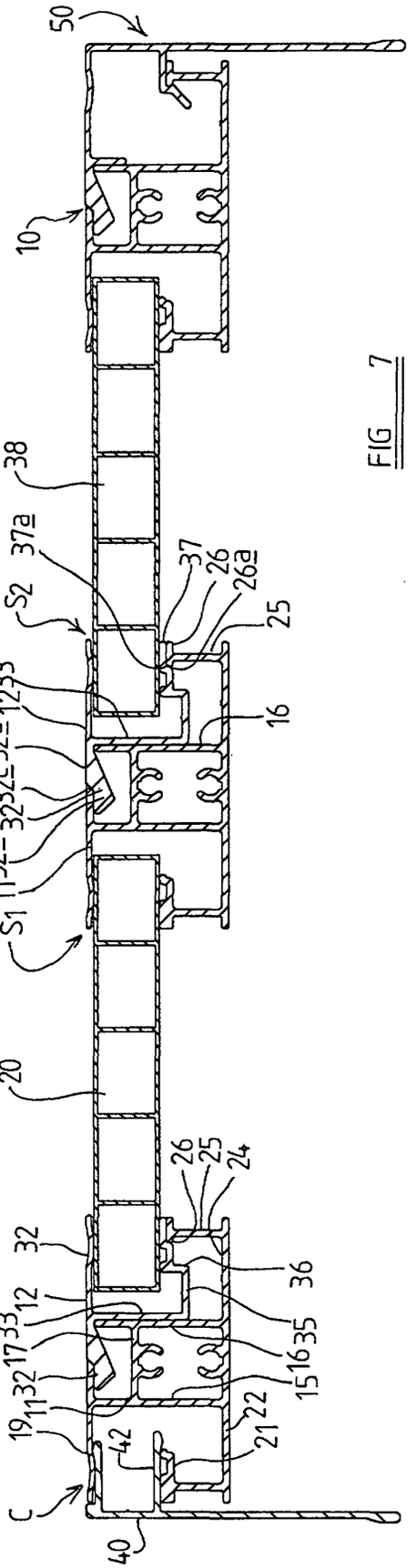

FIG 7

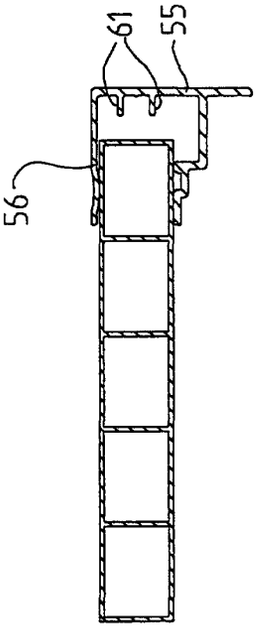

FIG 9

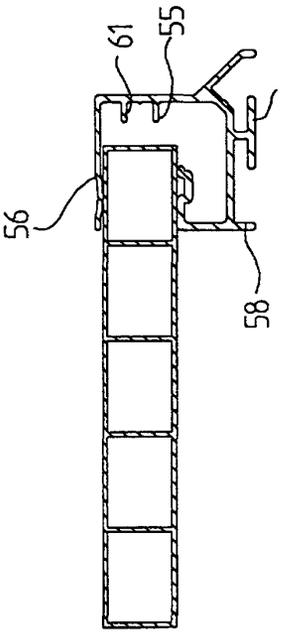

FIG 8