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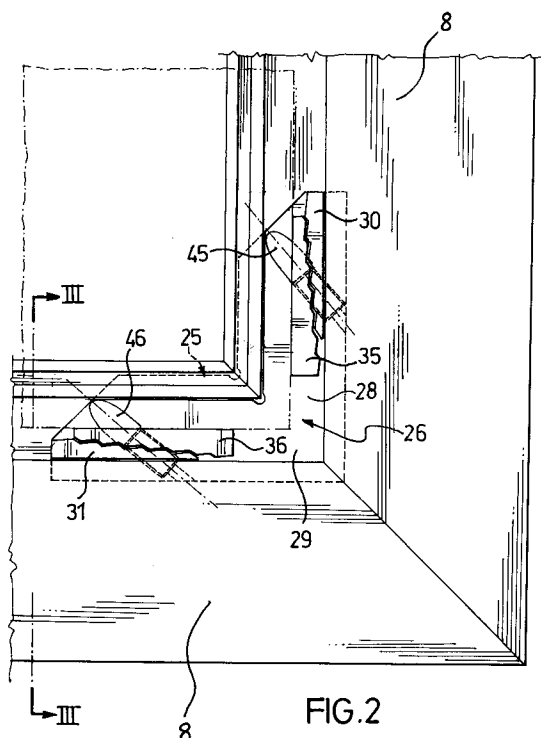
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(54) **Right-angled connecting fitment for supporting wedges for fixing a pane of glass in a window formed from profiled sections.**

(57) In order to enable the wedges (35, 36) which fix a pane of glass (2) in a window (1) to be positioned quickly and precisely, the invention provides a connecting fitment (26) with a right-angled body defined by two limbs (28, 29) at right angles to each other. From at least one of these latter projects at least one support plate (30, 31) part of which constitutes the wedge for the window.



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The present invention relates to a fitment for fixing a pane of glass in a window frame formed from profiled metal sections.

Windows of the type considered above are already fairly widespread and well known in all sections of the civil building industry; a technical aspect relating to them which is less recognised but has a certain importance to those working in the industry is constituted by all those devices for facilitating their assembly and putting them into operation. These operations are in fact carried out by the assembly of the various components, that is, the profiled metal sections cut to measure, the sealing strips, the handles, etc, prepared separately beforehand. Although it is now possible to make use of machines to assemble the profiled sections which constitute the frame which considerably reduces the production times, with regard to the fitting of the panes of glass in the assembled frames, the delicacy of this operation, which can readily be perceived, makes certain difficulties.

The search for structural solutions which reduce the time needed for this phase in the window assembly thus assumes considerable importance in that this is one of the few points of improvement yet remaining in the field of windows constituted by metal profiled sections.

At present, the insertion of a pane of glass in an assembled window frame is carried out by the fitting of a series of wedges between the edge of the pane of glass and the said frame; without explaining the reasons for the fitting of these wedges, it is relevant to note that these introduce an element of difficulty into the window assembly cycle. In fact, the workhand who has to carry out this task must fit the wedges around the window at predetermined points; this operation is not always easy in some parts of the window, for example, in the upper regions thereof and, in some circumstances, it often happens that the wedges cannot be fixed firmly to the window frame by means of the various ribs, grooves or the like on the profiled sections. All this constrains the workhand to a process of work which is long and difficult compared with the other phases in the assembly and the particular consequence is that such a solution is not satisfactory in any attempt to increase the production yield.

The object of the present invention is to provide a fitment for the assembly of windows and, more particularly, for the fitting of a pane of glass in a window frame constituted by assembled profiled sections, which has structural and functional characteristics such as to enable the disadvantages mentioned above with reference to the prior art to be overcome.

This object is achieved according to the invention by a fitment characterised in the claims which

follow.

Further characteristics and advantages of the invention will become more apparent from the description of one embodiment given below by way of non-limiting example, with reference to the appended drawings, in which:-

Figure 1 is partially-sectioned perspective view of a window according to the invention;

Figure 2 shows a detail of the window of Figure 1;

Figure 3 shows the detail of Figure 2 sectioned on the line III-III of that Figure;

Figure 4 is a perspective view of a fitment according to the invention.

With reference to the said drawings and in particular to Figure 1, a window according to the invention is generally indicated 1 and, in this embodiment, is of the type provided with a conventional double-glazing pane 2.

The window 1 has a frame 5 which comprises a plurality of profiled sections 8 connected together at right angles to each other; in a preferred embodiment, the profiled sections 8 each have a cross-section 10 which includes two closed, quadrilateral-shaped central parts 12 and 13 joined by two walls 15 of conventional insulating material interposed between them. The two central parts 12 and 13 thus connected are in transverse alignment with the profiled section itself.

The window 1 considered above also includes two flanges 18 and 19 which extend from respective opposite sides of the aligned central parts 12 and 13.

The flange 18 is intended to serve as an abutment for the fitting of the window against its casing; since it is not relevant for the purposes of explaining the present invention, this will not be described further below.

The flange 19 has engagement means 23, in this example constituted by a set of ribs on its surface, adapted to constitute a guide for a fitment 25 of the invention.

This fitment comprises a right-angled body 26 defined by two limbs 28 and 29 at right angles to each other; from each of these projects a respective support plate 30 and 31. To advantage, the support plates 30 and 31 have respective cut-away surfaces 33 and 34 on the sides thereof facing the other limb. More particularly, it should be noted that the thickness of the support plates 30 and 31 decreases in a direction parallel to that of the respective limb 28 or 29 from which it projects so that, due to the effect of the cut-away surfaces, each support plate has a wedge shape which roughly resembles a flight of steps. The fitment according to the invention is completed by a pair of wedges 35, 36 of shapes which mate with those of the support plates 30 and 31 just described.

The fitment 25 also has fixing means 38 constituted in this case by a set of grooves and ribs adapted to engage the said engagement means 23 of the profiled sections 8. To advantage, and in accordance with a preferred embodiment of the invention, the right-angled connecting fitment 25 also has anchoring means 45 and 46 in the limbs 28 and 29, in this example constituted by threaded pins which pass through corresponding holes formed in the limbs 28 and 29 themselves.

During the assembly of the window 1 indicated above, the respective profiled sections 8 are assembled to form the frame 5 by conventional methods. In this phase, the right-angled connecting fitment 25 is positioned with the fixing means 38 engaged with the corresponding means 23 provided in the profiled sections 8; more particularly, the right-angled shape of the fitment enables its two limbs 28 and 29 to engage the two profiled sections 8 connected at the corner of the window frame 5.

Naturally, as a result of its right-angled shape, a fitment according to the invention is located at the four corners of the window frame, that is, at the junctions of its constituent profiled sections.

The workhand who fits the glass in the frame thus has available, at the corners of the window frame, the support plates 30 and 31 adapted to receive the wedges 35 and 36 needed to clamp the glass in place; it is thus clear that the accessory of the invention contributes to rationalising the fitting of the glass in the window frame, avoiding the disadvantages of the prior art.

Furthermore, an interesting advantage offered by the present invention, in addition to that just explained, is that the right-angled fitment 25 stiffens the connection between the two profiled sections on which it is mounted; in particular, one sees with reference to Figure 3 of the embodiment, that, in a frame for supporting two panes of glass, the profiled sections 8 used have an elongate cross-section because of the thickness of the glass: this increases the difficulty of providing an effective connection along the entire section.

The fitment of the invention is also able to take on the function of an additional stiffening element for the connection of the profiled sections because of the presence of the anchoring means 45 and 46 with which it is provided.

Naturally the fitment of the invention could undergo structural modifications or variations to adapt its practical details to the different operative conditions in which it may be used; clearly, in fact, the support plates 30 and 31 of the embodiment described above could be of a shape other than the wedge shape with the cut-away surfaces 33 and 34 according to the type of wedge it is desired to fit in the window.

To support this last argument, it should be noted that, it is of interest for users of a wedge to be able to adjust the position of its surface of contact with the pane of glass, as happens for example, in the above case by virtue of the cut-away surfaces and the decreasing thickness of the support plates: this is to enable the wedge to be adapted to the glass to be mounted in the window at any time and to modify the framing of the latter so as to obtain perfect geometric homogeneity of the respective frame.

According to this teaching, the possibility of forming connecting fitments in which any support plates 30 and 31 have their own adjustment means, for example, cams, eccentric screws or otherwise, should not be excluded. In such an eventuality, it would no longer be necessary to have a wedge associated with the support plate to obtain the adjustability of the wedge, but, instead, each support plate could also constitute the wedge, thus assuming a double function, that is, of the wedge and of the support element therefor.

Finally then, the possibility of locating the connecting fitment in a closed-box part of the section of the profiled section should not be excluded either; to this end it would be necessary to modify the fitment by moving the support plate frontally with respect to the respective limb 28 or 29, as well as possibly forming a channel in the profiled section to allow the introduction of this limb 28 or 29 into the profiled section.

These and other variants which may be envisaged for changing the embodiment of the fitment considered above are, however, to be considered as falling within the scope of protection defined by the subsequent claims.

Claims

1. A fitment for fixing a pane of glass (2) in a frame (5) of a window (1) formed from profiled sections (8), characterised in that it comprises a right-angled body (26) defined by two substantially coplanar limbs (28, 29) at right angles to each other provided with means (38) for engaging the profiled sections (8) of the window at a corner of the latter, at least one support plate (30, 31) projecting from at least one of the limbs (28, 29), and a part of the support plate (30, 31) and constituting a wedge (35, 36) for the fixing of the pane of glass (2).
2. A fitment according to Claim 1, characterised in that the part constituting the wedge (35, 36) is releasably associated with the support plate (30, 31).

3. A fitment according to Claim 2, characterised in that the support plate (30, 31) has an incised surface (33, 34) for engaging a corresponding wedge (35, 36) having a surface which mates with that of the support plate (30, 31), the wedge and the support plate each having a thickness which varies linearly so as to give a substantially wedge shape. 5
4. A fitment according to Claim 3, characterised in that it includes means (45,46) for anchoring it to the profiled sections (8) of the window frame (5) disposed in correspondence with the said limbs (28, 29). 10
5. A fitment according to Claim 4, characterised in that the anchoring means include a pair of threaded pins (45, 46) engaged in corresponding holes in the said limbs (28, 29). 15
6. A fitment according to Claim 1, characterised in that the part constituting the wedge (35, 36) is integral with the support plate (30, 31). 20

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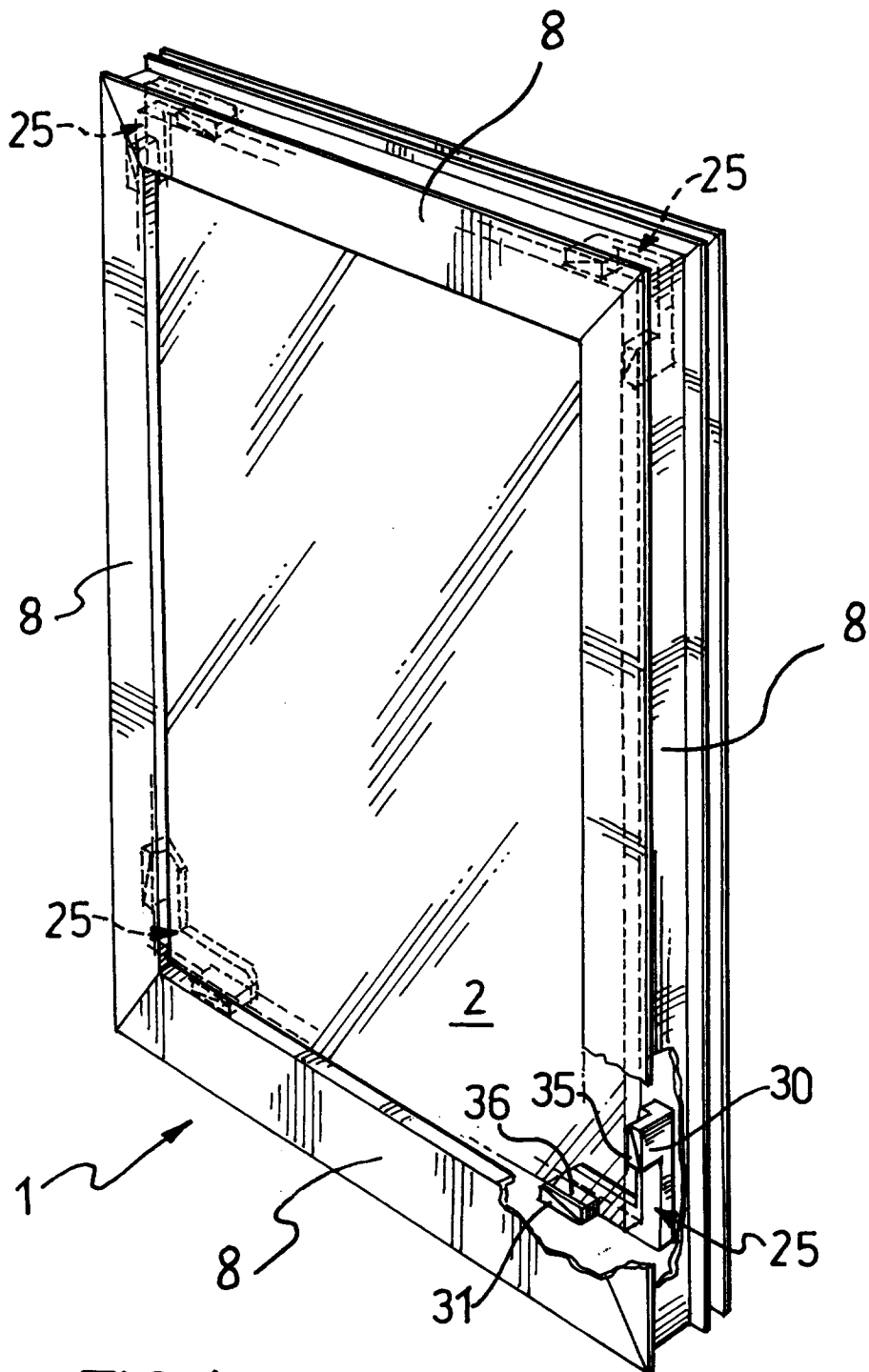


FIG.1

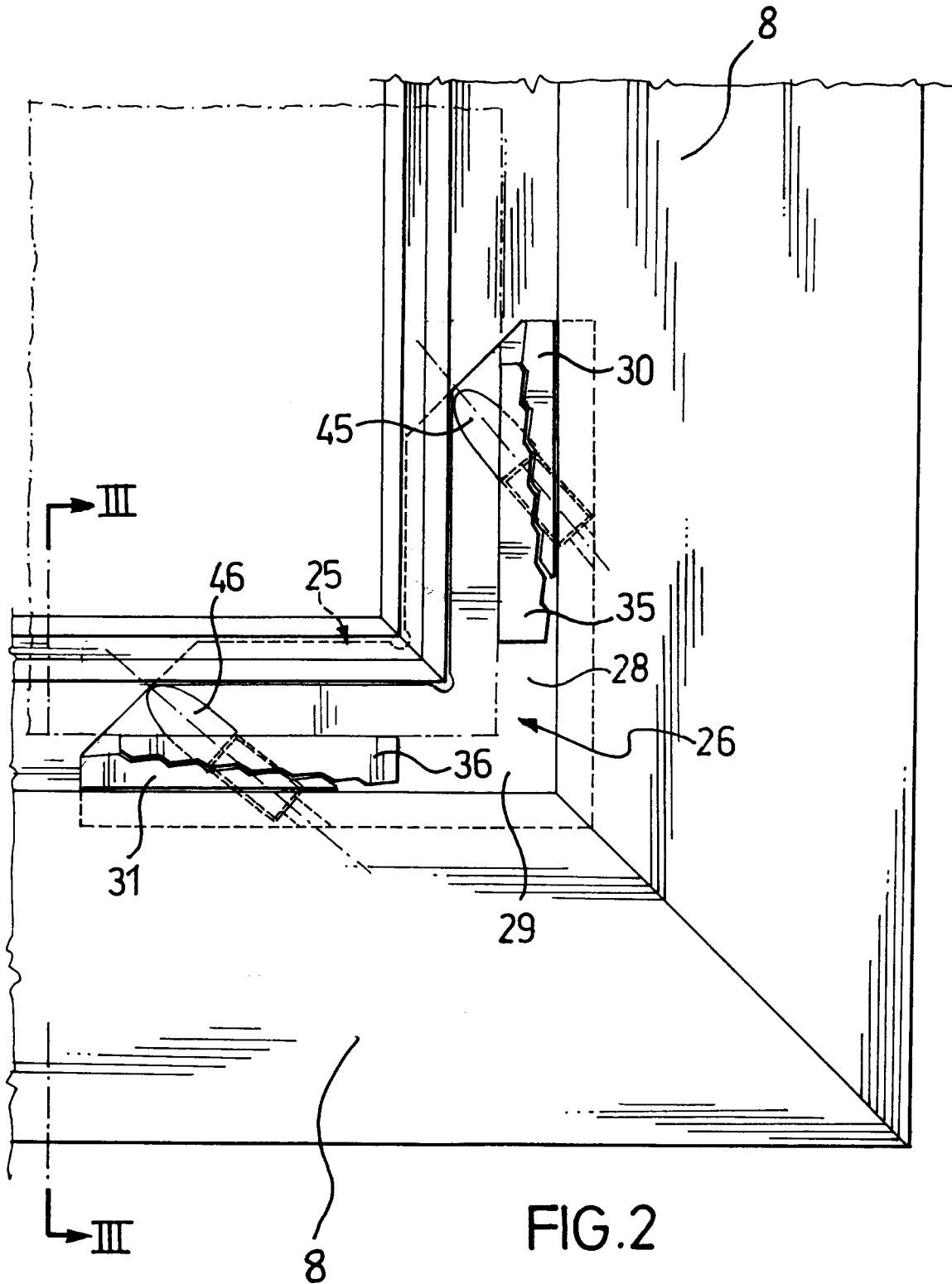
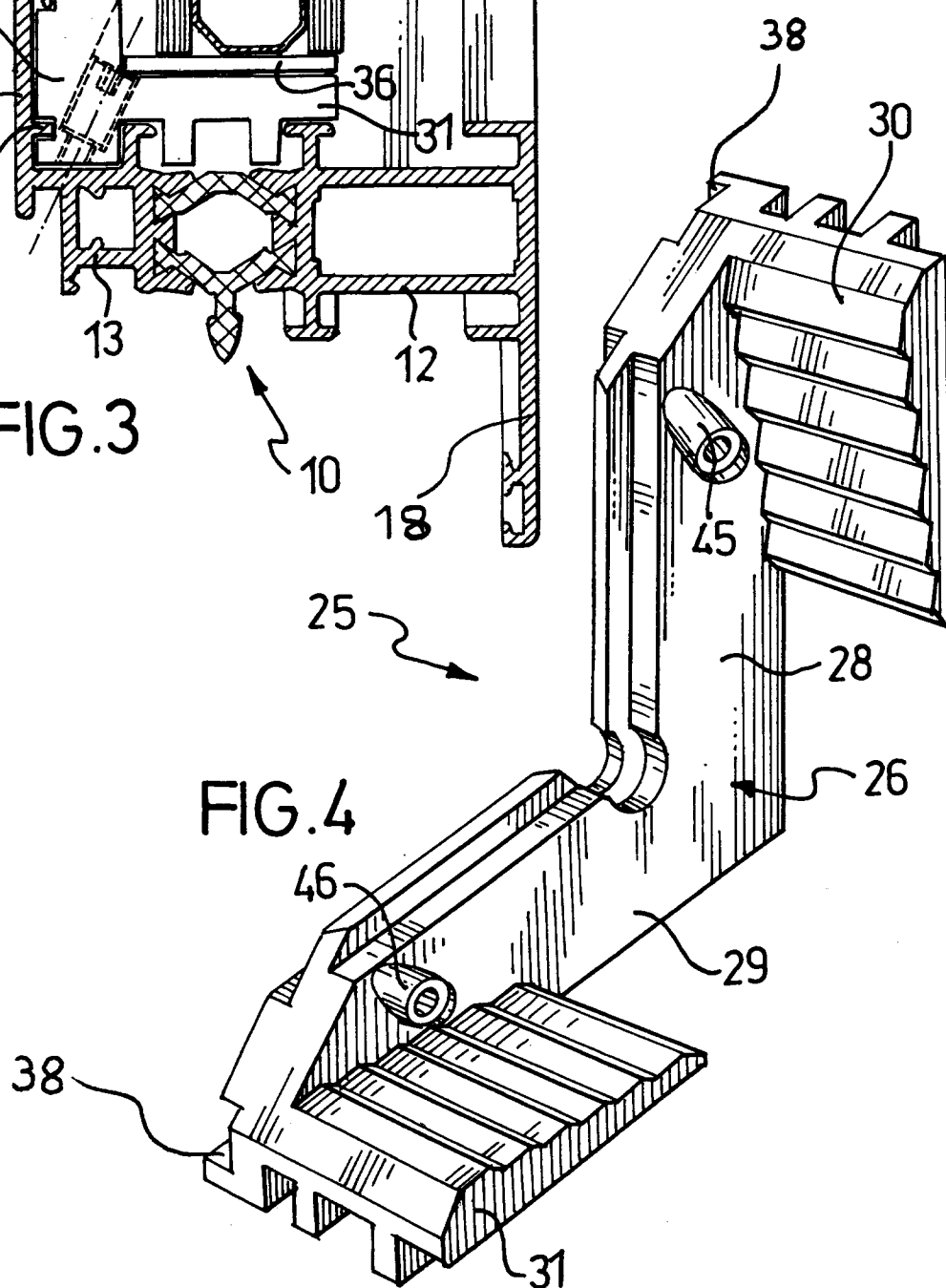
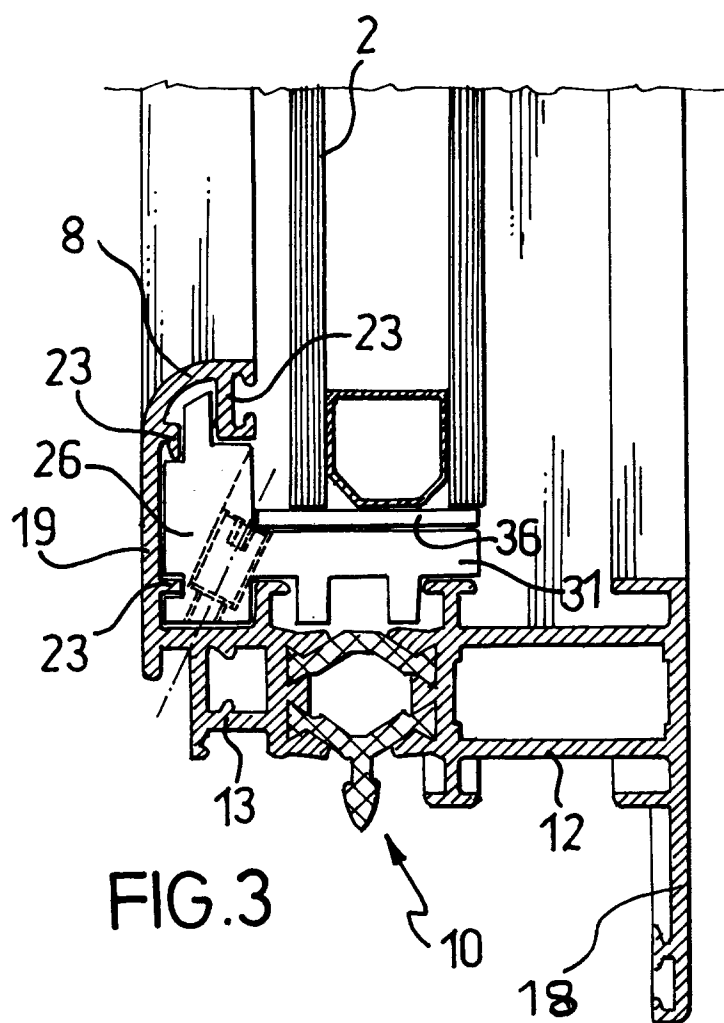


FIG.2





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EUROPEAN SEARCH REPORT

Application Number
EP 93 20 0918

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Y	DE-A-34 19 412 (SÄLZER) * page 11, paragraph 7 - page 13, paragraph 2; figures * ---	1-4	E06B3/54 E06B3/98
Y	US-A-3 404 501 (VON WEDEL) * column 3, line 37 - line 75 * * column 4, line 64 - column 5, line 34 * * column 5, line 53 - line 69 * * figures 1,2,9,10 * ---	1-4	
A	DE-A-20 44 299 (SCHÜRMANN) * page 5, paragraph 2; figures 11,12 * ---	1-3	
A	FR-A-2 417 621 (GALLO & BORDEL) * page 4, line 18 - page 5, line 8; figures * ---	1-3,6	
A	FR-A-2 293 559 (BRENDLE) * page 10, line 33 - page 14, line 12; figures * -----	1,4,5	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			E06B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 February 1994	Examiner Depoorter, F
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	