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Reinforced wooden or other compound frame member.

The various elements (1,2,3,4) that form the stile and/or rail of a frame, are stiffened by two or more metallic bodies (6), hidden from view in the thickness of the stile or rail. These stiffeners serve also as anchoring means for the hinges or other hardware and as assembling means for the two parts of the stile or rail which clamp the glass pane between them. The anchoring or assembling screws are also hidden from view but easily accessible. The opposed surfaces of the two parts of each stile or rail are provided with longitudinal slots for the stiffeners which are either of Z or L form.

It is known that frames, and in particular door and window frames, are formed by a framework fastened to the wall and by one or more hinged wing or basculed to the framework itself.

It is also that the central part of each bascule or fixed wing is prepared to receive a glass or a plane surface, according to the use of the frame itself.

Either the fame or the framework are everytime produced and assembled in the factory and then installed in situ, causing great difficulty in transport and storage due to the space.

Many solutions have been suggested in order to stiffen the various frameworks produced according to the traditional rules, in particular as concerning wood frames.

In the French patent n° 2 529 819 are shown wood frames formed by layers of wood glued one another and provided by slots in order to receive a metallic internal armor. The pits are obtained by dovetail grooves longitudinally opposed and ready to receive the stiffening metallic elements screwed at view.

The French patent N° 2 570 748 uses **L** squares, animated, for the assemblage of the stiles and the traverses, a **T** square to connect the rail of the wing with the framework of the wing itself, with linking elements at view even if covered by caps.

These French patents do not solve the question of hiding the linking elements at view, and the difficulty of assembling the elements themselves; furthermore the linking elements at view or caps are not very nice to see and the assembling of the frame is little rational too.

Argument of the present invention is a means of anchoring the different laminated elements and compounds that form the stile and/or the rail of a laminated frame, stiffened by two or more metallic bodies opposed and/or overlapped and once connected and incorporated disappearing from view within the thickness of the stile or rail itself, form a single stiffener, either for an eventual armor plating of the frame itself, or for the anchoring to them of the hinges, or hardware in general, either for the locking of the framework or of parts of the window stay framework; without showing screws or other locking means at view.

According to the invention, the frame in the widest sense of the word, either in its movable part on in its immovable one, is formed as a rule by a stile and a rail, each one is composed, that is formed by layers or blocks of homogeneous or heterogeneous materials assembled together. In other words each stile and/or rail is formed by at least two wooden elements opposed and/or overlapped and/or side by side united, within the thickness of the stile and/or the rail, by two or more stiffeners, usually by materials not attackable by atmospheric agents, suitably shaped out and opposed to each other, each anchored to the opposed elements so that, once connected, the stiffen-

ers result overlapped and form a single stiffener preferably continual, perimetrically to the frame, either framework or wing. The locking of the opposed stiffeners, one assembled and/or connected to each of the elements or opposed surfaces, of **L**, **Z**, **C**, **V** etc., is obtained through screws or other means in the section of the frame that are not at sight, but easily accessible. The two surfaces opposed to each stile and/or rail are transversally provided of slots or longitudinal channels, each provided to permit the accommodation of its own stiffener which are the former of **Z** section and the latter of **L** section, so that:

1) the stiffeners of **Z** section corner bent or drop-forged, assembled through inserting, connect to each corner the stile with the rail of one of the two opposed surfaces forming a load bearing halfwing moveable or immovable, that is of adequate thickness, so that to receive the windowpane or windowpanes with more chambers and/or panels.

The blocking of the hardware or of the hinges, either disappearing from view or at view, is directly done on the corner profiles of **Z** form, this is an important characteristic because permits a greater physical and mechanical resistance in comparison with the traditional frames.

2) The stiffeners with **L** section, continuous and/or discontinuous, anchored to the other surface, opposed to the other, using screws or other means permit during the following connection to improve the stiffening too and the linking of the elements of the framework or window stay framework to the load bearing halfwing, assembled or not previously. Such a solution works as window stay too, substituting the traditional system, giving the opportunity to use different colours and materials too, so that you can obtain a two-colours and two-material frame too.

Another advantage to such a solution is to obtain a great prime cost saving since we have abolished the traditional window stay list which needed further working and presented difficulty for the assemblage.

It is obvious that such a system permits the assembling and the disassembly of the glass and/or the panel without taking off the wing from the window frame and without anchoring elements at view.

These and the characteristics of the invention will be clearer from the following description of a preferred shape which is carried out of a compound wood, laminated, as you can see from the enclosed drawings where:

figure 1 shows in a transversal section a compound stile and/or a rail of different qualities of wood;

figure 2 shows in section a frame, that is a stile and a rail, with its framework and window stay and a triple glass;

figure 3 is an exploded view of figure 2 after the

working;

figure 4 is a section view, in elevation of a part of a frame according to the invention;

figure 5 shows varying of the locking system of a window stay.

figure 6 shows the anchoring of the hinge to the frame.

Referring to the drawings, the plain frame, according to the invention, stile and/or rail, is formed by a first material 1 little valuable that forms in its whole the internal framework, by a second material 2, little valuable, that forms in its whole the external framework, by a frame 3 and 4, of precious material, that form the window stay and/or the covering of the bonding line of the various materials that form the single elements.

As we have already said, the following description will deal about wood, but of course you can use any kind of valid materials, such as resin, PVC, aluminum, iron etc, eventually combined, called compound too.

Between the layers forming the elements from 1 to 4, it is provided a slot 5 preferably shaped, used to receive a flask 6 (Fig.3) preferably of a Z profile, flask 6 corner bent that is assembled through inserting in the space 5 at the moment of the assembling of the stile with the rail formed by the elements 1, 2, 3, o 1, 2, 4 of the half wing.

As previously said, the frameworks of the window stay or panel, 3 and 4, are realized as frameworks apart or directly obtained by the section of the base profile or in single elements, substituting the normal window stay lists, with positive practical and aesthetic results. These frameworks 3, 4 are anchored to the framework formed by the elements 1, 2, 3 or 1, 2, 4 through the body 7(fig. 2), of L section, previously connected to the body 3, and secured to the load bearing element of the stile and/or rail 1, 2 of the half wing, according to whether of the two is externally less visible through screws or other, without precluding the possibility of access.

The elements that form the window stay frameworks 3 and 4 are usually provided of packings 8 that seal the panel and prevent moisture and air from infiltrating into the joints.

It must be underlined that flasks 6 and 7 can be mainly used to stop or receive the hinges where the movable wing of the frame rotates as shown in 11 only as an example but it is not binding. For this reason the external part of the element 2 is provided of a groove facing the stile of the framework. The hinge and the hardware in general is fixed, i.e; using screws that penetrate the stile and set on the transversal side of the flask 6. In the case of bascule wings, likewise the bascule is lodged against the rail of the element 1, anchored to the transversal section of the flask 6 or externally on its orthogonally back.

In a variant shown in detail in figure 5, the over-

hanging part, towards the outside, of the gap 9, is abolished in some section of its length, so that the gap itself takes the shape of a simple offset, in order to fix the window stay framework through a square 10 of L, U or other section. Even in this case, a screw or other means, secures the square element 10 with the stile and/or the rail anchoring it to the flask 6.

Shaping the window stay framework 3 or 4, it is possible to use single glass panes or thick glass panes or panels of any thickness. This way it is possible to save material and time for the laying in comparison to the traditional window stay, since the framework 3 or 4 is easily to disassemble and laid off again, without moving the wing of the framework too.

A vantageous important particular of the improvement of this invention is the possibility to adopt heterogeneous materials, particularly useful for the preparing of elements, different colours too, composing and assembling together so that to form monolithic elements, obtaining the assembling either out the laying or during the laying, with substantial savings in transport costs and avoiding to show any kind of connecting elements at view.

The invention has been shown and described only as an example but it is not binding, integrating it with variants but of course without adding any new idea to it.

Claims

1.- Improvements in framing and in particular in framing laminate frames or casings of wood and/or other homogeneous or heterogeneous compound material, characterized of what the frame is compound of, either in its movable or immovable part, by stiles and rails composite and/or compound, that is formed of at least two elements, of which one facing the glass pane, in the case of movable wing, or that facing the anchoring surface, in the case of immovable framework, is preferably of less good quality material of that of the element that is placed side by side to it, the assembling and the stiffening of at least two elements is obtained gluing, if it is possible, or using screws or other, disappearing screws are used on the good quality material that is at view.

2.- Improvements according to claim 1, characterized of a frame is anchored through flasks to the faces at view of the movable framework accomplishing the task of window stay.

3.- Improvements according to one or more of the preceding claims, characterized that at pre-established distances or continually, the two opposed surfaces of each rail and/or stile are transversally provided of slots designed to accept in the assembling face the transversal part of the flasks or profiles shaped at Z, C, L, T, or other section, flasks or profiles used in general to perfect the connection between the elements

of the frame to the elements of stile/or rail.

4.- Improvements according to one or more of the preceding claims, characterized that on the corners, the flasks, preferably **Z**, **L** or other section, is corner bent to stiffen the corner itself and the other flasks preferably at **L**, even them corner bent too, allow the anchoring of the trueing of the panel and/or of the window stay and of the same to the load bearing framework.

5.- Improvements according to one or more of the preceding claims, characterized that the stiffeners that animate disappearing from view the frame, either framework or wing, work either as elements of the load bearing structure on which are secured the hinges and hardware in general, or as stiffeners, such to make the frame half armor plated or armor plated, permitting a greater physical and mechanical resistance of frame itself.

6.- Improvements according to one or more of the preceding claims, characterized that the basic profiles either of the wing or of the framework are realized of laminated profiles, appropriately pre-cut and pre-worked, in order to, once assembled, form the slot of the stiffeners, facilitating the working process and reducing at a very minimum the waste of wood or of other material in general, during the profiling phase of the frame itself, allowing the use of less good quality material, whenever it is possible.

7.- Improvements according to one or more of the preceding claims, characterized that the window stay framework may either be whole or formed by different assembled materials or formed by single loose elements, directly connected to the load bearing framework.

8.- the elements of the frame can be either stepped in or assembled in situ too, obtaining substantial savings due to storage, to transport costs and to the laying.

9.- Improvements according to one or more of the preceding claims, characterized that the slotting or slot is perimetrically to the frame, either framework or wing, and in correspondence to it practicing two or more holes transversally, not at view from the outside, becomes a ventilated chamber even through the inserting of suitably shaped out stiffeners, ventilated chamber that, in the case of wooden frames, will help ulteriorly to stabilize the wood, so to let humidity out in this chamber in order not to get those crackings and distortions of the frame especially when the external surface of the frame is treated with varnish or particular treatments that do not allow breathing to the wood.

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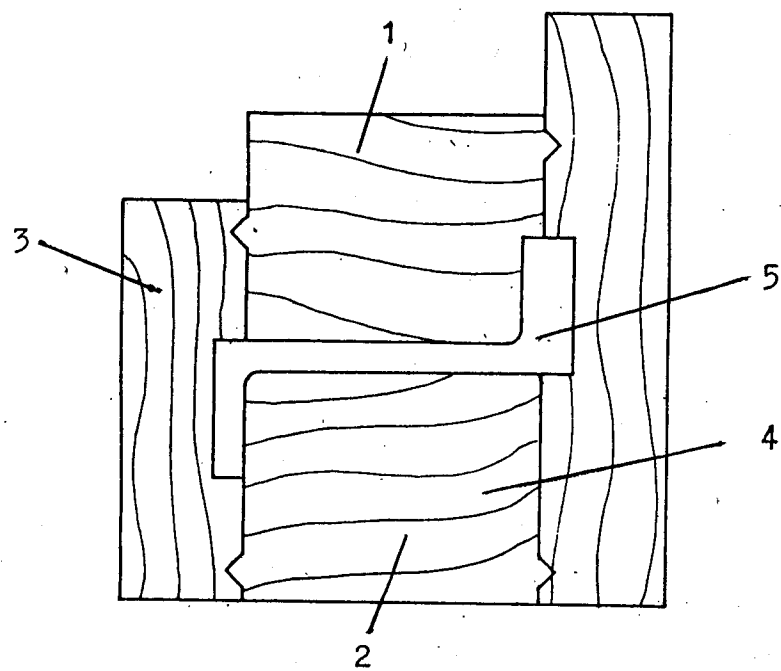


FIG. 1

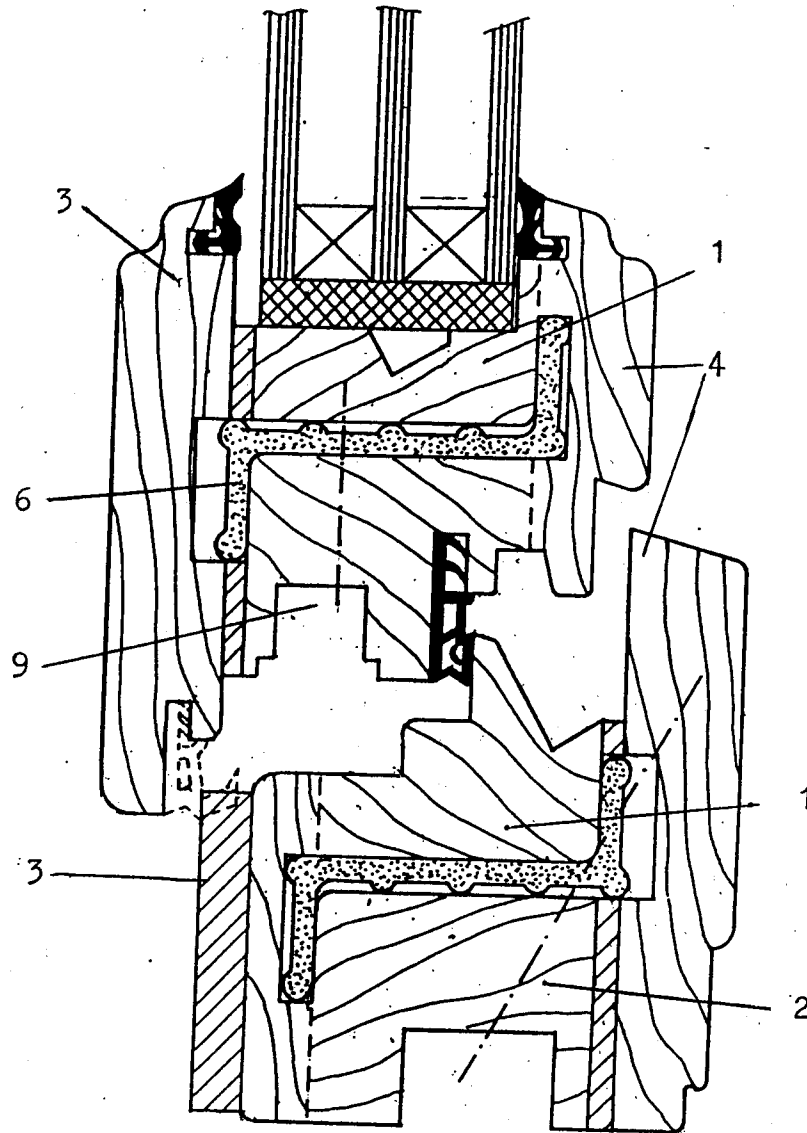


FIG. 2

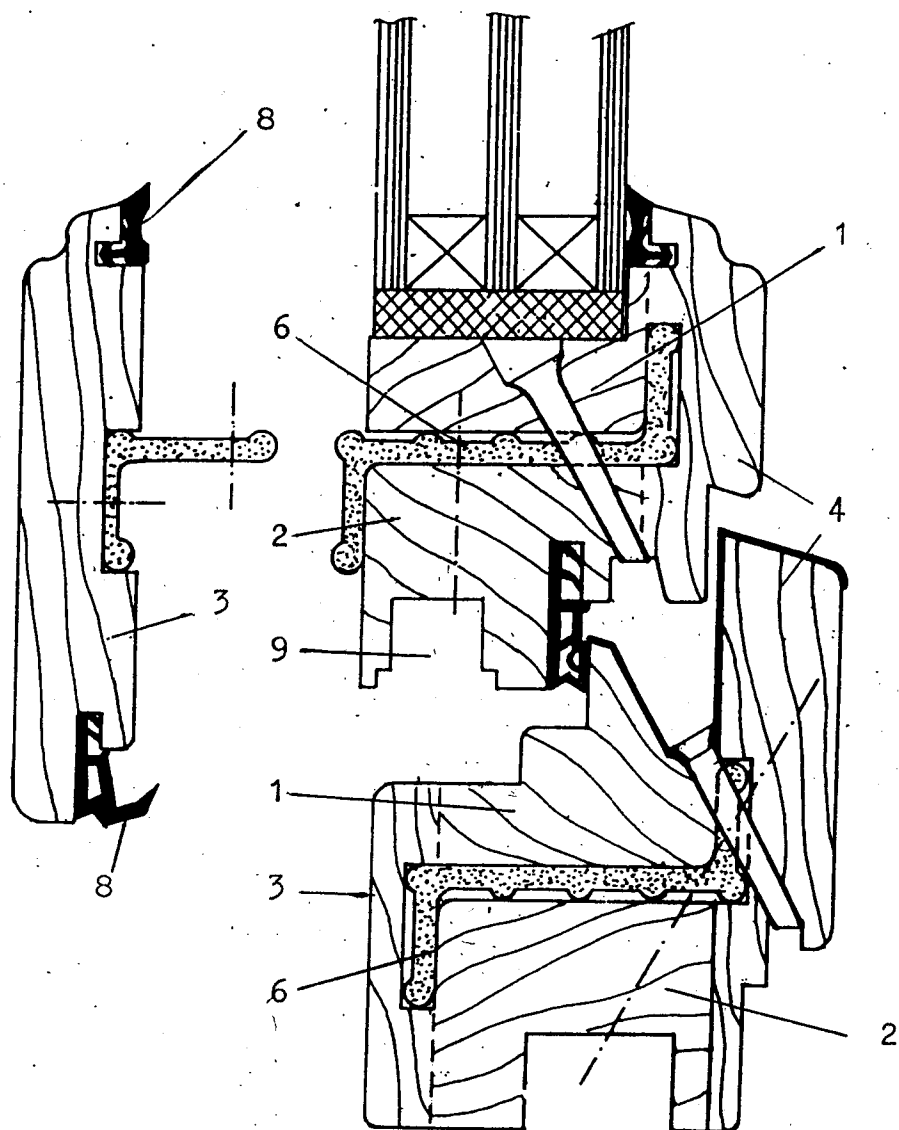


FIG. 3

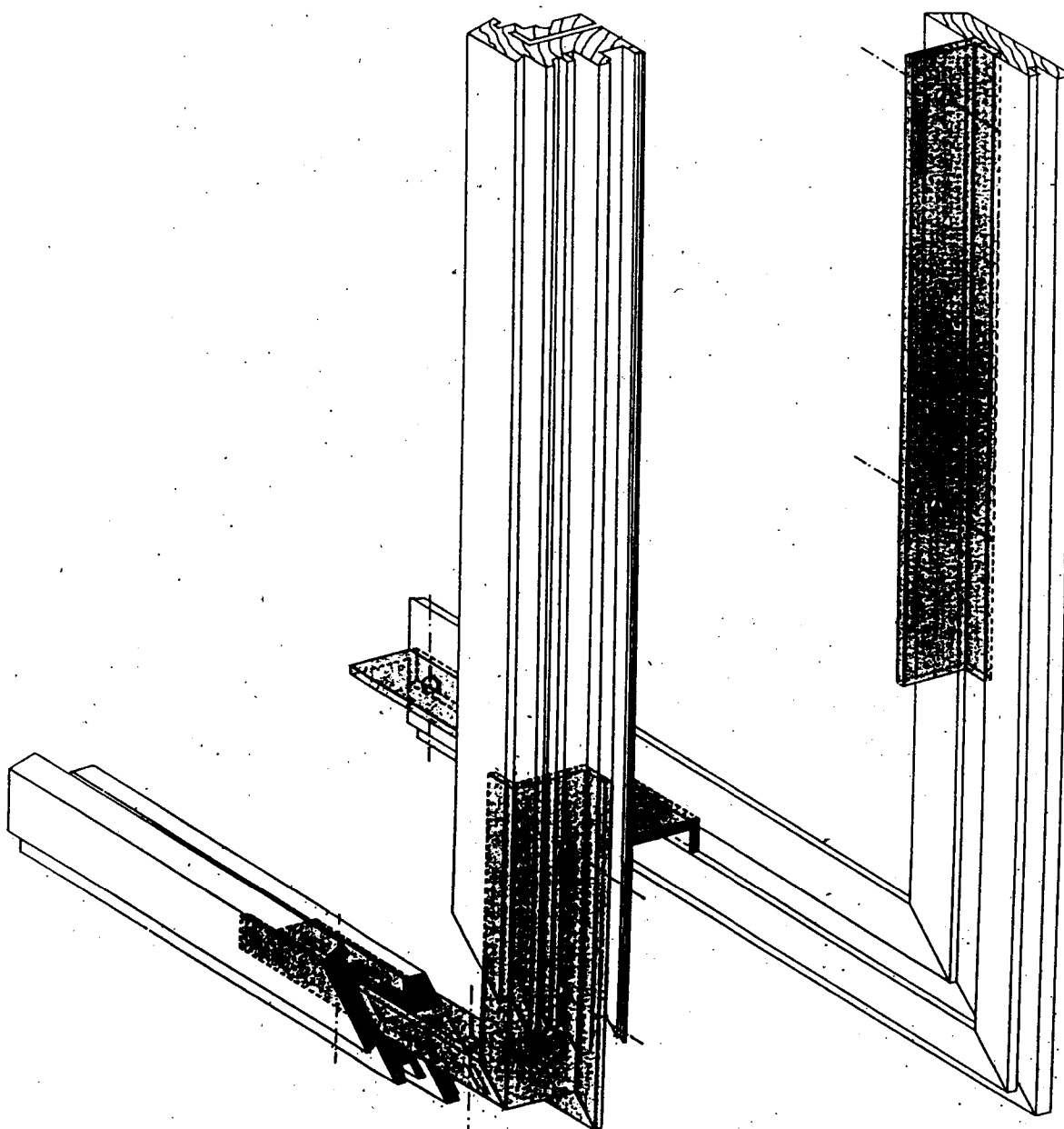


FIG. 4

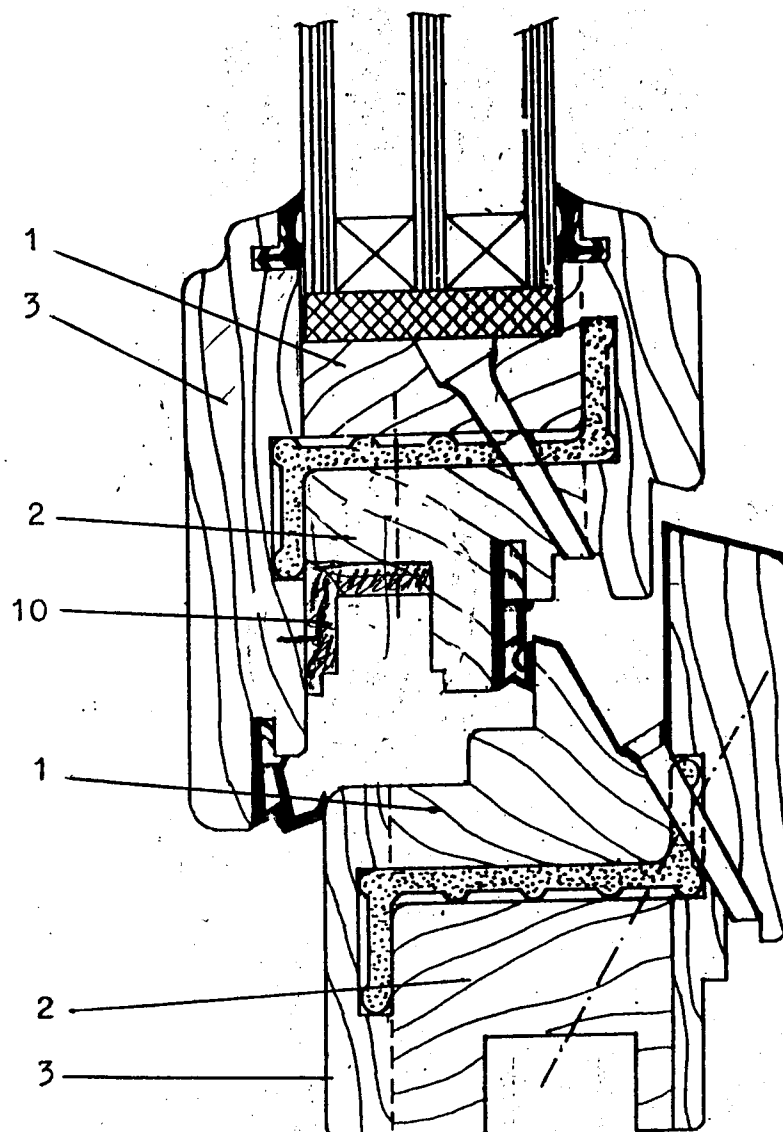


FIG. 5

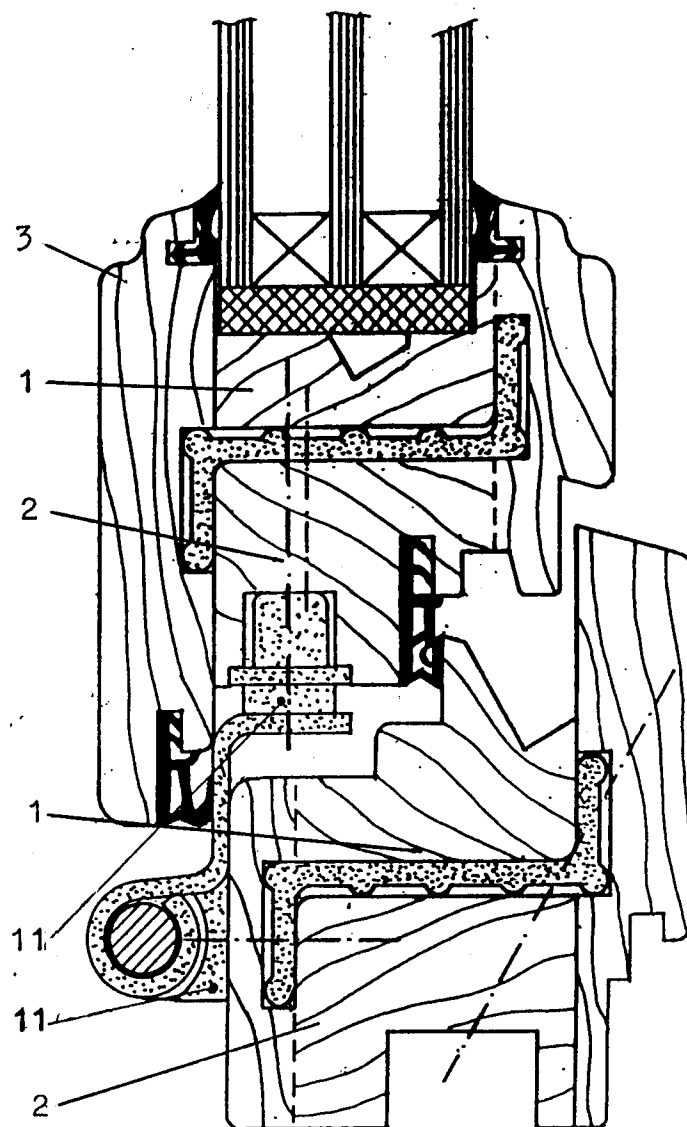


FIG. 6



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 83 0576

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)
X	EP-A-0 229 015 (MEETH)	1,6	E06B3/10
Y	* column 1, line 20 - column 3, line 24; figures *	2,5,8,9	E06B3/26

X	DE-A-3 509 101 (ROHLFS)	1,3,6	
	* page 5, paragraph 3 - page 11, paragraph 3; figures *		

Y	DE-A-3 210 253 (LANGENHORST)	2	
	* page 9, line 16 - page 10, line 20; figures *		

Y	US-A-4 982 530 (PALMER)	5	
A	* column 3, line 60 - column 7, line 41; figures *	1,2,3,7	

Y	FR-A-2 484 008 (NUOVE SABB)	8	
	* claim 1; figures *		

Y	DE-A-1 659 975 (HACKER)	9	
A	* page 2, line 1 - page 8, line 2; figures *	1	

A	DE-A-2 203 356 (ALEX)	1-3	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
	* page 12, line 1 - line 21; figures *		

D,A	FR-A-2 570 748 (CHANSON)	2-4	E06B
	* page 2, line 21 - page 3, line 27; figures 1-5 *		

The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 AUGUST 1992	Examiner DEPOORTER F.
CATEGORY OF CITED DOCUMENTS		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 I : document cited for other reasons & : member of the same patent family, corresponding document	
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			

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