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(54) A door mounting assembly

(57) A door mounting assembly which enables a rectangular door 12 to be mounted to an existing, incompatible, rectangular door frame 14 comprises a sub-frame 16 for fitting into the existing door frame along at least its two opposite vertical edges and at least two edge members 18 for fitting respectively along the two opposite vertical edges of the door, the edge members co-operating with the sub-frame when the door is closed.

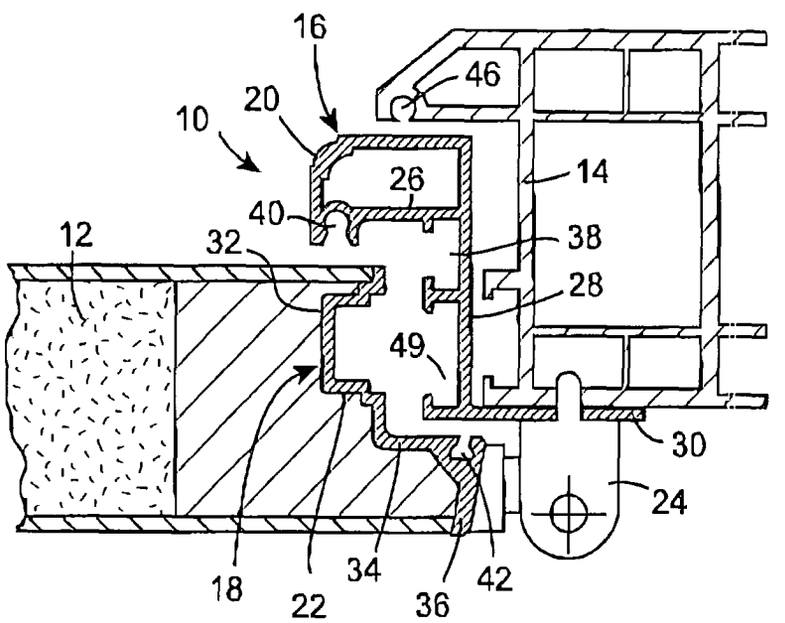

Fig. 1

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Description

[0001] This invention relates to a door mounting assembly which enables a door to be mounted to an existing door frame.

[0002] In Ireland, window and door systems account for over half of all joinery sales, both as systems for fitting to new buildings, and as replacement systems for existing buildings.

[0003] There are a large number of pvc window and door systems available on the market, with each system generally being produced by a plastics extruder and then sold onto a manufacturer who may sell directly to the public or may sell to a number of individual companies who supply and fit to the end user. Pvc profiles from different manufacturers are broadly similar in overall dimensions, but are unique in many ways. Pvc door systems, although popular, do have a number of drawbacks, with stability, security, and also importantly to the consumer, aesthetics. Thus an increasingly popular alternative to pvc doors are composite doors, as such doors have the low maintenance appeal of pvc doors, with the look and feel of timber.

[0004] However, it is both expensive and time consuming to adapt a composite door or indeed a conventional timber door, to each and every pvc frame system on the market. As a solution, some composite door manufacturers develop their own pvc frame systems suitable for use with a particular composite door. Although in theory this seems like an adequate solution, when a pvc joinery manufacturer wishes to put, for example, side screens or windows beside or around the composite door and corresponding frame, more often than not the frames will not match in colour/style and will not connect together properly to form a sufficient seal. Obviously the manufacturers and fitters of pvc joinery systems do not wish to sell or fit a system that is not easy to install. They would like the composite doors to fit their own frame systems, thus giving more control over the final product, reducing the cost, and improving the overall aesthetic effect.

[0005] It is therefore an object of the present invention to provide a door mounting assembly which enables a door to be mounted to an existing door frame.

[0006] According to the present invention there is provided a door mounting assembly which enables a rectangular door to be mounted to an existing, incompatible, rectangular door frame, the assembly comprising a sub-frame for fitting into the existing door frame along at least its two opposite vertical edges and at least two edge members for fitting respectively along the two opposite vertical edges of the door, the edge members cooperating with the sub-frame when the door is closed.

[0007] Preferably, each of the sub-frame and edge members are rebated such that a portion of the sub-frame overlaps the edge members on one side of the door and a portion of the edge members overlap the sub-frame on the opposite side of the door.

[0008] Embodiments of the present invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a sectioned view of a door mounting assembly according to a first embodiment of the invention, mounted to an existing door frame, and carrying a composite door.

Figure 2 is a sectioned view of a sub-frame and an edge member forming elements of the door mounting assembly of figure 1;

Figure 3 is a similar sectioned view to that of figure 1, wherein various components have been secured by means of a plurality of screws;

Figure 4 is a sectioned view of a door mounted to an existing door frame by means of the embodiment of door mounting assembly of Figures 1 to 3; and

Figure 5 is a sectioned view of an alternative embodiment of the door mounting assembly of the present invention.

[0009] Referring now to figures 1 to 4 of the accompanying drawings, there is illustrated a first embodiment of a door mounting assembly according to the present invention, generally indicated as 10, for use in mounting a rectangular door 12 in an otherwise incompatible existing rectangular door frame 14. The door 12 illustrated is of composite form, having a core sandwich between two sheets of veneer or the like, although the door 12 could of course be formed of solid timber, or any other suitable material. The assembly 10 comprises an outer sub-frame 16 for fitting into the existing door frame 14, and an inner frame 18 for mounting to the edges of the door 12, the inner frame 18 being shaped and dimensioned for a co-operative fit with the sub-frame 16 as will be described. The sub-frame 16 preferably comprises four outer frame members 20 of substantially constant cross-section and mitred end to end to form a rectangular frame surrounding the door 12 on all four sides. Likewise, the inner frame 18 preferably consists of four edge members 22 of substantially constant cross-section, one mounted along each edge of the door 12 and mitred at the corners, for co-operation with the corresponding outer frame members 20 of the sub-frame 16. It will however be appreciated that outer and inner frame members 20 and 22 could simply be located along the hinged edge and the opposite edge of the door 12 (i.e. its vertical edges) in order to allow the door 12 to be mounted to the existing door frame 14. However, a satisfactory seal would not therefore be created between the top edge of the door 12 and the corresponding portion of the door frame 14, and the underside of the door 12. It is therefore preferable, particularly with exterior doors, that the outer frame members 20 and the edge

members 22 each form a closed rectangle surrounding the door 12 on all sides.

[0010] Obviously, in order to allow conventional hinged opening of the door 12, one edge member 22 is connected by hinges 24 to the adjacent outer frame member 20. Thus the sub-frame 16 can be quickly and easily secured to the existing door frame 14, as will be described in detail hereinafter, and the door 12, having the inner frame 18 forming a rim therearound, be quickly and easily hingedly mounted to the sub-frame 16, and therefore the existing door frame 14. As mentioned above, and as will be described hereinafter in detail, the sub-frame 16 and inner frame 18 are correspondingly shaped such as to provide a preferably weather-proof seal between the door 12 and the outer frame 16.

[0011] Referring in particular to figure 2, it can be seen that each outer frame member 20, in section, is substantially Z-shaped, consisting of a first, hollow, section 26 and a second section 30 in parallel spaced relation to one another, and joined by a third section 28 extending therebetween. Each outer frame member is preferably manufactured from profiled aluminium or a pvc extrusion, or indeed a combination of both, although it will of course be appreciated that the outer frame members 20 could be formed from a number of individual components suitably joined to provide the configuration shown.

[0012] Each edge member 22 is also substantially Z-shaped in cross section, comprising a first leg 32, a second leg 34 extending therefrom and substantially perpendicular thereto, and a third leg 36 extending from a second leg 34, again substantially perpendicularly thereto. The edge members 22 are also formed in similar fashion to the outer frame members 20 for example by extrusion. In order to fit the edge members 22 to the door 12, the edges of the door 12 must be machined with a similar if not identical profile to that of the edge member 22, in order to securely receive same.

[0013] The co-operating cross sections of the sub-frame 16 and the inner frame 18 provide a double rebate between each edge of the door 12 and the corresponding section of the sub-frame 16. Specifically, the first section 26 and the third section 28 form a first rebate overlapping the edge member 22 and door 12 on one face of the latter, while the first leg 32 and the second leg 34 form a second rebate, overlapping the third section 30 of the outer frame member 20. To ensure a fully weatherproof seal between the door 12 and the sub-frame 16, a first channel 40 is also preferably provided in the first section 26, for carrying a strip seal or gasket (not shown) of conventional form for sealing against the door 12, while a second channel 42 is provided between the second leg 34 and third leg 36, again for carrying a conventional strip seal or gasket (not shown) for sealing against the section 30. It will of course be appreciated that either or both of the first channel 40 and second channel 42 could be repositioned as desired or indeed any other suitable sealing means could be utilised between the door 12 and the sub-frame 16.

[0014] Thus, in order to mount the door 12 using the mounting assembly 10 of the present invention, the sub-frame 16 is mounted in the existing door frame 14. This is achieved by passing fixing means in the form of screws 44 through both the second section 28 and third section 30 of each outer frame member 20, directly into the existing door frame 14. Sliding blocks 45 may be used in order to increase the area of the second section 28 on which the respective screws 44 act. Also, spacers (not shown) may be inserted between each outer frame member 20 and the adjacent portion of the existing door frame 14, i.e. in the gap behind the section 28, to ensure a desired separation between the two according to the width of door to be fitted. It will of course also be understood that any other suitable fixing means could be used, such as an adhesive, to secure the sub-frame 16 to the existing door frame 14. The existing door frame 14 will also normally include a channel 46 for receiving a strip seal or gasket (not shown), and such a gasket should be utilised to form a seal between the door frame 14 and the sub-frame 16. In addition, the door frame 14 is preferably provided with a thermal break (not shown) within the main cavity thereof.

[0015] In order to mount the inner frame 18 to the door 12, as described above, a suitable profile must be machined along the edges of the door 12, preferably using a purpose designed routing bit (not shown). Once the edge members 22 have been pressed into place around the edges of the door 12, each member is then secured in place by means of a plurality of screws 44 passing through the first leg 32 and the third leg 36. Again, the position and orientation of the screws 44 is not essential and could be altered as required or desired. Furthermore, the screws 44 could be replaced with any other suitable fixing means, again for example an adhesive or the like. Once the inner frame 18 has been fitted to the door 12, the combined door 12 and inner frame 18 is then mounted to the sub-frame 16 by means of the hinges 24. It will of course be understood that the hinges 24 need not be of the form illustrated, and could be of any other suitable shape and/or configuration.

[0016] Once the door 12 is mounted, it is then necessary to be able to retain the door 12 in the closed position, and to lock the door 12 if necessary, which will conventionally be achieved by means of a lock assembly 48 housed within one side of the door 12, generally opposite to the hinge 24 as illustrated in figure 4. Thus the second section 28 of the respective outer frame member 20 is provided with a channel 49 for receiving a latch bolt 50 of the lock assembly 48, in order to allow the door 12 to be held in the closed position, in conventional fashion. The channel 49 may also receive a dead bolt (not shown) in order to allow the door 12 to be locked using a key or the like. If necessary, a suitably shaped and dimensioned aperture (not shown) may be provided in the second section 28, within the channel 49, in order to allow the latch bolt 50 and/or dead bolt (not shown) to pass through the second section 28, possibly into a

similar channel in the existing door frame 14.

[0017] Referring now to figure 5, there is illustrated a second embodiment of a mounting assembly according to the present invention, generally indicated as 110, again for mounting a door 112 to an existing door frame 114. In this second embodiment, like components have been accorded like reference numerals plus 100, and unless otherwise stated, perform a like function. The assembly 110 again comprises an outer sub-frame 116 and an inner frame 118, the sub-frame 116 being mounted within the door frame 114, while the inner frame 118 is mounted around the edges of the door 112. The outermost portion of the outer frame member 120 is preferably detachable, in order to allow fixing screws (not shown) or the like to be passed through the outer frame member 120 and into the door frame 114.

[0018] The main difference with the second embodiment is the provision of adjustment means in the form of a plate 60 mounted on the outside of the outer frame member 120 between the door frame 114 and the sub-frame 116. The plate 60 is preferably provided with a ball 62 at one end thereof, housed within a correspondingly shaped socket 64 in the outer frame member 20, such that the plate 60 may be hinged relative to the outer frame member 120. The outer frame member 120 is also provided with a threaded aperture 66 for receiving a correspondingly threaded grub screw (not shown) or the like accessible from the inside of the sub-frame. Thus, as the grub screw is advanced through the threaded aperture 66, it will contact the plate 60, with further advancement of the grub screw forcing the plate 60 to hinge rearwardly (anti-clockwise as seen in Fig. 5). Once the free edge of the plate 60 has contacted the door frame 114, any further pivoting of same will force the outer frame member 120 outwardly away from the corresponding section of the door frame 114, thereby allowing adjustment of the position of the sub-frame 116 relative to the door frame 114 prior to final fixing. The plate 60 is preferably formed from a material which will create a thermal break between the door frame 114 and the outer frame 116.

[0019] It will therefore be appreciated that the mounting assembly 10;110 of the present invention allows the secure weather tight fitting of almost any square edged door into an existing frame, quickly and easily. For example, a door may be prepared off site by securing the inner frame 18; 118 thereto, then hingedly mounting the outer sub-frame 16; 116 thereto, before shipping the door to the required site. For a new building, a pvc or aluminium door frame, matching the other doors/windows, can be fitted prior to the arrival of the door and mounting assembly 10;110, which can then be quickly and easily secured in place. The double rebate, and consequent space available between the outer frame 16;116 and the inner frame 18; 118 provides a significant margin of error, and therefore increases the speed of on-site fittings. Furthermore, as previously stated, the mounting assembly 10;110 allows a new door to be fitted to an existing door frame, thereby drastically reducing the price of replacing a door, as it will no longer be necessary to replace the whole frame to fit a particular door, as is normally the case.

[0020] The present invention is not limited to the embodiments described herein, which may be amended or modified without departing from the scope of the present invention.

Claims

1. A door mounting assembly which enables a rectangular door to be mounted to an existing, incompatible, rectangular door frame, the assembly comprising a sub-frame for fitting into the existing door frame along at least its two opposite vertical edges and at least two edge members for fitting respectively along the two opposite vertical edges of the door, the edge members co-operating with the sub-frame when the door is closed.

2. An assembly as claimed in claim 1, wherein each of the sub-frame and edge members are rebated such that a portion of the sub-frame overlaps the edge members on one side of the door and a portion of the edge members overlap the sub-frame on the opposite side of the door.

3. An assembly as claimed in claim 2, wherein the overlapping portions of the edge members and/or sub-frame are adapted to carry a resilient seal for forming a seal between the sub-frame and door when the door is closed.

4. An assembly as claimed in any preceding claim, wherein one edge member is hinged to the sub-frame.

5. An assembly as claimed in any preceding claim, wherein the sub-frame is rectangular and the edge members are fitted along all four edges of the door.

6. An assembly as claimed in any preceding claim, wherein the sub-frame is substantially Z-shaped in cross section with first and second substantially parallel but spaced apart sections joined by a third section substantially perpendicular to each of the first and second sections.

7. An assembly as claimed in any preceding claim, wherein the sub-frame comprises means for adjusting the position of the sub-frame relative to the existing door frame prior to final fixing of the sub-frame.

8. An assembly as claimed in claim 7, wherein the adjusting means comprises a flap hinged to the sub-

frame and extending, in use, from the outside of the sub-frame towards the existing door frame, and means accessible from the inside of the sub-frame for adjusting the angle of the flap relative to the sub-frame.

9. An assembly as claimed in claim 7 or 8, wherein the adjusting means forms a thermal break between the sub-frame and existing door frame.

10. A door assembly in which a rectangular door is mounted to an existing, incompatible, rectangular door frame, the assembly comprising a sub-frame fitted into the existing door frame along at least its two opposite vertical edges and at least two edge members fitted respectively along the two opposite vertical edges of the door, the edge members co-operating with the sub-frame when the door is closed.

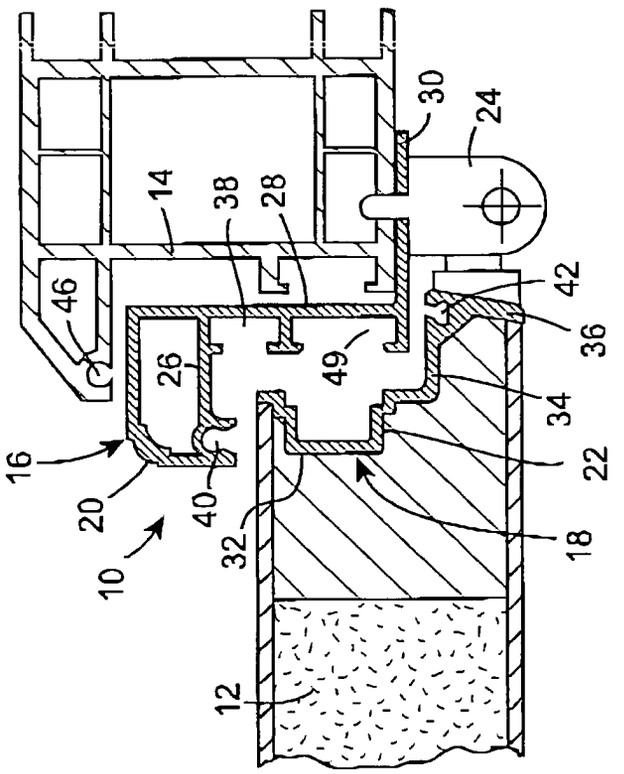

Fig. 1

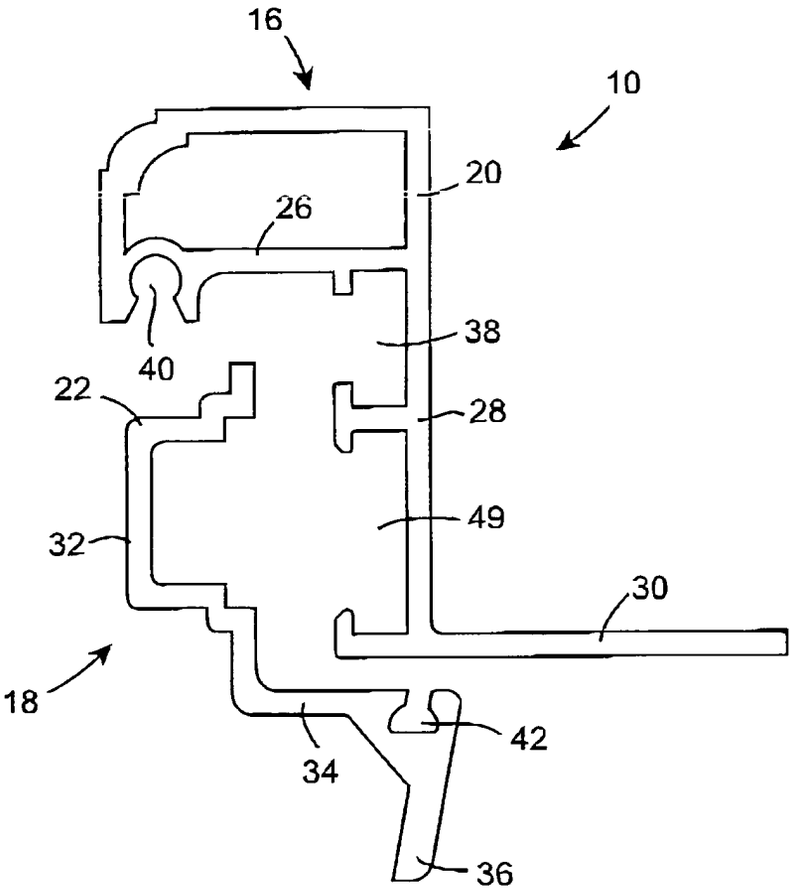

Fig. 2

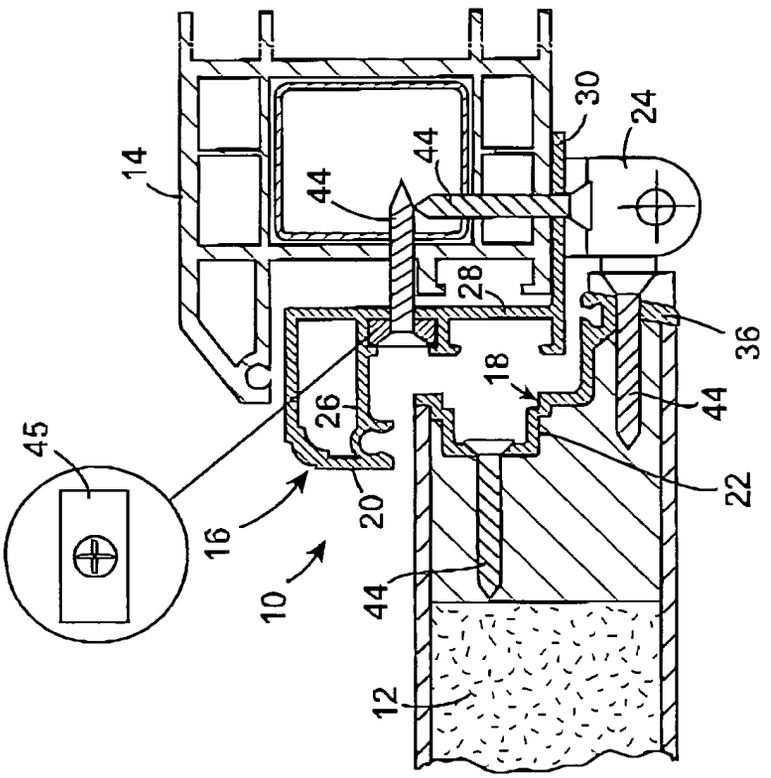

Fig. 3

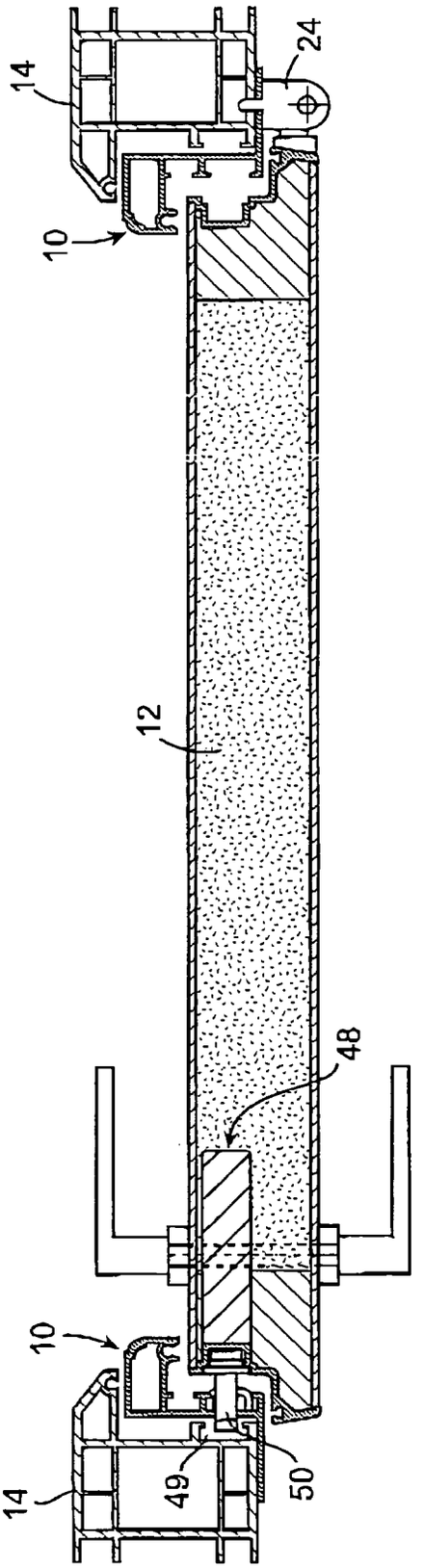

Fig. 4

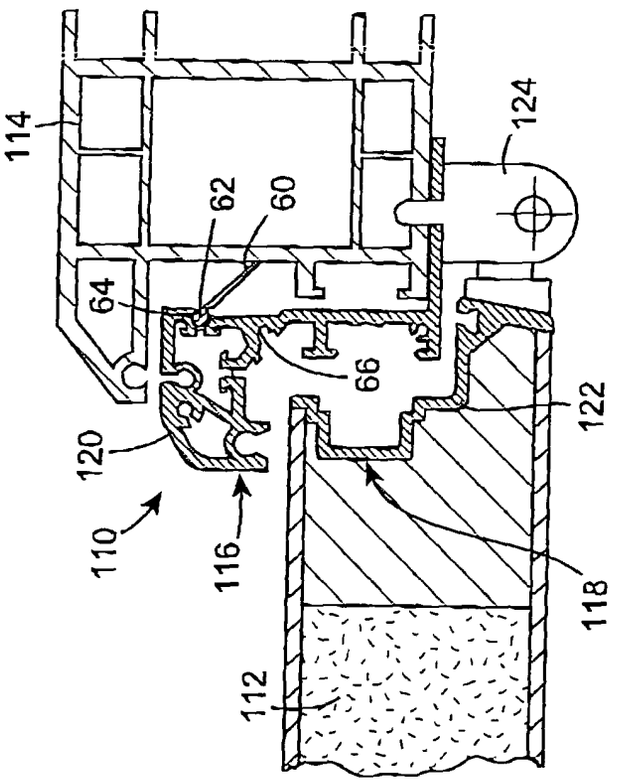

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 05 00 3872

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.7)
X	EP 0 792 992 A (NIEMANN, HANS-DIETER) 3 September 1997 (1997-09-03) * column 1, line 53 - column 6, line 53; figures 1,2,4 *	1-6,10	E06B1/34
X	DE 76 00 834 U1 (JOHANNES BROCKMANN GMBH & CO KG, 4250 BOTTROP) 26 May 1976 (1976-05-26) * page 2, paragraph 3 - page 5, paragraph 1; claims 1,2; figure 2 *	1-6,10	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 June 2005	Merz, W

CATEGORY OF CITED DOCUMENTS

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