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Kern

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[54] **PRESS-FITTED JOINT BETWEEN A TRANSOM BAR AND A FRAME OR SASH BAR FOR USE ON WINDOWS, DOORS OR THE LIKE**

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[21] Appl. No.: **280,012**

Related U.S. Application Data

[62] Division of Ser. No. 201,707, Nov. 24, 1971, abandoned.

[52] **U.S. Cl.** ..... **52/758 H,** 52/656

[51] **Int. Cl.** **F16b 7/00**

[58] **Field of Search** ..... 287/189, 35, 189.36 R, 287/189.36 H, 54 A, 54 C, 54 B, 127, 20.92 E; 52/285, 475, 656

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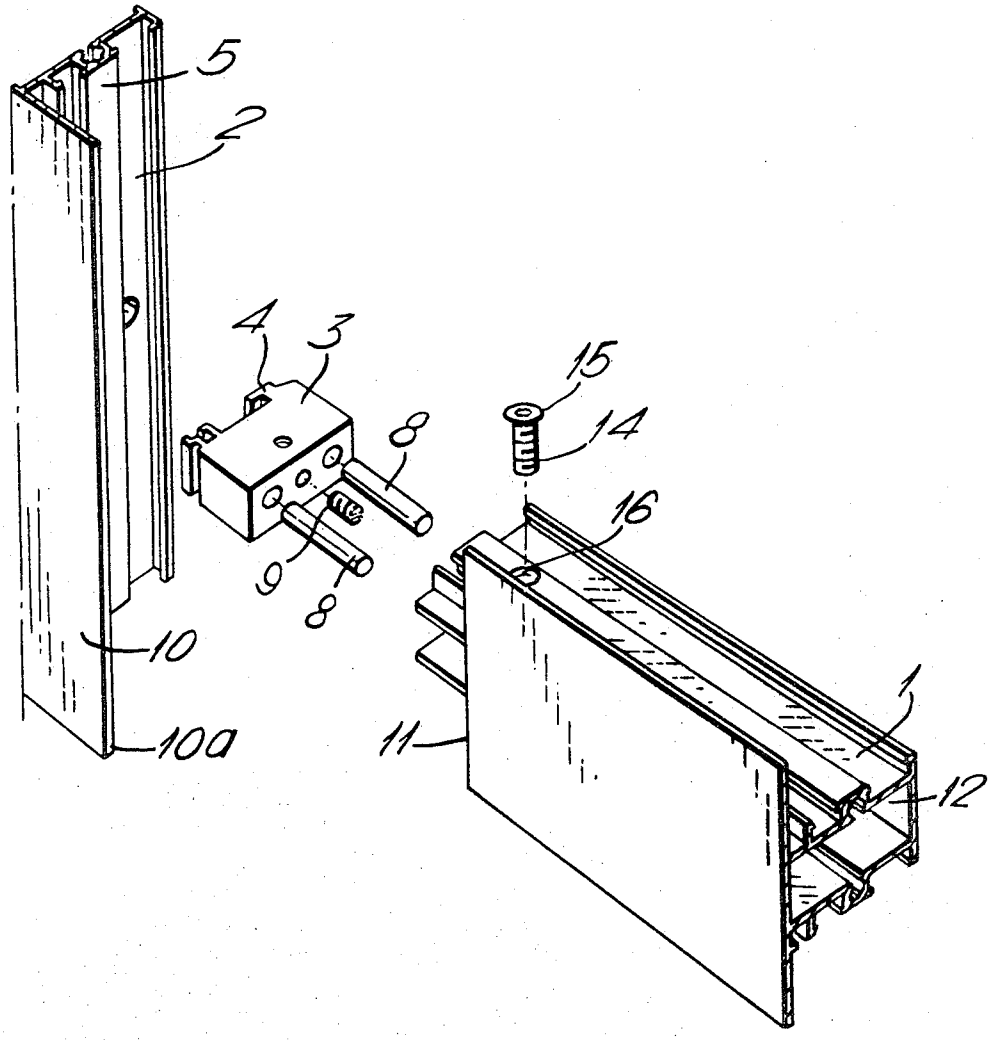
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Attorney, Agent, or Firm—Ladas, Parry, Von Gehr, Goldsmith & Deschamps

[57] **ABSTRACT**

A press-fitted joint between a transom bar and the frame or sash bar of a window, door or the like is provided having a connecting piece with parallel hooked ribs which enter the transom bar, such hooked ribs being in engagement with facing hooked ribs on the frame or sash bar wherein the engagement is effected solely with hooks of the connecting piece open in the same direction and hooks of the frame or sash bar open in the other direction and the inter-engaging hooked ribs permit of displacement of the connecting piece in relation to the opening of its hooks at least to the extent of the depth of the hooks relative to the frame or sash bar and that for securing the connecting piece in its frame or sash bar engaging position, one or more fixing pins are provided which are forced into registering holes of the connecting piece and the sash bar.

4 Claims, 2 Drawing Figures



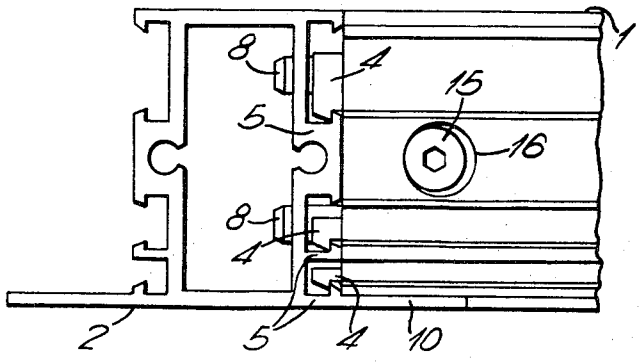


Fig. 1.

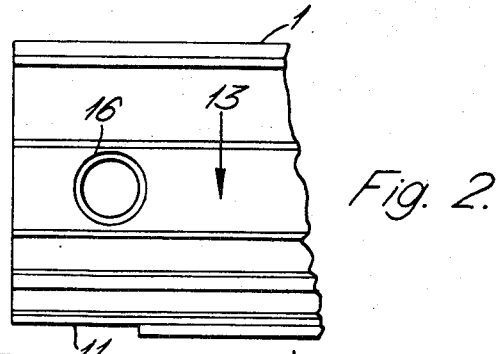
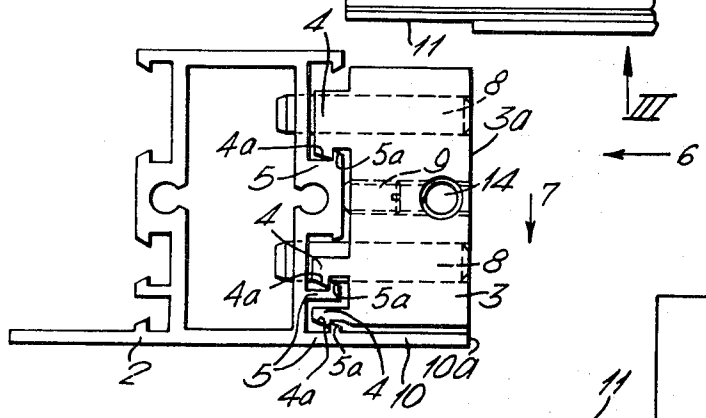


Fig. 2.



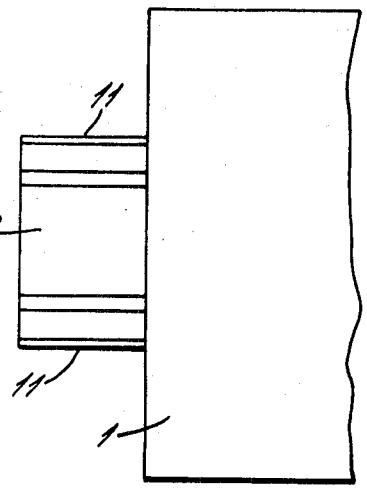


Fig. 3.

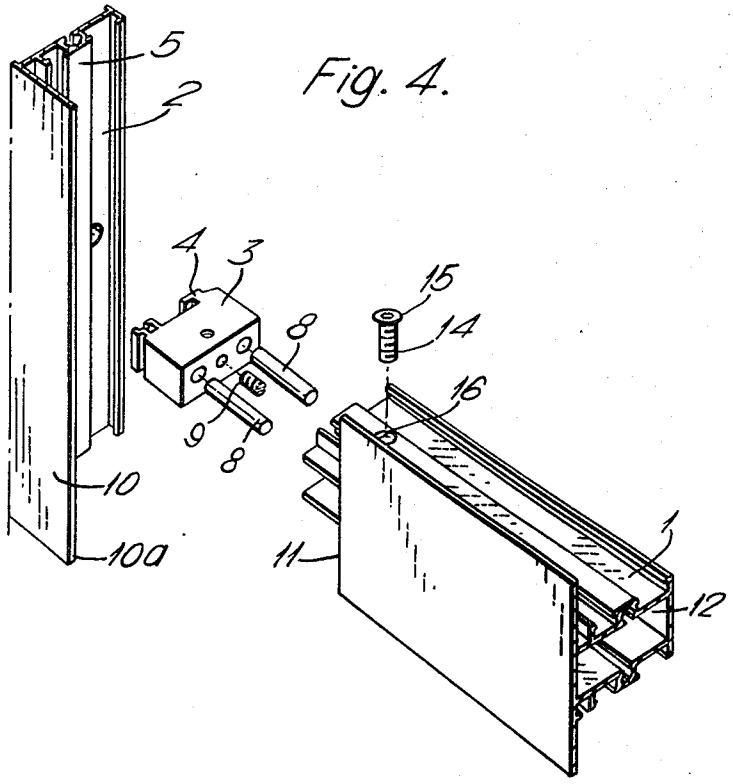


Fig. 4.

PRESS-FITTED JOINT BETWEEN A TRANSOM BAR AND A FRAME OR SASH BAR FOR USE ON WINDOWS, DOORS OR THE LIKE

This is a division of application Ser. No. 201,707, filed Nov. 24, 1971, now abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to a press-fitted joint between a transom and a frame or sash bar for use on windows, doors or the like having a connecting piece with parallel hooked ribs which enter the transom section and which hooked ribs are in interengagement with facing hooked ribs on the frame or sash bar.

In known press-fitted joints of this kind, the hooked ribs of the connecting piece are in the form of T-shaped ribs, which with suitably T-shaped undercut grooves engage the frame or sash bar. The connecting piece is fixed to the frame or sash bar by a screw penetrating the connecting piece and held in female screw threads in the frame or sash bar. It is of disadvantage that the connecting pieces can only be pushed in from the end of the frame or sash bar into its T-shaped undercut grooves which makes for difficulties and makes connection impossible in the case of frames with welded corners and that further for the fixing of the connecting pieces holes have to be drilled into the frame or sash bar, but this also has to be provided with female threads.

In order that the connecting pieces do not have to be pushed in from the end of the frame or sash bar, and in order to avoid cutting the female threads, it is known to form the connecting piece in two parts, each with a half undercut stub and to insert both parts of the connecting piece lying together with their stub halves into a sufficiently large hole in the frame or sash bar and then to force them apart, whereby the undercut parts of the studs come into hooked engagement with the wall of the frame or sash bar. The two parts of the connecting piece are pushed apart by conical pins which, at the same time, secure the transom mounted on the connecting piece to the connecting piece. The connecting piece thus receives its final fixing to the frame or sash bar only when the transom is secured to the connecting piece, this making the assembly difficult.

The invention has for its object to provide a press-fitted joint of the above-named type so that the connecting piece can be inserted from the front onto the frame or sash bar and does not have to be pushed in from the section end, and that fixing of the connecting piece, in particular without securing at the same time the profiled transom is possible in a simple manner from the front, that is from the direction in which the connecting piece is inserted in the frame or sash bar.

SUMMARY

According to the invention we provide a press-fitted joint between a transom bar and the frame or sash bar of a window, door or the like having a connecting piece with parallel hooked ribs which enter the transom bar, such hooked ribs being in engagement with facing hooked ribs on the frame or sash bar wherein the engagement is effected solely with hooks of the connecting piece open in the same direction and hooks of the frame or sash bar open in the other direction and the inter-engaging hooked ribs permit of displacement of the connecting piece in relation to the opening of its hooks at least to the extent of the depth of the hooks relative to the frame or sash bar and that for securing the connecting piece in its frame or sash bar engaging position, one or more fixing pins are provided which are forced into registering holes of the connecting piece and the sash bar.

The engagement between hooks open all in the same direction and the possibility to displace the members premit insertion of the connecting piece from the front onto the frame or sash bar and further permit by displacement in the direction of the opening of the hooks the engagement of the hooked ribs on the frame or sash bar. These hooked ribs of the frame or sash bar may be formed for instance by the undercut side walls of the grooved rebate for the glass or by the grooves provided for the reception of sealing ribs or the like. In each case, the connecting piece is held in engagement by the fixing pins which are forced in subsequently after the connecting piece is brought into engagement in the manner described with the hooked ribs.

In a preferred embodiment the connecting piece has a compression screw arranged parallel between the fixing pins which is forced against the frame or sash bar and under compression forces the abutting hooked surfaces of the inter-engaged hooked ribs against each other.

In a further constructional form of the invention, it is proposed that in frames or sash bars having an abutment piece projecting in the direction of the transom, the connecting piece in the direction of the transom is not longer than the projecting width of the abutment piece and forms a joint with the lateral edge of the abutment piece and that the fixing pins of the connecting piece do not project over its end face.

In this case the lateral recess customarily provided on the transom for the planar reception of the abutment piece permits the passage of the connecting piece with the result that the transom does not have to be mounted in its longitudinal direction on the connecting piece but can be placed on the connecting piece transversely to the plane of the frame. By these means it is possible for the first time, to insert crossing bars on finished closed sash frames and to secure them by means of connecting pieces.

BRIEF DESCRIPTION OF THE DRAWINGS

A constructional form of the invention will now be explained in greater detail with reference to the accompanying drawings wherein:

FIG. 1 shows a press-fitted joint according to the invention in plan view;

FIG. 2 shows the joint of FIG. 1 with the transom bar removed;

FIG. 3 shows a view of the transom bar shown in FIG. 2 in the direction of arrow III in FIG. 2; and

FIG. 4 shows in perspective an exploded view of the joint.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawing, 1 refers to the transom bar and 2 to a frame or sash bar. As shown in FIG. 1 the transom bar 1 abuts against one of the side walls of the frame or sash bar 2. The connection between members 1 and 2 is effected by means of a connecting piece 3 which enters the transom bar 1 with three parallel hooked ribs 4

shown in the constructional form which are in engagement with correspondingly shaped hooked ribs **5** on the frame or sash bar **2.** This engagement is effected exclusively by means of hooks **4***a* of the connecting piece **3** open in the same direction and by means of hooks **5***a* of the frame or sash bar **2** which are open in the opposite direction. The hooked ribs **4, 5** which are inter-engaged, permit of displacement of the connecting piece **3** with respect to the direction of opening of its hooks **4***a*, by at least the depth of the hooks relative to the frame or sash bar **2.** Referring to FIG. **2,** the connecting piece **3** can thus be mounted on the side of the frame or sash bar **2** in the direction of arrow **6** whereby the co-operating hooked ribs **4, 5** slide upon each other but do not yet come into engagement. To effect this engagement, the connecting piece **3** must also be displaced in direction of arrow **7.** In order to secure the connecting piece **3** in its position of engagement on the frame or sash bar **2,** in the constructional form shown, two fixing pins **8** are provided which are forced into registering holes of the connecting piece **3** and the frame or sash bar **2.** In addition the fixing pins **8** perform further functions; they take to a large extent the stress resulting from the weight of the glass and the wind pressure on the window. Further, the holes provided for the pins in the frame or sash bar **2** can be drilled by means of a template according to previously determined measurements and thus give the workmen the possibility to provide the transom bar according to exact measurements. Further, when several fixation pins **8** are provided, they prevent rotation of the connecting piece which is usually the case. For such rotation it is only necessary to have at one point a few tenths millimetres gap which would render the connection loose unless an adhesive is used.

In the connecting piece **3,** parallel between fixing pins **8,** a compression screw **9** is arranged. This screw **9** is forced against the frame or sash bar **2** and, when under compression, forces against each other the abutting hooked surfaces of the inter-engaged hooked ribs **4, 5.** The compression screw **9** fulfills two objects. Firstly at the time of completing the assembly, it effects the provisional fixing of the connecting piece **3** before forcing in the fixing pins **8.** Secondly, in the case of gluing of the connecting piece **3** it is conceivable that the adhesive, before finally mounting the transom bar on the sash frame, is allowed to harden. Between the surfaces of the hooked ribs **4, 5** of the connecting piece **3,** which are intended to inter-engage, and the frame or sash bar **2,** gluing surfaces may thus be formed which later on during the assembly may be pushed away as a result of the very strong stress due to the weight of the glass and wind load. The connection would then be loose to a certain extent. Since the compression screw **9** is tightened before hardening of the adhesive, it is assured that the inter-abutting surfaces of the hooked ribs **4, 5** within the area of the hooks, bear against each other without the interposition of an adhesive.

The constructional form shown shows the case of a frame or sash bar **2** with an abutment piece **10** projecting in the direction of the transom bar **1.** For the reception of this abutment piece **10,** a lateral recess **11** is provided in the transom bar **1** so that, as shown in FIG. **3** the interior of the transom bar becomes accessible to the width of the abutment piece **10.** The connecting piece **3,** in the direction of transom bar **1** is not longer than the projecting width of the abutment piece **10,** and thus forms a joint with the lateral edge **10***a* of the abutment piece **10.** Moreover the fixing pins **8** of the connecting piece **3** do not project beyond its abutment face **3***a* so that as a result the connecting piece **3** can enter through the lateral recess **11** into the interior face **12** of the transom bar **1** when the latter is moved in the direction of arrow **13** in FIG. **2** transversely to the plane of the frame onto the connecting piece **3.** In this way it is possible to insert a crossing bar in finished closed frames and secure them by means of connecting pieces.

For securing the transom bar **1** to the connecting piece **2,** a securing screw **14** is provided, the screw having a conical head **15.** The hole **16** in the transom bar **1** receiving the screwhead **15** is slightly eccentrically offset with respect to the female threads in the connecting piece **3** as can be seen in FIG. **1.** When tightening the nut **14,** the transom bar **1** is forced by the sloping side of the screwhead **15** against the frame or sash bar **2.** The assembly of the press-fitted connection takes place in quite a simple manner. After making ready the sawn and milled sections, by means of drilling templates, the holes are drilled for the reception of the fixing pins **8.** The connecting piece **3** is hooked into the frame or sash bar **2** whereby the hooked parts may additionally be glued together. The compression screw **9** which, when the parts are delivered, is already screwed into the connecting piece, is then tightened. The fixing pins **8** are then forced in. The length of these fixing pins is so dimensioned that they can be hammered into the connecting piece **3** until they become flush with the front face **3***a* of the connecting piece. Bits of remaining adhesive prevent the fixing pins **8** from moving back; moreover the fixing pins are so dimensioned in diameter that they are held tight in the holes under friction.

The transom bar **1** is then moved in the direction of arrow **13** in FIG. **2** onto the piece to be filled, where the sash frame not shown at all four corners has already been welded or glued together. The fixing screw **14** is now tightened and thrusts the transom bar against the frame or sash bar **2.** It is obvious that the parts in addition may be glued together.

I claim:

1. A press-fitted joint between a transom bar and a frame bar for windows, doors and the like, wherein:

a. the frame bar comprises an opposed pair of parallel side faces and at least one transverse web connecting said side faces, said web having on one side thereof at least two upstanding ribs running in the length direction of the frame bar in spaced parallel relationship with one another, each rib having a hook formed on its longitudinal edge which opens in a direction toward a given one of said pair of side faces of the frame bar;

b. the transom bar comprises an opposed pair of parallel side faces and a spaced parallel pair of transverse webs connecting these side faces, said pair of webs defining a chamber therebetween; and,

c. a connecting piece is disposed within said chamber and is removably secured to said transom bar, said connecting piece having a ribbed side proximate said one side of said web of the frame bar and provided with at least two elongated upstanding ribs running in the length direction of the frame bar in spaced parallel relationship with one another, each rib of the connecting piece having a hook formed on its longitudinal edge which opens in a direction

opposite to that of said hooks of the frame bar and which interengages with a respective one of the latter hooks, the arrangement of said ribs of the frame bar and connecting piece being such that before the connecting bar and the frame bar are secured to one another the connecting piece is laterally displaceable relative to the frame bar in the open direction of said hooks of the frame bar at least to an extent which frees the respective intergaged hooks from interengagement, the connecting piece having parallel through holes therein which register with through holes in the web of said frame bar, the registering holes having fixing pins forced therein to secure the connecting piece and the frame bar to one another in their hook engaging position.

2. A press-fitted joint according to claim **1,** wherein the connecting piece has a compression screw arranged parallel to and between the fixing pins, said screw being forced against said one side of the transverse web of the frame bar so as to force abutting surfaces of the interengaged hooks tightly against one another.

3. A press-fitted joint according to claim **1,** wherein the other one of said pair of side faces of the frame bar is in abutting coplanar relationship with a recessed one of said side faces of the transom bar, the connecting piece extending from its ribbed side to an opposing flat side thereof in the longitudinal direction of the transom bar no further than said other one of said pair of side faces of the frame bar, the fixing pins not projecting beyond said flat side of the connecting piece.

4. A press-fitted joint according to claim **3,** wherein said recessed side face of the transom bar is recessed by an amount permitting lateral access for said connecting piece to and from said chamber of the transom bar while said connecting piece is secured to the frame bar and unsecured to the transom bar.

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