Oct. 21, 1952 E. PEREMI ET AL 2,614,666

CORNER JOINT

Original Filed Feb. 14, 1946 2 SHEETS—SHEET 1

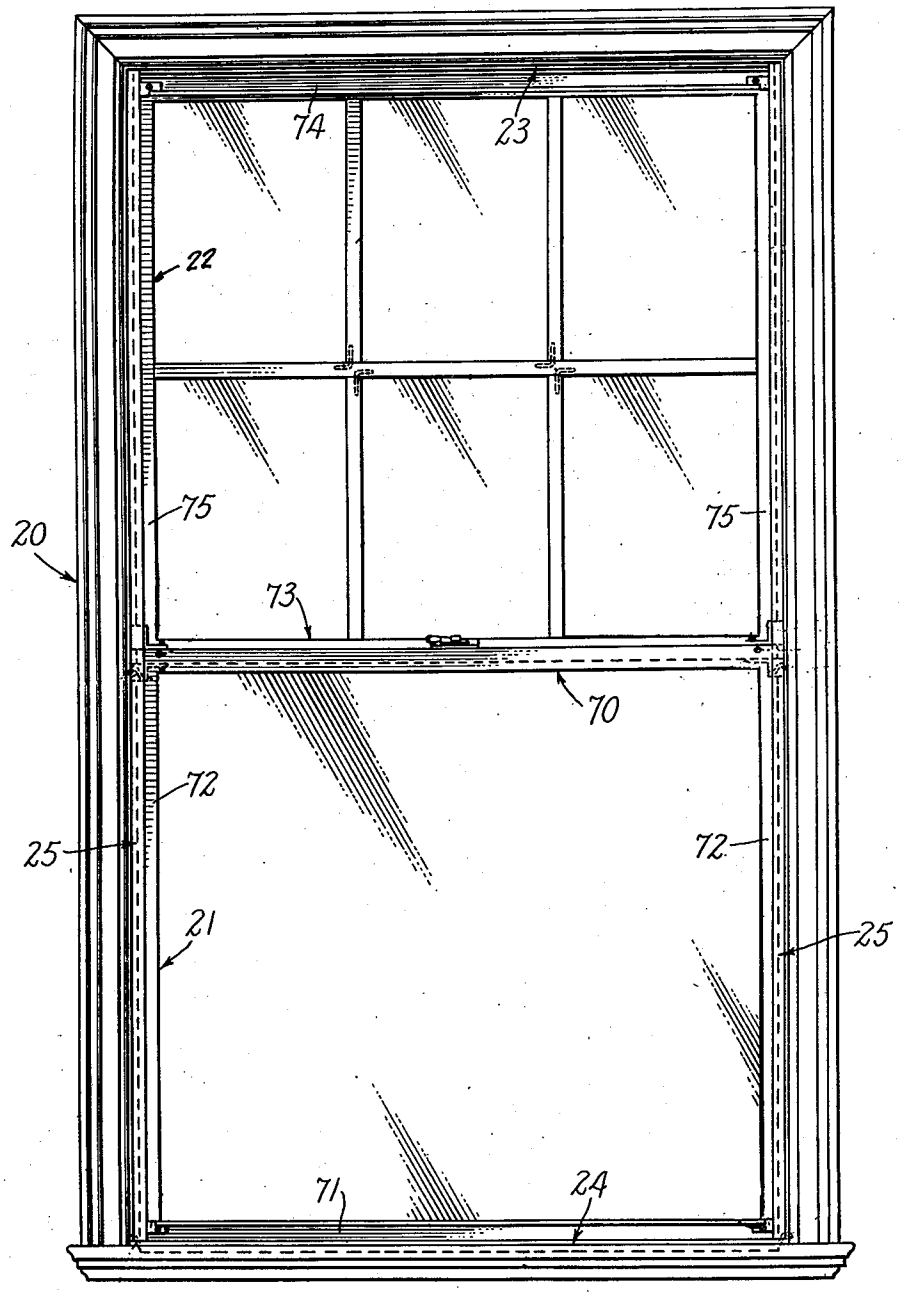


Fig. 1.

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Fig. 2.

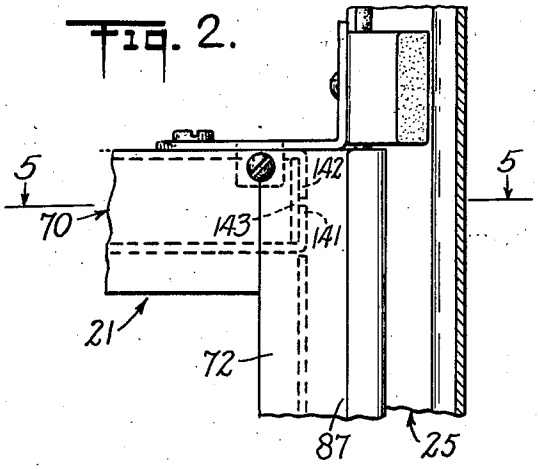


Fig. 3.

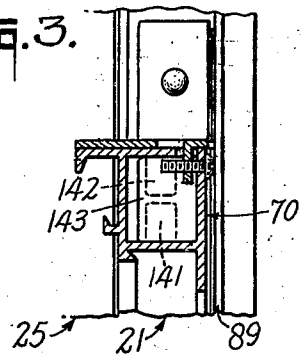


Fig. 4.

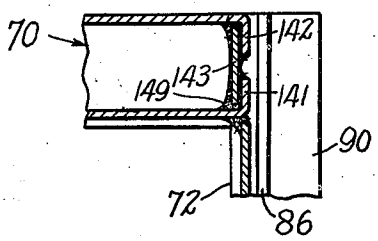


Fig. 5.

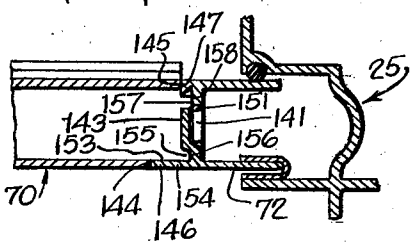
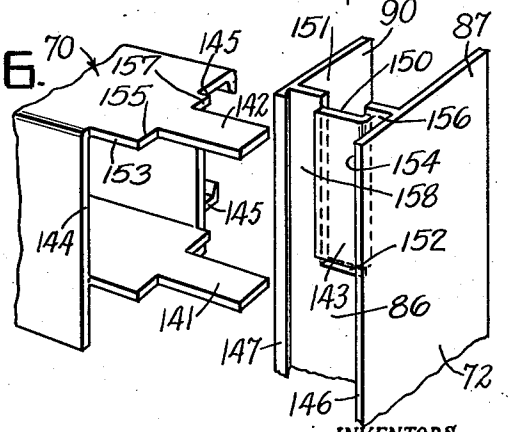


Fig. 7.

Fig. 6.



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2,614,666

CORNER JOINT

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Original application February 14, 1946, Serial No. 647,560. Divided and this application June 8, 1948, Serial No. 31,807

6 Claims. (Cl. 189—76)

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The subject matter of this application is divided out of our co-pending application Serial No. 647,560, filed February 14, 1946, on which Patent 2,473,298 was issued on June 14, 1949.

The invention relates to a metal window sash and frame construction.

An object of the invention resides in the provision of an improved construction for the corners of the sash and frame wherein the meeting members are securely locked together and are sealed against leakage.

A further object of the invention resides in providing a corner construction wherein the two members are mechanically locked together and at the locking location are sealed to prevent leakage of the weather into one of the members and to assist in the locking of the members together.

With these and other objects in view, such as will appear as the description progresses, the invention resides in the combination and arrangement of parts illustrated in the drawings, described in the specification and recited in the claims.

In the drawings wherein we have shown one form of the invention:

Figure 1 is a vertical elevation of the inside of a window frame and sashes and in which our invention is employed;

Figure 2 is a fragmentary view, partly in section, of a corner of a sash and the adjacent portion of the frame wherein the employment of our invention is illustrated;

Figure 3 is a transverse sectional view through the sash illustrating the positions of the locking tongues which form a portion of the embodiment of our invention illustrated;

Figure 4 is a vertical sectional view taken at right angles to Figure 3;

Figure 5 is a horizontal sectional view taken on line 5—5 of Figure 2;

Figure 6 is a fragmentary perspective view of one end of one of the sash rails before its association with the other of the sash rails; and

Figure 7 is a similar view of the other of the sash rails showing the latter turned 90° to its position of association with the sash rail illustrated in Figure 6.

Referring to Figure 1, the window construction, which includes double hung sashes, comprises a frame 20, a lower sash 21 and an upper sash 22. The window frame in which the sashes are mounted includes a header 23, a sill 24 and jambs 25. Each of the sashes 21 and 22 includes upper and lower horizontal rails and vertical side

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rails, which may be formed of extruded sections, and each of which is flanged so as to provide weather-stripping and glazing channels.

The lower sash 21 comprises the upper or meeting horizontal rail 70 and the lower horizontal rail 71, both of which are preferably of tubular form, as illustrated in Figure 6, and maybe of extruded aluminum, and side rails 72 which are preferably of channel form, as shown in Figure 6, and may, also, be of extruded aluminum. These side rails are formed with a base 86 and projecting flanges 87 and 90.

Similarly the upper sash 22 comprises a lower horizontal or meeting rail 73 and an upper horizontal rail 74, both preferably of extruded aluminum and of tubular form, as shown in Figure 6, and side rails 75, which latter are preferably of channel form and of extruded aluminum, as shown in Figure 7.

To insure the rectangular form of the window sash frame or window frame during handling prior to installation and after installation, we have provided means for securing the corners of the rails such as the rails of the sashes together in such manner that not only will the rectangular form be maintained but in the case of the sashes the corners will be leakproof.

Referring to Figures 2, through 7, for illustrative purposes, the upper horizontal sash rail 70 of the lower sash, for instance, is provided with outwardly extending tenons or tongues 141 and 142, which are adapted to be bent to engage with and interlock with an offset portion or mortise 143 on the side rail 72, with the edges 144 and 145 of the rail 70 respectively abutting the edges 146 and 147 of the side rail 72. The tongues 141 and 142 are secured in their interlocked relationship with the offset portion 143 by a joining metal. In Figure 4 we have illustrated the relationship of this joining metal and the aluminum rails of a sash at a corner of the sash. In this figure it will be seen that the joining metal after being combined with the aluminum structure at the corner of the sash in a manner later to be described, bonds the meeting portions of the ends of the rails at the sash together and forms a leakproof joint to prevent entry of the weather into the tubular sash rail 70. It will be seen from Figure 4 that at the end of the tubular rail 70 the joining metal 149 forms a leakproof seal. The joining metal also bonds the corners of the rails together at the various points of contact between the corner elements of the rails.

In forming this leakproof joint a flowable metal is applied to the joint after the tongues 141 and

142 have been mechanically interlocked with the offset portion 143 and is then heated and upon heating will flow into the relatively small spaces between the interengaging portions of the corners of the rail, as illustrated in Figure 4. When the corner of the sash or frame, as the case may be, is thus assembled, the tongue 142 will overlie the upper edge 150 of the offset portion 143 and will be bent downwardly in said offset portion as illustrated in Figure 4, and the upper surface of the tongue 142 will lie in the cut away portion 151 of the offset portion 143 so that the upper surface of the rail 70 will be substantially in alignment with the upper end of the rail 72, as illustrated in Figure 4.

The lower tongue 141 will extend through the opening 152 of the base 86 of the rail 72, and thence upwardly and lie within the offset portion 143, as illustrated in Figure 4. The tongues 141 and 142 and the base portion 86 are in substantial contact with each other, the sealing metal merely filling the voids between them.

When the tongues are thus engaged with the offset portion 143 the edge 144 of the rail 70 will engage the edge 146 of the rail 72 and the edge 145 will engage the edge 147 of the rail 72, as has been pointed out. The edge 153 of the rail 170 will engage the inner face 154 of the rail 72 and the edge 155 will engage the face 156 of the rail 72. At the same time the edge 157 of the rail 70 will engage the face 158 of the rail 72.

Thus the relative movement of the corner portions of the rails in either the plane of the sash or laterally will be effectively prevented.

When we speak of aluminum herein we of course intend to include such alloys as are now in commercial use, and while we have illustrated and described a particular form of our invention in its application particularly to a corner of the sash it is to be understood that various changes may be made within the scope of the claims, and we therefore do not wish to be limited to the illustrated embodiment except in so far as limitation is made necessary by the claims.

We claim:

1. A metal window frame construction comprising a pair of rail members abutting at their ends and forming a corner, one of said rail members having a pair of spaced flanges and a base member extending therebetween, a portion of said base member being offset from the plane thereof and terminating at one of its ends adjacent the end thereof, said base member having an opening therethrough adjacent the other end of said offset portion, the other rail member having spaced walls and a pair of tongues extending from opposite of said walls, one of which tongues extends over one end of said offset portion and through said opening in said base member and substantially parallel to and closely adjacent said offset portion, the other of which tongues extends over the opposite end of said offset portion and substantially parallel to and closely adjacent said offset portion, said second mentioned rail member having end shoulders abutting the base member of said first-mentioned rail member on the side of the latter opposite to that from which said flanges of said first mentioned rail extend.

2. The combination of elements recited in claim 1 wherein said first-mentioned rail member is provided with a flange extension contacting a side edge of said last-mentioned rail member.

3. The combination of elements recited in claim 1 wherein said second-mentioned rail member includes upper, lower and side walls, the upper and lower walls being provided with end shoulders abutting said base member of said first-mentioned rail member, said first-mentioned rail member having extension flanges projecting from said base member from the side opposite to that from which said first-mentioned flanges extend and said second-mentioned rail member having shoulders on the upper and lower walls thereof contacting the inner faces of said extension flanges.

4. The combination of elements recited in claim 3 wherein said second-mentioned rail member is provided with shoulders on the side walls thereof contacting the edges of said extension flanges.

5. The combination of elements recited in claim 1 wherein the second-mentioned end of said offset portion terminates short of one end of said first-mentioned rail member to form a recess for the reception of the adjacent tongue on said second-mentioned rail member.

6. The combination of elements recited in claim 1 wherein said base member of said first-mentioned rail member is provided with shoulders substantially coextensive with the side edges of said tongues and arranged closely adjacent said side edges.

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