July 20, 1948. H. H. GOLDBERG 2,445,428

JOINT FOR METAL WINDOW SASH FRAMES

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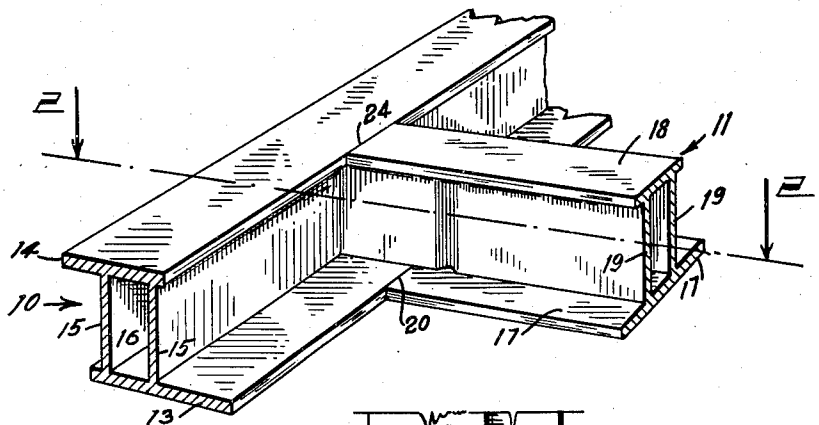


Fig. 1.

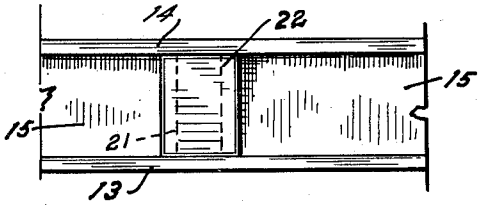


Fig. 3.

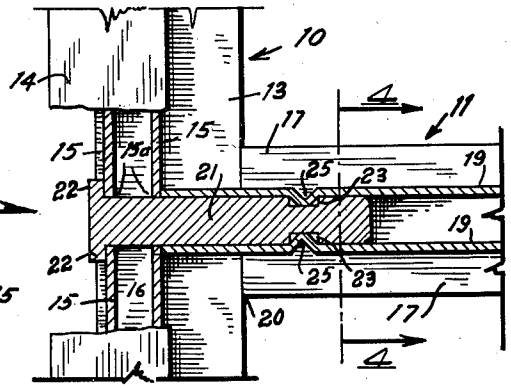


Fig. 2.

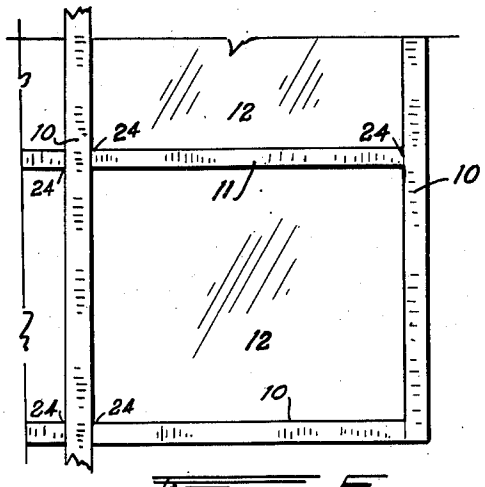


Fig. 5.

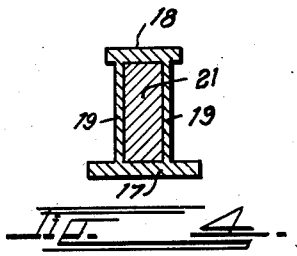


Fig. 4.

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JOINT FOR METAL WINDOW SASH FRAMES

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1 Claim. (Cl. 287—54)

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This invention relates to improvements in joints between members of metal window sash frames. Metal window sash are becoming increasingly popular and many improvements are being made in regard thereto.

The usual metal window sash are constructed from either steel bars or aluminum bars and these have heretofore, as a general rule, been joined by means of welding. Although welding is quite satisfactory for the production of a good joint between steel frame members, it is not so desirable or satisfactory when used in connection with the present extruded aluminum frame members.

It is the object of this invention to produce an improved method and an improved joint for interconnecting extruded aluminum window sash members which will dispense with welding and at the same time produce a rigid and lasting joint or connection.

In order to explain this invention so that it may be readily understood, reference will now be had to the accompanying drawing in which the joint and the method of forming the same have been illustrated, and in which:

Figure 1 is a perspective view showing two window sash members, of usual construction, interconnected, the view showing the parts after the joint has been made;

Figure 2 is a view partly in top plan and partly in section taken on line 2—2, Figure 1;

Figure 3 is an end elevation looking in the direction of arrow 3, in Figure 2;

Figure 4 is a section taken on line 4—4, Figure 2; and

Figure 5 is a diagrammatic view showing a portion of a window sash.

Referring now to the drawing, reference numeral 10 designates one of the vertical window sash members and reference numeral 11 designates a transverse window sash member of usual extruded aluminum construction. In Figure 5 the several sash members have been shown interconnected and glass panes 12 positioned in place therein.

For the purpose of this description, the sash frame member 10 will be considered as extending vertically when viewed as in Figure 5, although the angular relation with the horizon is, of course, immaterial, but this supposition is made for the purpose of facilitating the description.

It will be observed that member 10 has oppositely extending flanges 13 and 14, which are interconnected by means of a hollow web formed

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from two spaced webs 15. Between the flanges and the inner surfaces of the webs is a rectangular opening 16. The upper surface of flange 13 serves as a support for the window pane.

Frame member 11 is constructed in a slighhly different manner, having a lower flange 17 and an upper flange 18 and spaced webs 19. In this structural form, web 17 extends equal distances to opposite sides of the web and the same is true of flange 18, leaving a pane supporting surface that cooperates with the corresponding surface of flange 13.

Referring now more particularly to Figure 2, it will be observed that webs 15 are provided with rectangular openings 15a extending the entire distance between the opposing surfaces of flanges 13 and 14 and whose width is equal to the distance between the inner surfaces of webs 19. Flange 17 is cut back along line 20 to such an extent that the ends of webs 19 engage the surface of adjacent web 15 of member 10. A rectangular pin or connector, which has been designated by reference numeral 21, is provided at one end with a head having flanges 22 projecting from opposite sides thereof. Pin 21 is of the same size and shape as the opening between webs 19, as shown more particularly in Figure 4. Pin 21 is also provided on opposite sides with grooves 23. Flange 18 of member 11 is cut back to such an extent that its end engages the adjacent edge of flange 14 along line 24, as shown in Figure 1. After the end of member 11 has been cut back, as shown, it is positioned against the web of member 10 so that the openings in webs 15 are in alignment with the opening between webs 19. Pin 21 is now inserted and the parts forced together by means of some suitable device so as to be held firmly and rigidly. When the parts are thus assembled and supported, webs 19 are subjected to the action of a tool which bends them inwardly as indicated at 25, the inner surface of the bent portions extending into grooves 23. The interconnection between the inwardly bent surfaces and the edges of grooves 23 serve to hold the parts rigidly and firmly in assembled position. Due to the fact that flanges 17 and 18 abut against the edges of flanges 13 and 14, the parts remain rigid and the joint is therefore more desirable than a welded joint because the surfaces remain smooth as distinguished from a welded joint where the molten metal makes them irregular. As before mentioned, a welded aluminum joint is not always dependable, whereas, a joint constructed in accordance with this invention is as strong as

the pin by means of which the parts are interconnected.

In the construction shown, frame member 10 is formed with webs 15 spaced apart. Of course it is immaterial so far as this particular method of joining two members together is concerned, whether or not the web is solid or formed by two spaced webs, as illustrated in the drawing. Instead of the interconnection comprising the grooves 23 and the inwardly bent portion 25, it is possible to drill a hole through these members and interconnect them by means of a rivet in a manner in which similar members are ordinarily interconnected.

Figure 5 is intended merely to show the relationship of the sash members, but the joint described and illustrated is, of course, applicable to other constructions than the specific one shown. The use of flanges 17 and 18 cut back so as to engage the edges of flanges 13 and 14 or a corresponding surface on the member to which frame member 11 is attached serves to brace member 11 to prevent its tilting relative to the other member.

Having described the invention what is claimed as new is:

In a window sash comprising two frame members, each of which has two parallel flanges spaced apart and interconnected by webs, in which one frame member is connected with the other in substantially right angular relation and

in which one of the members has a tubular web, the flanges on the last mentioned member being cut back to permit the ends of the web to engage the adjacent side of the web on the other member while the cut back ends of the flanges abut the edges of the flanges on the other member, the web on said other member having an opening of the same size and shape as the opening in the tubular web, a headed pin extending through the hole in the web and into the registering opening in the tubular web, and means for interconnecting the pin with the tubular web to resist forces tending to produce relative longitudinal movement, the ends of the cut back flanges, in their abutting relation to the edges of the flanges on the other member, serving to resist forces tending to move the members angularly.

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