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2,867,856

PANEL CONSTRUCTION AND ASSEMBLY

Filed Oct. 11, 1955

3 Sheets-Sheet 1

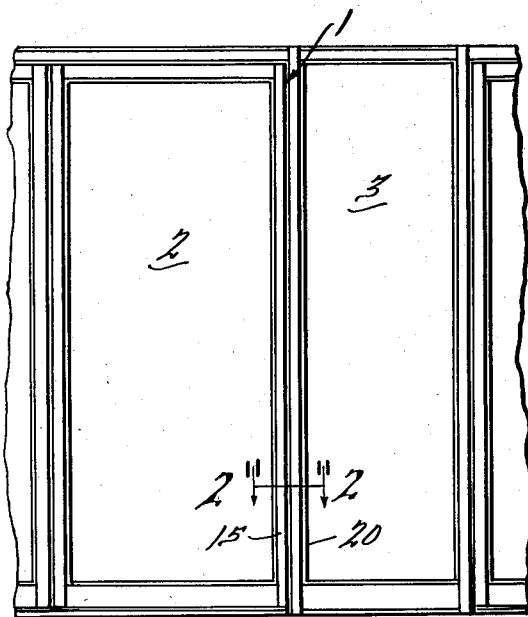


FIG. 1.

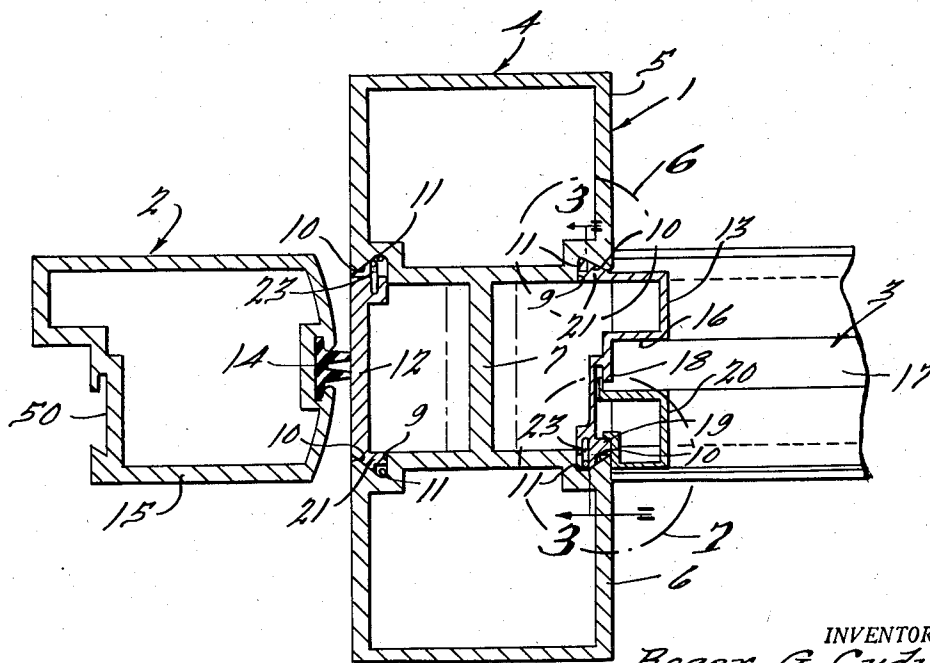


FIG. 2.

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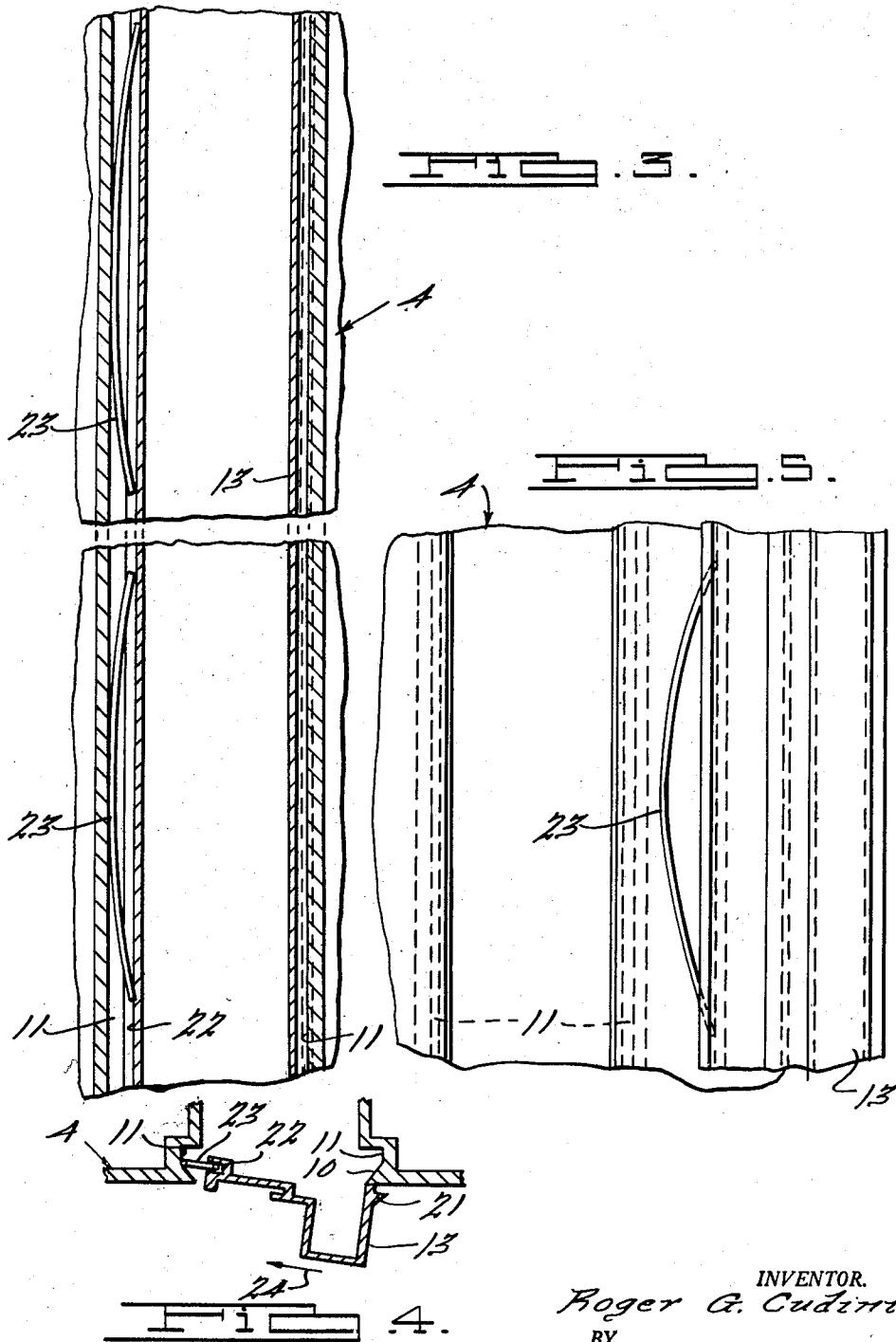
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FIG. 3.

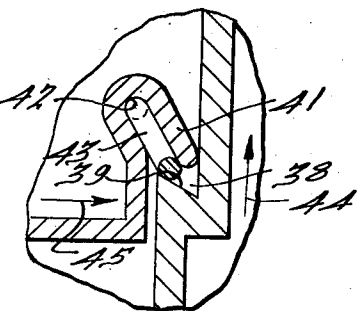
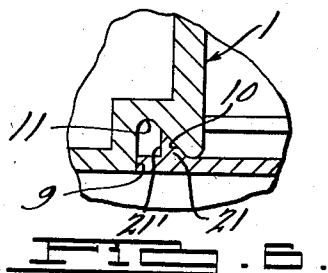


FIG. 5.

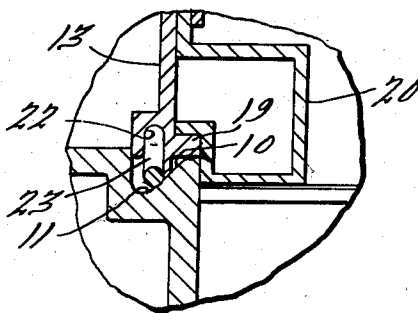
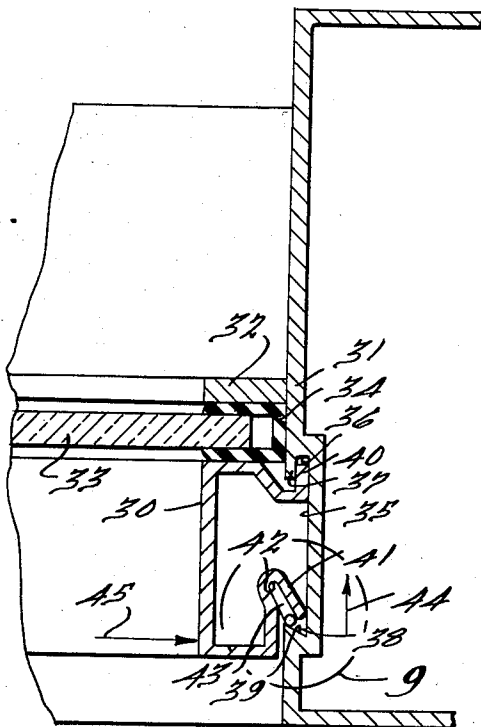


FIG. 7.

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PANEL CONSTRUCTION AND ASSEMBLY

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3 Claims. (Cl. 20—11)

The present invention relates to improvements in building constructions and particularly relates to improved frame constructions to facilitate the assembly of the various functionally different metal frame elements required in such building constructions.

It is desirable in building constructions employing metal frame elements, and particularly aluminum frame elements, to standardize on the cross-sectional shapes of the extrusions employed in such frames to thereby simplify and effect economies in the manufacture of such sections. By employing different adapter elements, a standard frame section may be employed to serve a number of functionally different purposes. For example, a standard section may be employed to define an opening which, by the use of one type of adapter, may be employed to define a door opening and, with a different adapter, may be employed to define a window light opening.

The primary object of the present invention is to provide simplified sections adapted to receive therein any one of different adapter elements to thereby accomplish numerous uses for a single sectional extrusion.

Another important object of the present invention is to provide an adapter for attaching elements of an assembly whereby the elements are mounted in the assembly and remain therein under a substantially constant pressure regardless of any expansion or contraction, and likened to a floating mount under constant pressure regardless of temperature change.

A further object of the invention is to provide an improved manner of attaching adapter elements to a frame section so that such adapter elements may be easily attached but, when in position, form a secure assembly.

Other objects of the invention will become apparent from the following specification, the drawings relating thereto and from the claims hereinafter set forth.

In the drawings in which like numerals are used to designate like parts in the several views throughout:

Figure 1 is a partial, front elevational view of an aluminum entrance which embodies features of the present invention;

Fig. 2 is an enlarged cross-sectional view taken substantially along the line of 2—2 of Fig. 1;

Fig. 3 is a broken, vertical, cross-sectional view taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a separated, transverse, cross-sectional view of the construction shown in Fig. 3 and showing the adapter element as it is being assembled;

Fig. 5 is a front elevational view of the structure shown in Figs. 3 and 4 with the adapter element separated, and prior to its assembly;

Fig. 6 is an enlarged partial view of the section shown within the circle 6 of Fig. 2;

Fig. 7 is an enlarged partial view of the section shown within the circle 7 of Fig. 2;

Fig. 8 is a view similar to Fig. 2, but showing a modified form of construction and assembly; and

Fig. 9 is an enlarged partial view of the section shown within the circle 9 of Fig. 8.

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Referring to Fig. 1, the entrance comprises a door frame assembly generally indicated at 1, within which a door 2 is pivotally mounted. The frame 1 also serves to support the side lights 3.

The frame 1 includes a vertical jam element generally indicated at 4, which at one side defines the opening for the door 2, and at the other side defines the opening for the light 3. The frame element 4 is in the illustrated embodiment formed of an aluminum extrusion, and its shape is best shown in Fig. 2. As shown, the extrusion 4 is symmetrical in form, having opposite box-like sections 5 and 6 connected by an integral central web 7. The opposite sides of the extrusion 5 are formed to define outwardly opening channels having base portions 9 and outwardly sloping converging surfaces 10. The base 9 and the surface 10 define a pair of facing grooves 11 in each of the channels, and in this embodiment such facing grooves are identical to each other.

The adapter elements mentioned above are received within the grooves 11 and, in the embodiment illustrated in Fig. 2 one of such adapters comprises a door jam element 12, and the other represents a glazing strip 13.

The jam element 12 has a flat outer face so that, when it is positioned within the grooves 11, the face is substantially flush with the adjacent sides of the frame 4. It is thus adapted to be engaged by the weatherstripping 14, which is mounted within a groove formed in the vertical rail 15 of the adjacent door frame 2.

The glazing element 13 has such a configuration as to provide a flange 16 against which a light 17 is disposed in the final assembly. In the embodiment shown in Fig. 2, the glazing strip 13 is also formed with a longitudinally extending groove 18 and flange 19 within which an elongated glazing strip 20 is snapped to hold the light 17 in position in the final assembly.

The ends or edges of the adapter elements 12 and 13, which are received within the grooves 11, have substantially identical constructions, although the remaining portions of such elements may be different in configuration, depending upon the intended uses of such elements.

The element 13 has one of its ends, indicated at 21, formed with a tapering outer surface complementary to the shape of the groove 11 defined by the bases 9 and 10, and having a corner groove 21'. The opposite end of the element 13 is formed with an outwardly projecting groove 22 within which a bowed spring 23 is disposed. There are a plurality of such springs spaced along the length of the elements 4 and 13 as needed. The ends of the bowed spring 23 engage within the base of the groove 22, and the intermediate bowed portion is adapted to be received within the adjacent groove 11, as best shown in Figs. 3 and 4. The strip 13 may be positioned adjacent the channel to which it is to be attached in the position shown in Fig. 4, and then moved in the direction of the arrow 24. The spring 23 will be compressed and the cam-shaped end 21 may be snapped within its adjacent groove 11 so that the cam shape engages the complementary tapered surface 10 of the groove 11. The action of the spring 23 on the adjacent surface of the groove 11, and the action of the contacting surfaces 21 and 10, will force the element 13 tightly within the grooves 11 and hold it in its assembled position.

Rather than assemble the element 13 as stated above, it may also be assembled by first inserting the end 21 within the groove 11, and then, by employing a screw driver or other tool, the spring 23 may be compressed and snapped into its adjacent groove 11.

The ends of jam element 12 are formed in the same way as the end of the element 13, and have been given similar numerals to indicate the corresponding parts. The assembly is effected as described above.

Referring to Fig. 8, a modified form of the adapter

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section is illustrated, and it is shown in connection with a glazing strip 30. Such glazing strip 30 is adapted to be attached to a frame member 31, which may be the frame of a door or other structural opening. The frame 31 is formed with a longitudinally extending flange 32 against which a window light or other panel element 33 is positioned. The end of the light 13 may be mounted within a U-shaped sealing strip 34 and be held in position by the adjacent side of the glazing strip 30.

The frame member 31 is formed with a longitudinally extending channel 35 having an inwardly facing groove 36 formed along one side, which is defined by the adjacent surface of the channel base and the inside surface of a flange 37, which is parallel to the base of the channel 35. The opposite edge of the channel is formed with a groove 38, which is defined by the adjacent base of the channel 35 and an outwardly tapering wall 39.

The strip 30 is formed with an outwardly directed flange 40 complementary in shape to the groove 36. On the opposite edge it is formed with a reversely turned edge 41, which slopes outwardly, complementary in shape to the taper 39 of the groove 38. The flange 41 forms a groove 42 within which a bowed spring 43 is received. The bowed spring 43 is similar to the spring 23 previously described, and is positioned with the ends of the spring disposed within the groove 42 and with the intermediate bowed portion bearing against the tapering surface 39, so that it acts to urge the element 30 in the directions of the arrows 44 and 45.

The groove 35 is similar to the groove 50 shown on the door 2 in Fig. 2, so that a light could be mounted within the door frame in the same manner as illustrated in Fig. 6.

The element 30 is assembled generally in the same manner as the element described above in connection with Figs. 1-5, in that the flange 40 may be positioned within the groove 36 and the spring 43 snapped into the groove 38, as shown in Fig. 6.

Formal changes may be made in the specific embodiments of the invention described without departing from the spirit of the invention, the scope of which is commensurate with the appended claims.

What is claimed is:

1. In a window assembly, a first frame element having an inwardly directed flange, a window light disposed against said flange, said first frame element having an integral portion disposed at substantially a right angle to said flange, said integral portion having a pair of facing grooves formed therein, one of said grooves having its outer edge converge outwardly toward the other groove, a second element fixedly disposed within said grooves and adapted to bear against said light on the side opposite the flange to support the light therebetween, said sec-

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ond element having a pair of opposite edges removably received within said grooves, said second element being formed adjacent one of said edges with a groove, and a bowed spring received within said last-named groove and resiliently bearing against the adjacent converging edge of its adjacent groove in said first element to yieldably urge said second element in the direction of said flange and maintain the edges of said second element within said grooves.

2. A frame assembly comprising a first frame element having a pair of facing grooves formed in opposite portions of one side thereof, with each of said grooves having a first surface and a second sloping surface arranged in a converging relation with the corresponding surface of the other one of said grooves in a direction toward said one side, a second frame element having a pair of opposite edges received in said grooves, with one of said edges being formed with an outer inclined surface complementary to the inclined surface on one of said grooves and engageable therewith, means on the other one of said edges engaged with the inclined surface of said other groove, and spring means positioned in said other one of said grooves and engageable with said other edge of said second frame element for releasably maintaining said edges against said inclined groove surfaces.

3. In combination with a main frame member, a plurality of frame adaptor members interchangeably and releasably mountable on said main frame member, said main frame member being of an open construction and having a pair of grooves formed in opposite portions thereof so that said grooves are in a facing relation, with one of said grooves being formed by a pair of angularly related surfaces one of which is inclined outwardly of said main frame member in a direction toward the other one of said pair of grooves, each of said frame adaptor members having a pair of opposite edges receivable within said grooves, with one of said edges having a portion thereof inclined for complementary engagement with the inclined surface of said one groove, and spring means received in the other one of said grooves for engagement with the other edge of a frame adaptor member for yieldably forcing said one edge thereof into said one groove and maintaining the inclined surfaces of said adaptor member and said one groove in engagement.

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