Feb. 8, 1955 P. PERKINS ET AL 2,701,396

STORM WINDOW

Filed Sept. 9, 1953

FIG. 1.

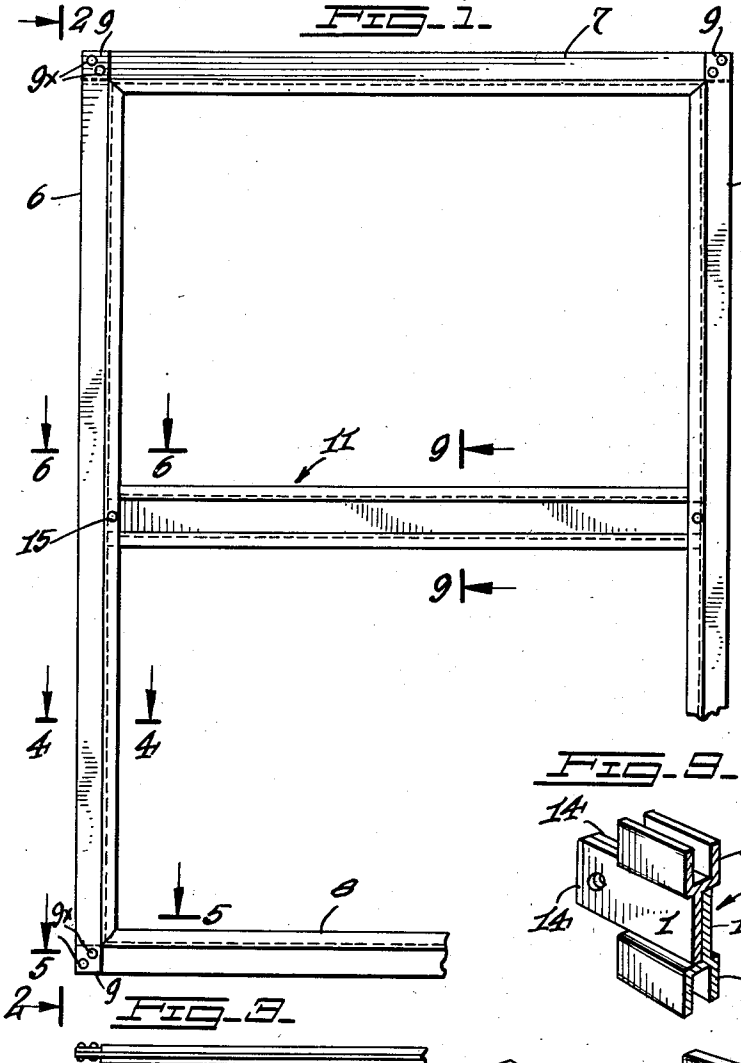


FIG. 2.

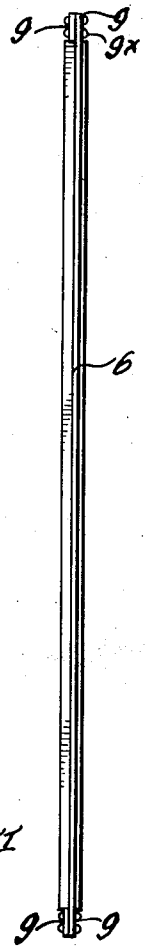


FIG. 3.

FIG. 9.

FIG. 4.



FIG. 5.

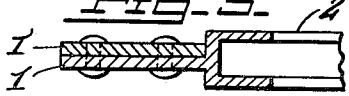


FIG. 6.

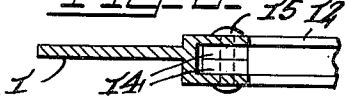


FIG. 7.

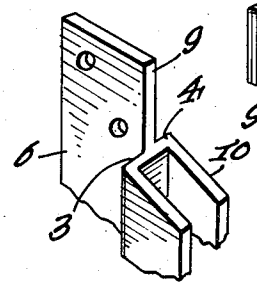
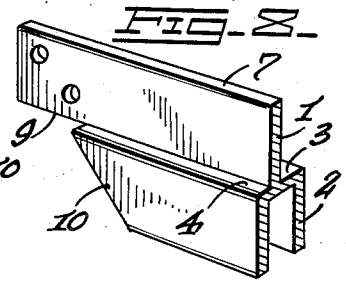


FIG. 8.



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STORM WINDOW

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Application September 9, 1953, Serial No. 379,188

1 Claim. (Cl. 20—55)

The object of the invention is to form an all metal window frame including side, head and bottom grooved rails, and an intermediate transverse composite rail assembly when necessary from a single extruded element so formed that it may be sectioned and miter cut at the ends of each section and the sections joined and secured to provide continuous pane receiving channel areas.

It is another object of this invention to provide a window of the character described in which the rails of the window are prepared from a single light and strong aluminum extrusion having a channel therein adapted to receive a glass pane.

It is another object of this invention to provide a window of the character described made from a single aluminum longitudinal extrusion having a tongue section and a channel section so formed that a sash intermediate transverse rail having pane receiving channels at opposite sides and in exact registry may be formed by reversing and abutting two extrusion sections.

It is a further object of this invention to provide an extrusion having a tongue section integral with a channel section having a U-shaped groove therein, said sections being adapted to effect an overlapping relationship with a continuous communication of said groove.

These and other objects of this invention will become apparent upon reading the following disclosure taken in conjunction with the accompanying drawing in which:

Fig. 1 is a front view of a window sash broken away in part and showing the sash adapted to receive two window panes;

Fig. 2 is a side view of the window of Fig. 1 and taken on line 2—2 of Fig. 1;

Fig. 3 is a plan view of the window sash broken away in part;

Fig. 4 is a fragmentary horizontal section taken on line 4—4 of Fig. 1;

Fig. 5 is a fragmentary horizontal section taken on line 5—5 of Fig. 1, and taken through a miter joint of the U-shaped channel section;

Fig. 6 is a fragmentary horizontal section taken on line 6—6 of Fig. 1 and showing the manner of securing a bridging frame into a U-shaped channel;

Fig. 7 is a fragmentary perspective view of a vertical rail forming section of the extrusion with the channel area cut as a miter joint;

Fig. 8 is a fragmentary perspective view horizontally disposed extrusion section showing a miter joint adapted to engage the miter joint shown in Fig. 7; and

Fig. 9 is a section taken on line 9—9 of Fig. 2 and showing the manner of overlapping two sections of the extrusion to effect a reinforced transverse rail having window pane receiving grooves at the top and the bottom.

Referring to the drawing and particularly to Fig. 8, a longitudinal extrusion having the cross section shown in Fig. 8 is prepared by extruding metal through a die having the contours of said cross section shown in Fig. 8. Preferably the material extruded is a light metal, for example aluminum. The extrusion has a tongue section 1 merging into a channel section 2, said channel section having a pane receiving channel therein. As shown in Figs. 7 and 8, the tongue section is disposed or offset to one side of the center line bisecting the U-shaped channel section, to provide an extrusion having a channel section shoulder 3 of greater width than its shoulder 4.

In making a window sash from the extrusion, a length of longitudinal extrusion is cut into sections each having the appropriate length or width of the sash. In Fig. 1 is shown a rectangular window made from four cut extrusion rail sections, the longitudinal rails 5 and 6 of the window being of greater length than the horizontal sections 7 and 8. To effect a juncture of the horizontal rail 7, with the vertically disposed rail 6, the channel ends are mitered as shown in Figs. 7 and 8 to form, in each case,

a projecting tongue 9. The sections are reversed so that the narrow shoulder 4, Fig. 8, will lie over the broad shoulder 3, Fig. 7, and thus the channels will be brought into exact registry.

As shown in Fig. 1 the projections 9 are disposed in overlapping relationship forming overlapped tongues at the ends of the window sash. In order to effect the overlapping of tongues 9 of two angularly disposed sash rails, it is necessary to cut the ends thereof at a miter joint angle 10 of about 45°. The miter joint 10 of a rail 6 meets the miter joint of the coacting rail in a manner to form a continuous U-shaped groove channel. To effect this continuous groove channel, it is necessary that one of the two rails be rotated through an angle of 180° so that in a sash having the rail 6 overlapped and secured to rail 7 the narrow shoulder 4 of rail 6 mates with the wide shoulder 3 of rail 7 and also the wide shoulder 3 of rail 6 mates with the narrow shoulder 4 of rail 7. The center line of the overlapped joint is centrally disposed relative to the U-shaped groove of the channel piece. This procedure of overlapping projections 9 at the ends of a window sash is followed at the four corners to produce a rigidly constructed sash having a continuous U-shaped channel adapted to receive a single flat pane of glass in all four channels of the window frame.

The window frame may be provided with one or more bridging composite rails 11 disposed parallel to the horizontal exterior rails 7 and 8. In this manner a plurality of window panes may be disposed within the exterior frame pieces 5, 6, 7 and 8. In preparing a bridging composite rail 11 a top extruded section 12 is disposed against a reversed bottom like section 13 so that the tongues 1 of each piece completely overlap one another in longitudinal relationship. In order to insert the composite rail 11 into the U-shaped grooves of vertical sash pieces 5 and 6 respectively, the channel end areas of each of the bridging pieces 12 and 13 are cut off leaving the projecting tongue areas, 14, Fig. 9. Each of the tongue areas 14 is provided with an aperture so that a rivet 15 (Figs. 1 and 6), may be passed through an aperture disposed in the U-shaped channel section of frame pieces 5 and 6 and thence through said tongues 14, thereby securing composite rail 11 rigidly in place to said vertical window frame pieces 5 and 6 with the U-shaped channel of rails 12 and 13 in continuous relationship each with the appropriate channels of rails 5 and 6. Because of the continuous channel relationship between frame pieces 5, 6, 7 and 11, a pane may be rigidly secured within said channel.

Having described my invention, what we claim and desire to secure by Letters Patent, is as follows:

In a storm window made from a continuous metallic extrusion having a tongue merging into a channel section disposed outwardly away from said tongue, the tongue being offset relatively to the longitudinal center of the channel section a degree equivalent to the thickness of the tongue, said window comprising a pair of spaced-apart vertically disposed sash rails having their U-shaped channels in opposed relationship, said vertical rails having their channel sections at the ends thereof mitre-cut and said rails thus having tongue projections, a pair of spaced-apart horizontally-disposed window sash rails having their U-shaped channels in opposed relationship, said horizontal rails having their channel sections at the ends thereof mitre-cut and said rails thus having tongue projections, the projections of the horizontal rails being disposed in overlapped relation to the projections of the vertical rails, the improvement which consists of at least one intermediate bridging composite rail disposed between and secured to two opposed rails, said bridging composite rail consisting of two like sections of said extrusion placed in reversed abutting relation, with the tongue of one section in lateral contact with the like tongue of the other section and with the channels of the two sections extending in opposite directions, said bridging composite rail having its channel sections at both ends cut away to form abutting tongue projections inserted in the channels of said opposed sash rail pieces and secured thereto.

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