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E. PEREMI ET AL

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WINDOW CONSTRUCTION

Filed Sept. 29, 1933

2 Sheets-Sheet 1

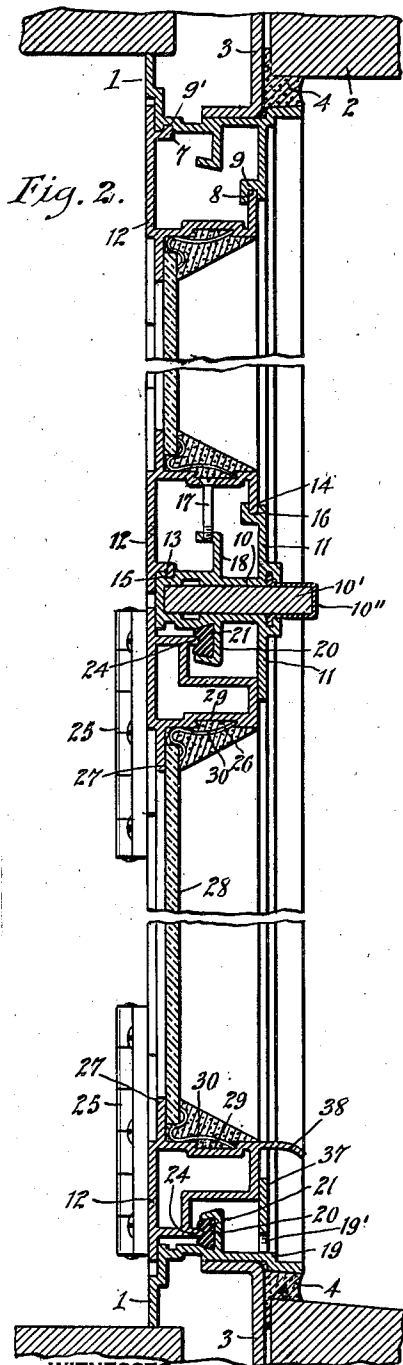


Fig. 2.

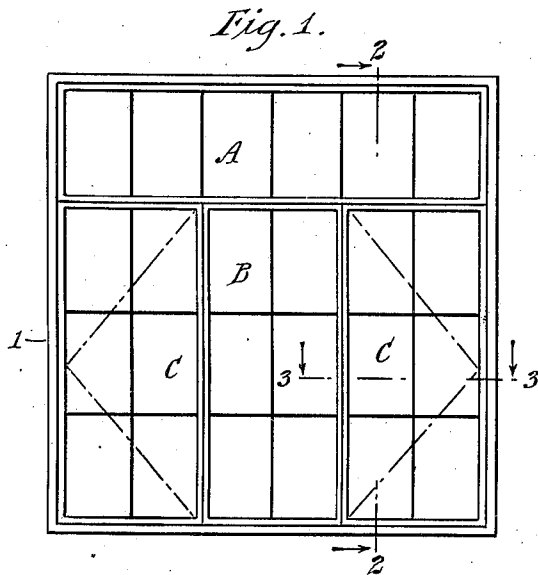


Fig. 1.

WITNESSES

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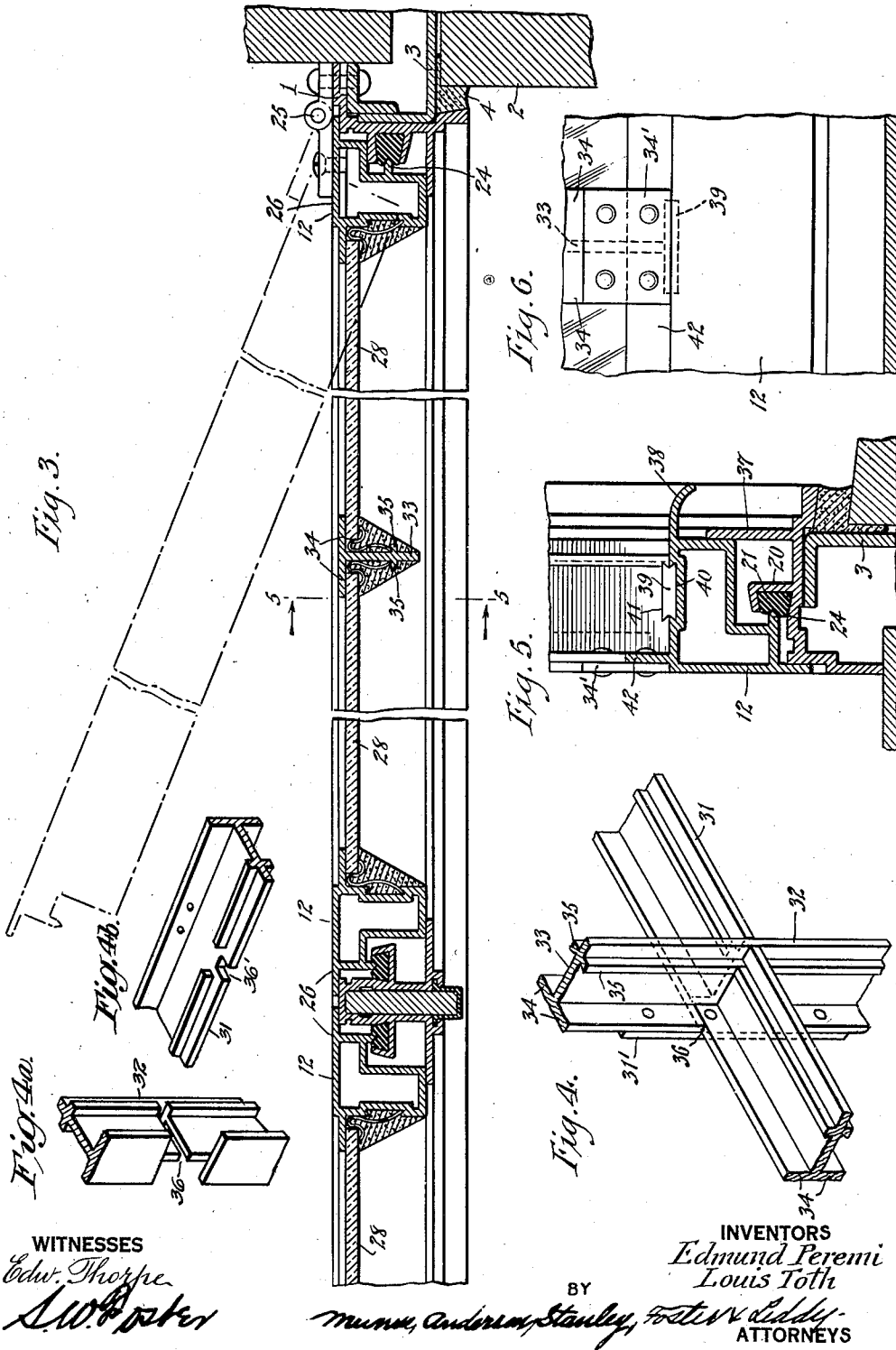
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

1,999,208

WINDOW CONSTRUCTION

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Application September 29, 1933, Serial No. 691,554

5 Claims. (Cl. 189—76)

This invention relates to window constructions and more particularly to windows of the casement type. The invention is applicable, however, to other types of window construction.

5 An object of the invention is to provide an improved window frame construction which is rigid and strong but of light weight, and which can be constructed and assembled at a relatively low cost.

10 A particular feature of the frame construction relates to the reinforcement of the mullion or transom bar or bars between the sash panels of the window. In accordance with this feature, the frame which is composed generally of light non-corroding metal, includes a mullion bar which is recessed to receive a reinforcing steel bar, and provision is made of a protecting and retaining cover or cap of non-corroding metal for overlying the reinforcing bar.

20 Another feature of the invention has to do with the joining together and reinforcing of the muntins where they intersect. The crossing muntins are provided with notches to enable them to be interfitted, and have flanged portions disposed in a common plane, and provision is made of a reinforcing plate which is rigidly connected to the flanges of both muntins.

30 A further feature of the invention has to do with the connection of the muntins to the sash bars. The frame and muntin members are provided with facing dove-tailed grooves and double dove-tailed connecting blocks or bars are inserted and interlocked with both members.

35 In accordance with another feature, the muntin flanges are cut away adjacent the sash bars and reinforcing members are affixed to flanges formed on the muntins and on the sash bars.

Other objects and advantages will hereafter appear.

40 No claim is made to the disclosed means for maintaining the panes in the sashes nor to the weatherproofing features employed nor to certain features of frame construction, such features being disclosed and claimed in our pending applications, Serial No. 691,553, filed September 29, 1933, for Window construction, and Serial No. 693,199, filed October 11, 1933, for Window construction.

50 In the accompanying drawings—

Figure 1 is a diagrammatic elevation showing an arrangement of the upper and central stationary frames and two casement windows;

55 Figure 2 is a broken view in section on an enlarged scale on the line 2—2 of Figure 1;

Figure 3 is a view on an enlarged scale in horizontal section on the line 3—3 of Figure 1;

Figure 4 is a perspective view illustrating a pair of crossed and joined muntins;

Figures 4a and 4b are detached perspective views of the muntins respectively, shown in Figure 4;

Figure 5 is a view in section on the line 5—5 of Figure 3; and

Figure 6 is a fragmentary elevation looking at the left hand side of Figure 5.

In the particular illustration of Figure 1, A represents the upper stationary window frame, B the central stationary window frame and C—C the two hinged or casement windows. Of course it is to be understood that this invention is not limited to any particular arrangement of stationary or hinged window frames, and the device is illustrated in one form to point out the invention.

20 An outer frame 1 of general rectangular form is anchored in the opening of the masonry 2 in any approved manner, suitable means 3 being indicated for the purpose, and a filling composition 4 is shown around the frame 1 to make the joint tight. The vertical and horizontal bars of this frame 1 are of the same general shape in cross section and are adapted to have fixed relation with complementary members 12 to form a hollow frame structure. The members 12 have webs 7 and 8 which fit in recessed portions 9 and 9' in the respective frame members and are rigidly secured therein in any desired manner. A horizontal transom bar 10 is secured in the frame 1, and this bar 10 is of hollow formation and has flat integral plates 11 at its face. A filler piece 10' is located in the hollow bar 10 and strengthens the same, and its outwardly projecting face is covered by a suitable cup 10''. An upper frame member 12, which corresponds in general shape to the other frame members 12, has webs 13 and 14 respectively fitting in recessed portions 15 and 16 respectively on the transom bar 10 at the upper portion of said transom bar forming a hollow horizontal member, and screws 17 are illustrated as extending through the members 12 and screwed into webs 18 on the transom bar 10. The transom bar 10 and the vertical frame members and horizontal frame members 19 are provided with integral webs 20, which have dove-tailed recesses therein to receive and hold weather strips 21. These weather-strips may constitute any suitable material and may be non-metallic, or they may be of metal.

The casement windows C are connected by

hinges 25 to the frame 1, and at all four edges are formed with webs 24 to engage the weatherstrips, as clearly indicated in Figures 2 and 3 of the drawings. The frames of the casement windows constitute hollow bars 26 which are somewhat L-shaped in cross section and which have webs 27 on their inner faces against which the window panes 28 are secured. The bars 26 also are formed with recesses 29, and metal clips 30 are employed to hold the window panes against the webs 27, and the recesses 29 afford accommodation for one end of each clip. The clips, as illustrated clearly in several figures of the drawings, are bowed between their ends and then curved reversely at their ends, one end of each clip being in the recess 29 and the other end of the clip bearing against the window pane, and these clips are covered and enclosed by putty, or other composition, 30, so as to hide the same, but the clips strengthen the connection and hold the window panes against pressure.

The stationary and hinged window panes are provided with muntins 31 and 32. These muntins where they cross are coupled. Each muntin has a main web 33 with relatively wide flanges 34 at one end and relatively narrow flanges 35 adjacent their other edge. Where the muntins cross, one muntin is cut out or recessed about three-fourths of its width, as shown at 36, which recess extends through the wider flanges 34, and the other muntin is recessed about one-fourth its width as at 36' to couple to the first mentioned muntin, so that they may be interlocked, as clearly indicated in Figure 4 of the drawings. The main flange 34 of the cross muntins is cut away to accommodate the other flange 34 of the cross muntins, and a reinforcing plate 31' is secured across the joint and to the muntins either by riveting or welding, as desired. The narrow flanges 35 serve as abutments for the window securing clips 30, as shown in Figure 3 of the drawings.

The main frame A is, of course, provided with a suitable abutment web 37 against which the casement window engages when in closed position, and between this abutment web 37 and the bars of the frame throughout an air chamber is formed which also constitutes a condensation chamber with a weep-hole 19' in the lower bar 37 to allow water to drain to the outside. The lower bar of each casement window has a downwardly curved drip flange 38 to direct water which runs down the window over the juncture between the window frame and the abutment flange.

The muntins above referred to where they engage the window frame are coupled to the frame at their ends by securing elements 39 of double dove-tailed formation in cross section, located in dove-tailed grooves 40 and 41, respectively, in the frame and muntins, the elements 39 being disposed laterally with respect to the muntins. The muntins are further secured in the frame by having the main flanged portion 34 cut away from the main web 33 at the ends of the muntins and plates 34' welded thereto and to the frame, as indicated in Figures 5 and 6 of the drawings. By thus cutting the ends of the muntins and providing the plates 34', as indicated,

the webs 42 are securely clamped and the muntins are securely held by this means as well as by the elements 39.

While we have illustrated what we believe to be the preferred embodiment of our invention, it is to be distinctly understood that various slight changes may be made with regard to the form and arrangement of parts without departing from our invention, and hence we do not limit ourselves to the precise details set forth but consider ourselves at liberty to make such changes and alterations as fairly fall within the spirit and scope of the claims.

What we claim is:

1. A window construction embodying a frame, 15 crossed muntins located in the frame, said muntins having recesses therein, the recess of one muntin being appreciably longer and deeper than the recess in the other, and the recessed portions of the muntins coupled together, said muntins 20 having flanges at their edges, the flanges of one crossed muntin being cut away, a strengthening plate secured across the crossing of the muntins and rigidly secured to one of them, said muntins having their flanges cut away at their ends, and 25 strengthening plates secured to the muntins and together with the muntins engaging portions of the window frame to secure the ends of the muntins to the frame.

2. In a window construction, a frame, muntins; 30 said frame and muntins having dovetailed grooves therein, the grooves in the frame being disposed directly opposite those in the muntins respectively, thus providing pairs of grooves, and securing elements each being of double dovetailed 35 formation in cross section, there being one of said securing elements engaged in each pair of grooves and said elements being disposed laterally with respect to said muntins.

3. In a window construction, hollow frame bars 40 constructed of relatively light metal, each bar having such cross sectional shape as to provide relatively angularly disposed walls, a strengthening bar located in each of said frame bars and of such shape in cross section as to lie in con- 45 tact with said walls, and a cap articulated with two of said walls to combine with all of said walls to enclose said bar.

4. In a window construction, a casement frame including divisional bars joined to provide a re- 50 cess between them throughout the length thereof, a strengthening bar inserted in and filling said recess and projecting from said recess, and a separate cap covering the projecting portion of said strengthening bar, said cap and divisional bars 55 being articulated.

5. In a window construction, a casement frame including divisional bars joined to provide a re- 60 cess between them throughout the length thereof, a strengthening bar inserted in and filling said recess and projecting from said recess, and a separate cap covering the projecting portion of said strengthening bar, said divisional bars having longitudinal grooves therein, and said cap having 65 flanges on the longitudinal edges thereof engaged in said grooves respectively, to secure the cap in place.

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