D. J. MURNANE.

METAL FRAME.

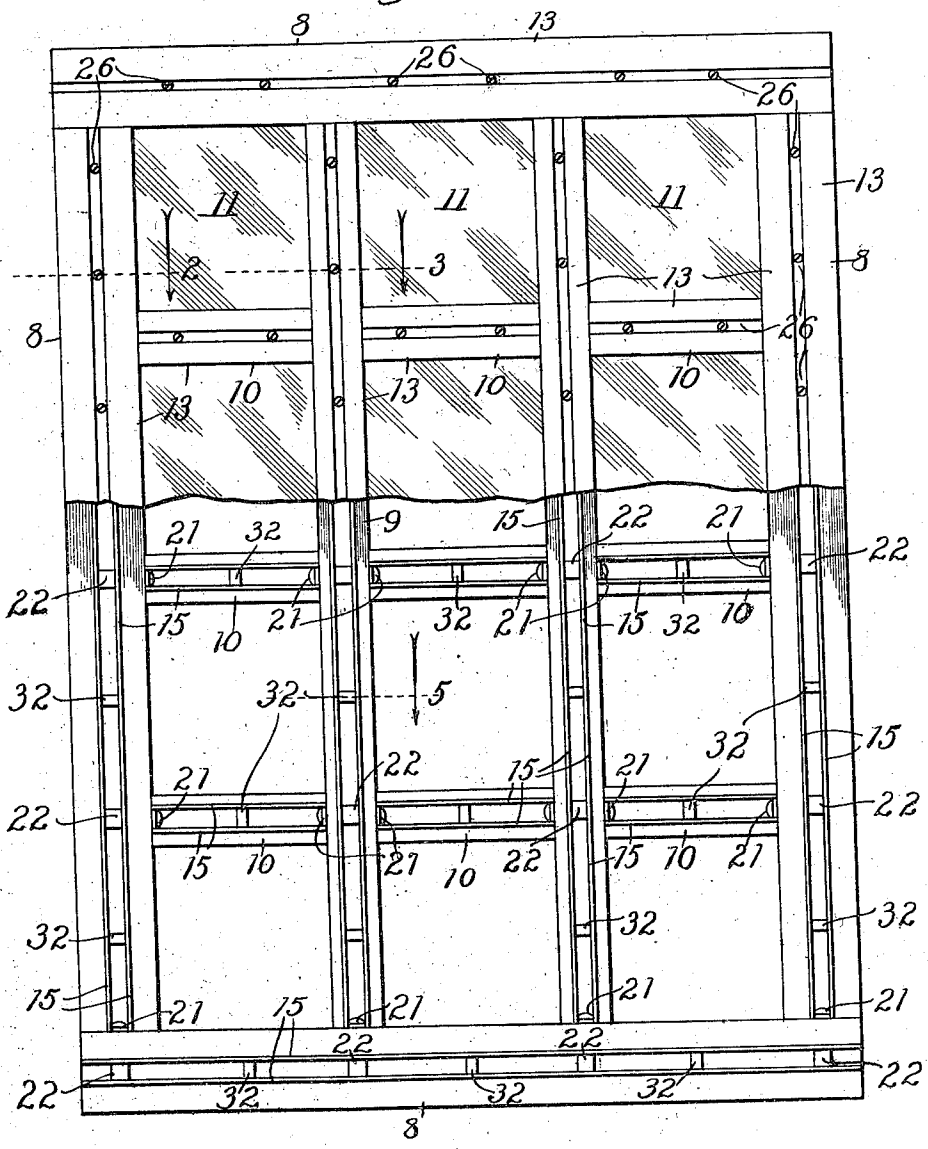
APPLICATION FILED DEC. 3, 1915.

1,260,938.

Patented Mar. 26, 1918.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

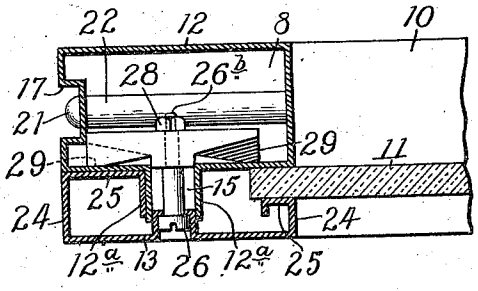


Fig. 3.

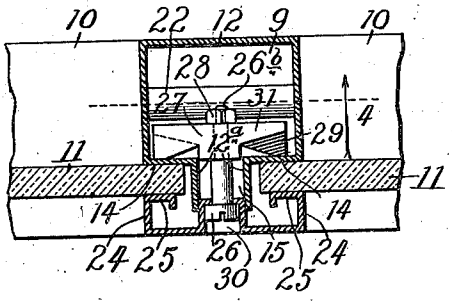


Fig. 5.

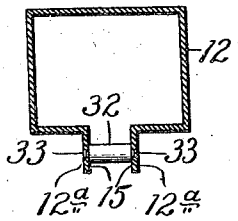


Fig. 4.

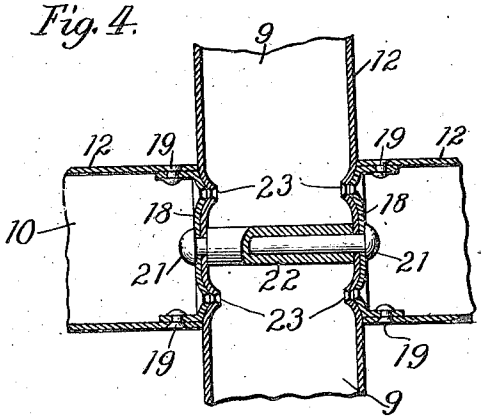


Fig. 6.

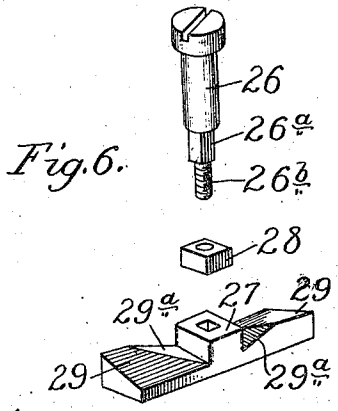
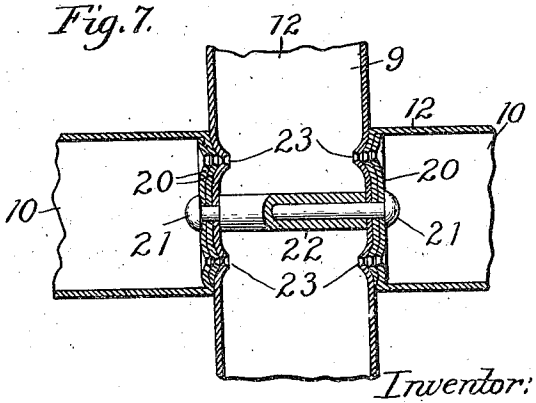


Fig. 7.



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UNITED STATES PATENT OFFICE.

DANIEL J. MURNANE, OF GLENDALE, MISSOURI.

METAL FRAME.

1,260,938. Specification of Letters Patent. Patented Mar. 26, 1918.

Original application filed May 4, 1914, Serial No. 836,206. Divided and this application filed December 3, 1915. Serial No. 64,799.

To all whom it may concern:

Be it known that I, DANIEL J. MURNANE, a citizen of the United States, residing at Glendale, in the county of St. Louis and State of Missouri, have invented new and useful Improvements in Metal Frames, of which the following is a specification.

My invention relates more particularly to metal frame construction for supporting plate-sections, as for example, panes of glass; and my primary object is to provide a construction of frame for this purpose wherein the plate-sections, as for example, panes of glass of different thicknesses, may be tightly secured therein, yet be capable of ready and easy removal therefrom, when desired, as in the case of breakage; this application being a division of an application for U. S. Letters Patent filed by me on May 4, 1914, Serial No. 836,206, for metal frames.

Referring to the accompanying drawings—

Figure 1 is a view in elevation of a window-sash, with means for securing the panes of glass in place constructed in accordance with my invention, portions of the removable cover-plates for the stationary members of the sash, and portions of the glass being omitted. Fig. 2 is an enlarged broken section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow. Fig. 3 is an enlarged broken section taken at the line 3 on Fig. 1 and viewed in the direction of the arrow. Fig. 4 is a section taken at the line 4 on Fig. 3 and viewed in the direction of the arrow. Fig. 5 is a section taken at the line 5 on Fig. 1 and viewed in the direction of the arrow. Fig. 6 is a perspective view of the parts of one of the several similar fastening devices employed; and Fig. 7, a view like Fig. 4 of a modification of the structure shown in Fig. 4.

I have chosen to illustrate my invention as applied to a window-sash provided for receiving a plurality of panes of glass, shown as twelve in number, though not with any intention of limiting it thereto, or to a multiple light sash.

The marginal frame-members of the sash are represented at 8, the vertical and horizontal interior members, or mullions, of the sash, at 9 and 10 respectively, and the panes of glass, or lights, at 11.

The members 8, 9 and 10 are each formed of stationary members 12 and removable cover members 13. The stationary members 12 which are of hollow form are formed of sheet-metal, bent preferably into the form illustrated, one side-wall 14 of each member 12 containing an opening 15, in the form of a slot, extending lengthwise of the member, the metal flanking these openings being deflected outwardly to form parallel flanges 12^a spaced apart, the wall 14 which contains the opening 15, forming seats for the panes 11. The members 12 of the members 8 differ from the members 12 of the members 9 and 10 in that the outer side-walls of the former are provided with grooves 17, formed by striking the metal inwardly, for a purpose hereinafter explained.

The ends of the members 12 of the frame-members 10 are provided at their ends with transverse members, these transverse members in the construction illustrated in Fig. 4 being represented at 18 and formed of channeled members fitting the ends of the member 12 and secured thereto at their flanges, as by rivets 19; and in the construction shown in Fig. 7, forming a modification, formed by providing extensions 20 on opposite side-walls of the member 12 and deflecting them into over-lapping relation to extend transversely of the members carrying them.

The members 9 and 10 are secured together in abutting relation, as represented, by fastening devices preferably in the form of rivets 21, which pass through the transverse members on the ends of the members 10, the side-walls of the members 9 and through spacers 22 disposed between said side-walls and forming reinforcing members for the members 9 preventing them from becoming dented or collapsing, these fastening devices being readily secured in position in the interior of the members 10, as stated, by means of the access afforded thereto through the openings 15 in the members 10.

It is preferred that one fastening device described be provided for each joint, and to permit of the ready accurate positioning of the members 9 and 10 relative to each other, interengaging means are provided on the ends of the members 10 and the abutting portions of the side-walls of the members 9. These means are preferably formed by indenting the said ends and abutting side walls as indicated at 23, whereby upon the act of assembling these frame-members

these indentations register and properly position the members and also prevent accidental axial rotation of the members 10.

The members 8 are connected in the abutting relation shown, by fastening means similar to those just described for the members 9 and 10, these fastening means 21 extending through opposite side-walls of the horizontal ones of the members 8 and through transverse members provided on the ends of the vertical ones of the members 8, as explained of the transverse members on the ends of the members 10, the outer heads of the fastening means fitting in the grooves 17.

The members 9 and 10 are secured to the members 8 in the same way as explained of the connection between the members 8, the ends of the members 9 being provided, for this purpose, with transverse members as in the case of the members 10.

The cover-members 13, or plates, for the members 9 and 10 are provided at opposite edges with rearwardly extending flanges 24 having inturned edges 25 between which and the seats 14 the panes 11 are clamped by the means hereinafter described. The cover-members 13 for the members 8 are like the cover-plates for the members 9 and 10, excepting that the flanges 24 at the outer sides of these cover-plates are deeper and are adapted to fit against the walls 14 at the marginal edges of the members 8.

My improved means for releasably securing the plates 13 in position on the members 8, 9 and 10, are preferably of the form shown, comprising a screw-bolt 26 provided intermediate its ends with a squared-section 26^a adapted to fit into a square recess in a wedge-member 27, the nut 28 screwing upon the threaded end 26^b of the bolt. The wedge 27 is formed with oppositely inclined wedge-surfaces 29 disposed at opposite sides of the bolt 25. In use, the bolt 25 is inserted into an opening 30 in the cover-plate 13, the wedge-member 27 then applied to the bolt and the nut applied and tightened. The cover-plate is then applied to position by introducing the wedge-member 27 through the slot 15 and upon turning the bolt, the wedge-surfaces 29 ride upon the inner surfaces of the sectional wall 14, containing the opening 15, thus drawing the cover-plate 13 toward the stationary frame-member to which it is applied, and clamping the panes of glass between the stationary member 12 and plate 13, it being understood that these fastening devices are provided of a number sufficient to clamp the panes at the desired number of points.

The flanges 12^a, if desired, may be reinforced, as by spreaders 32, interposed therebetween at intervals, with rivets 33 or the like passing through them and the flanges 12^a. It is preferred that the wedge-faces 29 adjacent to the center of the wedge-member 27, be partially cut away, as represented at 29^a so that the wedges when applied to position, will engage the walls 14 at points removed from the edges of the openings 15 and thus cause the panes 11 to be clamped between directly opposed surfaces.

It will be understood from the foregoing that the panes may be readily applied to and removed from the frame, and that the fastening devices for the members 12 are not exposed to view. Furthermore, by my improved fastening means panes of different thicknesses may readily be secured in place in the same frame.

While I have described my invention as applied to a sash for receiving panes of glass, I do not wish to be understood as intending to limit it to the use of such material, or to its use as a window or door sash, as my improved fastening means may be used with plate-sections of other material and with frames provided in other uses, nor do I wish to be understood as intending to limit my improved fastening means to frames, the members of which are secured together, as described. Furthermore, I do not wish to be understood as intending to limit my invention to the particular construction illustrated as the same may be variously modified and altered without departing from the spirit of my invention except as limited by the claims.

What I claim as new and desire to secure by Letters Patent is—

1. In a hollow metal frame construction, the combination of stationary frame-members containing slots in their faces, each having a seat at opposite sides of said slot, removable members having portions which extend into said slots in said stationary members, plate-sections positioned between said stationary and removable members and engaging said seats, and means for clamping said plate-sections between said members, said means engaging said removable members and extending into said stationary members through said slots, with wedging means engaging said stationary members and operating against the inner sides of the seats on the latter only at points removed from the marginal edges of said slots.

2. In a hollow metal frame construction, the combination of stationary frame-members containing slots in their faces, each having a seat at opposite sides of said slot, removable members on said stationary members with plate-sections positioned between said stationary and removable members and engaging said seats, and means for clamping said plate-sections between said members, said means engaging said removable members and extending into said stationary members through said slots, with wedging means engaging said stationary members

and operating against the inner sides of the seats on the latter only at points removed from the marginal edges of said slots.

3. In a hollow metal frame construction, the combination of a stationary member provided with seats, spaced apart, for plate-sections, with flanges, spaced apart, and extending outwardly from said seats and forming a slot in the face of said member, a removable member having an inset portion intermediate its edges which extends into said slot, with plate-engaging surfaces at the edges of said removable member at opposite sides of said inset portion, and a fastening device extending through said inset portion and slot and engaging the rear faces of the said seats on said stationary member only at points removed from the marginal edges of said slots.

4. In a hollow metal frame construction, the combination of a stationary member formed of sheet metal and provided with seats, spaced apart, for plate-sections, with flanges, spaced apart, and extending outwardly from said seats and forming a slot in the face of said member, a spacer member located between said flanges for preventing collapsing of the frame-member, a removable member on said stationary member with plate-engaging surfaces at opposite edges thereof, opposing the said seats, and a fastening device extending through said removable member and slot and engaging the rear faces of the said seats on said stationary member.

DANIEL J. MURNANE.

In presence of—
A. J. SCHWARTZ,
O. C. AVISUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."