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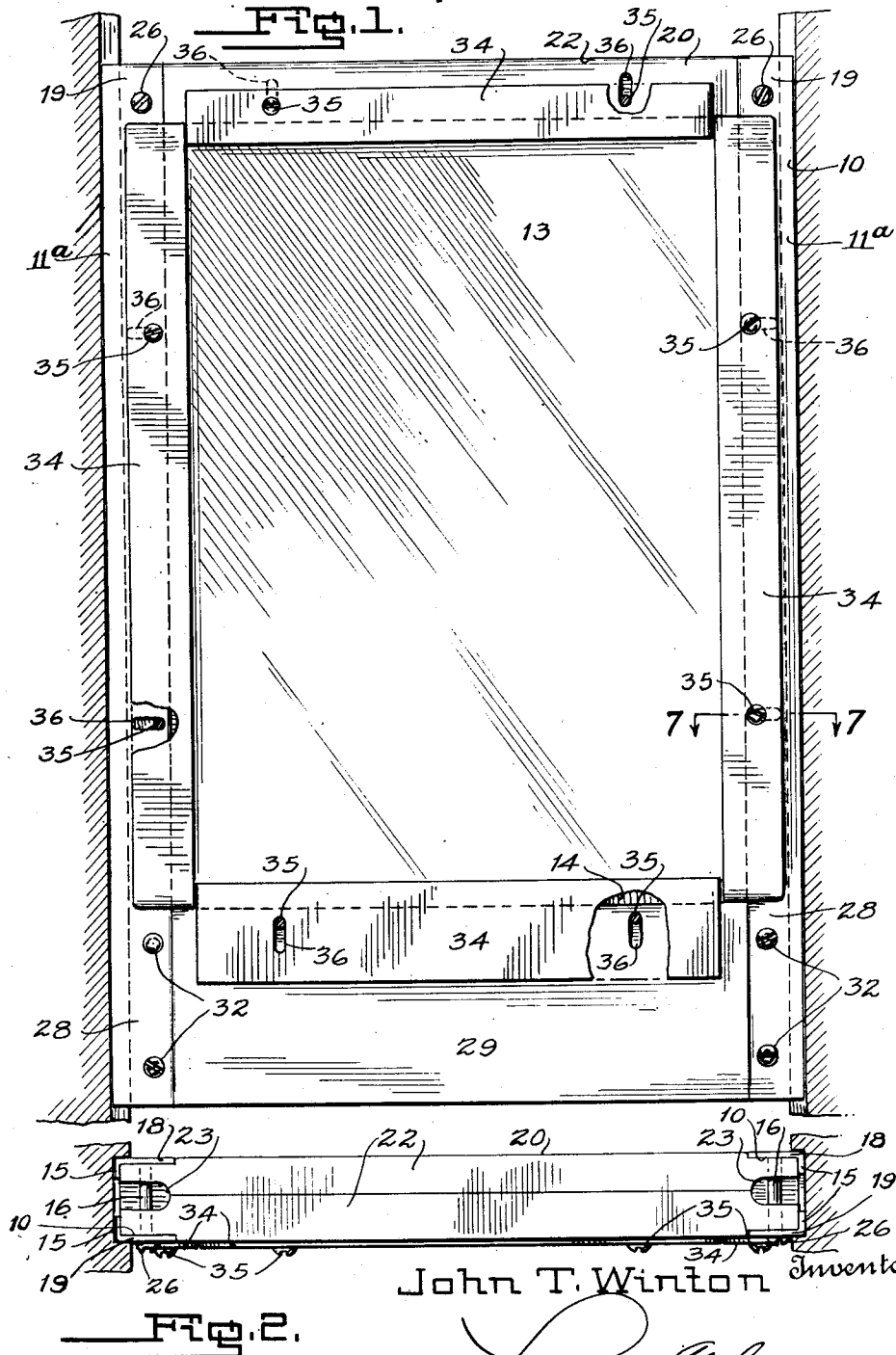
1,666,839

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METALLIC WINDOW SASH

Filed Sept. 21, 1925

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3. Fig. 4. Fig. 5.

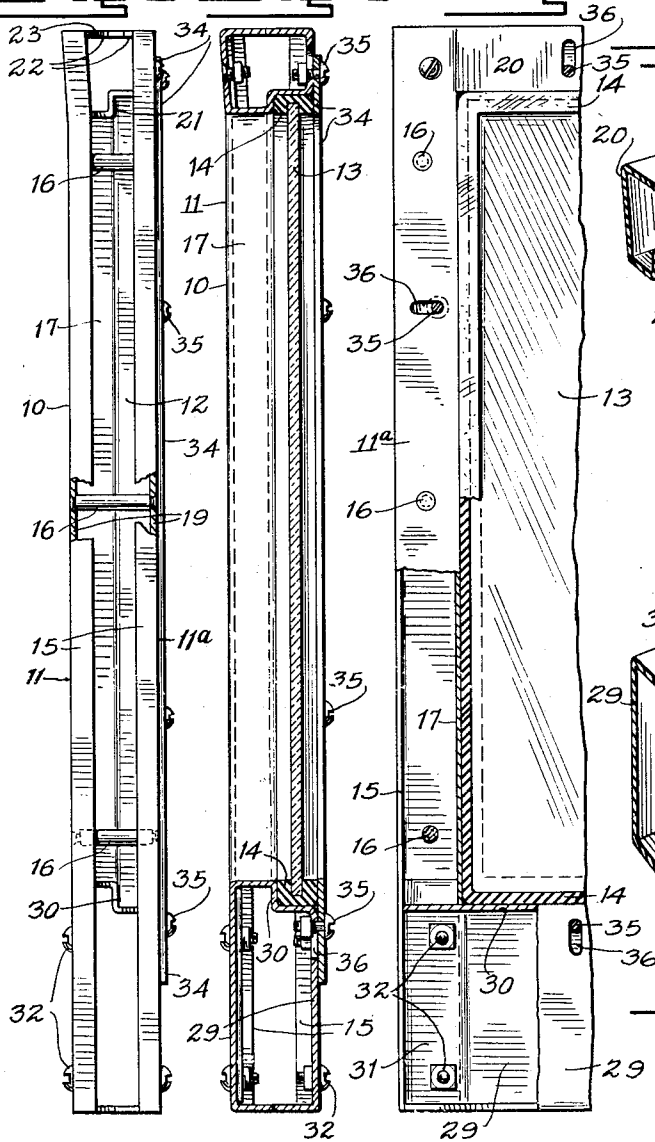


Fig. 6.

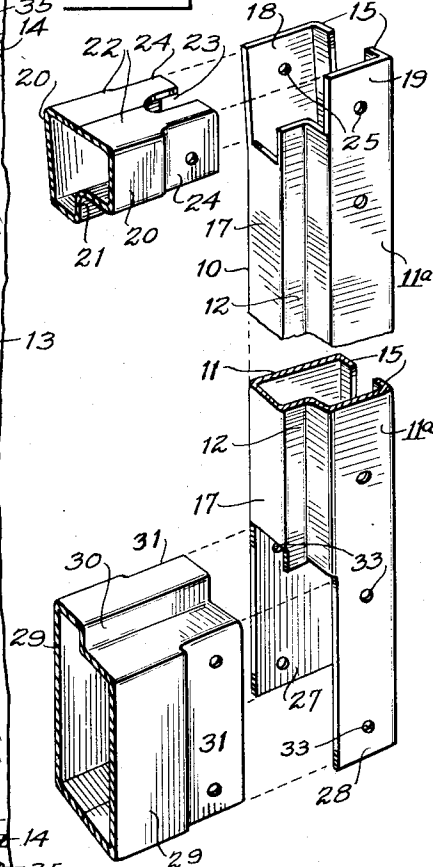


Fig. 7.

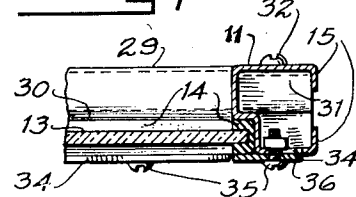
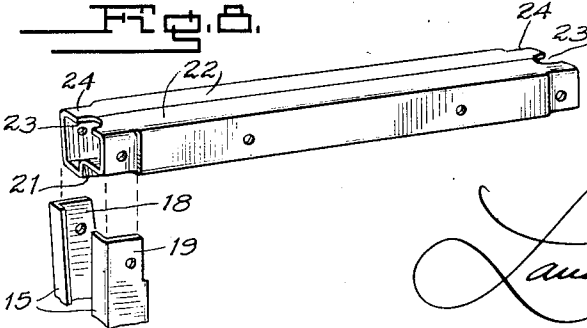


Fig. 8.



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UNITED STATES PATENT OFFICE

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METALLIC WINDOW SASH.

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The present invention relates to window sash construction, and more particularly to an improved sheet metal construction of sash.

8 An object of the present invention is to provide an improved structure for insuring strength and rigidity not only throughout the stiles and rails of the sash, but also at the corners or joints thereof to prevent the
10 springing or twisting of the sash incident to climatic and operating conditions.

Another object of the invention is to provide a novel means for retaining a transparent pane in the sash so that when broken
15 the pane may be easily removed and replaced without separating or removing any of the parts of the sash during the operation.

A further object of the invention is to provide a structure of stile and rail in the sash
20 which is reinforced and braced by the inherent pane supporting shoulder which is provided by substantially right angular bends in the stile and rail to eliminate spring construction and provide a substantially non-
25 resilient bar.

The above and various other objects and advantages of this invention will in part be described in, and in part understood from the following detailed description of the
30 present preferred embodiment, the same being illustrated in the accompanying drawings, wherein:

Fig. 1 is a side elevation of a sash constructed according to the present invention,
35 parts being broken away and the sash shown mounted in a window casing.

Fig. 2 is a top edge view of the same.

Fig. 3 is a side edge view of the sash, parts being broken away to disclose details.

40 Fig. 4 is a vertical section taken through the sash.

Fig. 5 is a fragmentary side elevation of the sash partly in section.

45 Fig. 6 is a fragmentary perspective view of the adjacent ends of a stile and the top and bottom rails.

Fig. 7 is a fragmentary transverse section taken through one side of the sash on the line 7—7 of Fig. 1, and

50 Fig. 8 is a fragmentary perspective view of the top rail separated from the adjacent end of one of the stiles.

Referring to the drawings 10 designates

the stiles or side pieces of the sash, each of which is rolled into substantially rectangular cross sectional configuration to provide a broad face or side 11 and provided at the inner corner of its other face or side 11^a with a substantially rectangular depression or
55 seat 12. This seat 12 extends throughout the length of the stile 10 and is adapted to receive thereagainst the edge portion of a transparent pane 13 or the like, the latter being provided about its marginal edge with a packing strip 14 for cushioning the pane
60 in the sash. The packing strip 14 engages the seat 12 directly and is adapted to seal the pane in the sash to prevent access of moisture and air and at the same time serves as a cushioning means to prevent damage to
65 the pane 13 incident to the vibration and impact of the sash in use and handling.

The outer edge portion of the stile 10 is formed by the intumed flanges 15 which are preferably spaced apart to permit the placing of a sash cord or the like which may be
75 attached to the stile by means of a cross pin or rivet 16 secured to the opposite faces 11 and 11^a and extending through the hollow stile. These rivets 16 are of any desired
80 number throughout the length of the stile 10 to reinforce it, and the sash cords may be secured to any desired pair of the rivets 16.

The upper end of each stile 11 has its opposite sides 10 and 11^a extended lengthwise beyond the inner wall 17 and the seat
85 12 of the stile to provide a pair of ears 18 and 19 to receive therebetween the adjacent end of the top rail 20. The ears 18 and 19 are reinforced by continuations of the
90 flanges 15 which extend throughout the length of the stile 10. As the top rail 20 is provided with a similarly formed depressed seat 21 at its lower corner, the seat 12 is extended upwardly beyond the inner
95 wall 17 a distance equal substantially to the height of the seat 21 so as to interfit therewith and provide a continuous ledge extending entirely around the inner edge of the sash.
100

The top rail 20 is also substantially rectangular in cross section and has its meeting flanges 22 at the top side to close the same, the outer or opposite faces of the top rail 20 are offset inwardly at the end of the top
105 rail to reduce the width thereof proportion-

ately to the thickness of the flanges or ears 18 and 19 to provide a smooth flush surface at the joint between the stile 10 and the rail 20. The top flanges 22 of the top rail 20 are cut away as at 23 to receive a sash cord there-through, and the inwardly offset ends of the top rail 20 provide ears 24 adapted to fit between the ears 18 and 19, the two pairs of ears having openings 25 therethrough for the reception of bolts 26 which carry nuts or the like upon their inner ends to bind the ears together in pairs. The ears 24 are adapted to fit against the flanges 15 and hold the sash in true rectangular form.

Each stile 10 is similarly constructed at its lower end with ears 27 and 28 which are of greater length than the ears 18 and 19 in order to extend entirely across the ends of a bottom rail 29 which closes the bottom of the sash. The bottom rail 29 is also of substantially rectangular cross sectional configuration with a depressed seat 30 at one of its inner edges of a depth and width to correspond with the seats 12 and 21 to register therewith and support the lower edge of the transparent pane 13. The opposite ends of the bottom rail 29 are reduced in width as in the case of the top rail 20 to provide ears 31 adapted to fit against the inner sides of the ears 27 and 28 of the stiles 10 and are secured thereto preferably by pairs of bolts 32 which pass through openings 33 in the overlapping ears. The ears 31 of the bottom rail 29 abut against the flanges 15 to further reinforce the sash and hold it in rectangular shape.

Each stile 10 and each top and bottom rail 20 and 29 may be provided with any suitable means for securing the pane of glass 13 in place, such as independent adjustable device for engaging the outer side of the packing strip 14 to hold the same against the annular seat which extends about the inner edge of the sash. These fastening devices may be each in the form of a flange strip 34 which carry bolts 35 which extend inwardly through outwardly extending slots 36 permitting movement of the bolts 35 and their flange strips 34 to move toward and from each other. In the present illustrated arrangement, the strips 34 which are carried by the stiles 10 are of a length substantially equal to that of the pane 13, while the top and bottom strips 34 are of a length to substantially fit between the end portions of the side strips 34 when the latter are moved inwardly. These strips 34 are adapted to extend, when moved inwardly, into overlapping engagement with the packing 14 a distance equal substantially to the width of the annular seat and the bolts 35 may be tightened to a more or less extent to bind the strips 34 against the packing and hold it firmly against the seat and the pane 13.

The strips 34 may thus be adjusted not only to overlap the packing but to also

accommodate packing 14 and panes 13 of different thicknesses. The slots 36 are of sufficient length to permit the retraction of the flange strips 34 backwardly out of line with the annular seat so that a pane 13 and its packing 14 may be easily moved into and out of place.

From the above it will be observed that the general structure of the side and top and bottom members of the sash is the same to provide the annular seat which is substantially of rectangular structure to correspond with the general cross sectional configuration of the members and lend rigidity thereto and eliminate any spring or yielding parts liable to bend the pane 13.

It is of course understood that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, and restricted only by the scope of the following claims.

What is claimed is:

1. In a metal sash construction, the combination of a stile and a rail, the stile formed of sheet metal with spaced apart inturned flanges at its outer edge and ears extending from and flush with its inner and outer faces, said flanges coextensive with said ears, and the rail formed of sheet metal with meeting inturned flanges at its outer edge and ears extending from but offset inwardly with respect to its inner and outer faces, said flanges of the rail coextensive with said ears of the rail, and means securing said stile and rail together with the ears of the rail between the ears of the stile and with the ears and flanges of the rail abutting the flanges of the stile.

2. In a metal sash construction, the combination of a stile and a rail, the stile formed of sheet metal with inturned flanges at its outer edge and ears extending from and flush with its inner and outer faces, said flanges coextensive with said ears, and the rail formed of sheet metal with inturned flanges at its outer edge and ears extending from but offset inwardly with respect to its inner and outer faces, said flanges of the rail coextensive with said ears of the rail, and means securing said stile and rail together with the ears of the rail between the ears of the stile and with the ears and flanges of the rail abutting the flanges of the stile.

3. In a metal sash construction, the combination of a stile and an upper rail, the stile formed of sheet metal with spaced apart inturned flanges at its outer edge and ears extending upwardly and flush with its inner and outer faces, said flanges coextensive with said ears, and the rail formed of sheet metal with meeting inturned flanges at its top, said flanges recessed at their ends

to provide a way for the sash cord, and ears extending from but offset inwardly with respect to the inner and outer faces of the rail, said flanges of the rail coextensive with said ears of the rail, means securing said stile and rail together with the ears of the rail between the ears of the stile and with the ears and flanges of the rail abutting the flanges of the stile, and a cross pin between the inner and outer faces of said stile, below the recess in the flanges of the rail, said cross pin to receive the sash cord. 10

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