Sept. 7, 1926. 1,599,286

H. N. RENTON

METAL WINDOW FRAME AND SASH

Filed Dec. 10, 1925 2 Sheets-Sheet 1

FIG. I.

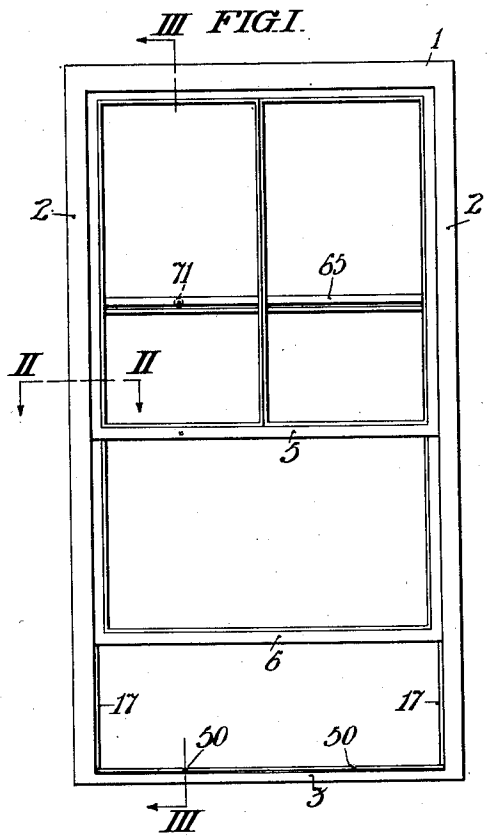
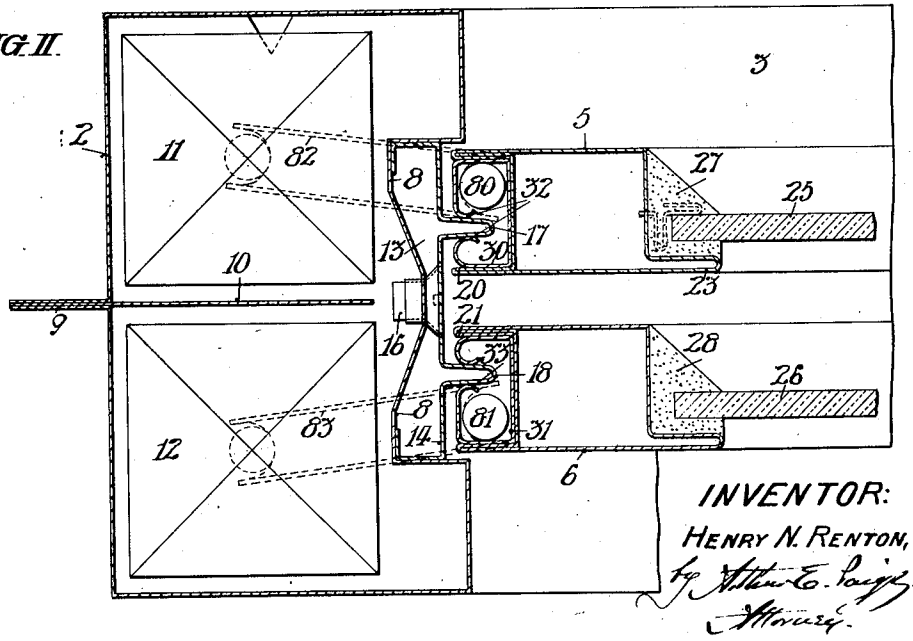


FIG. II.



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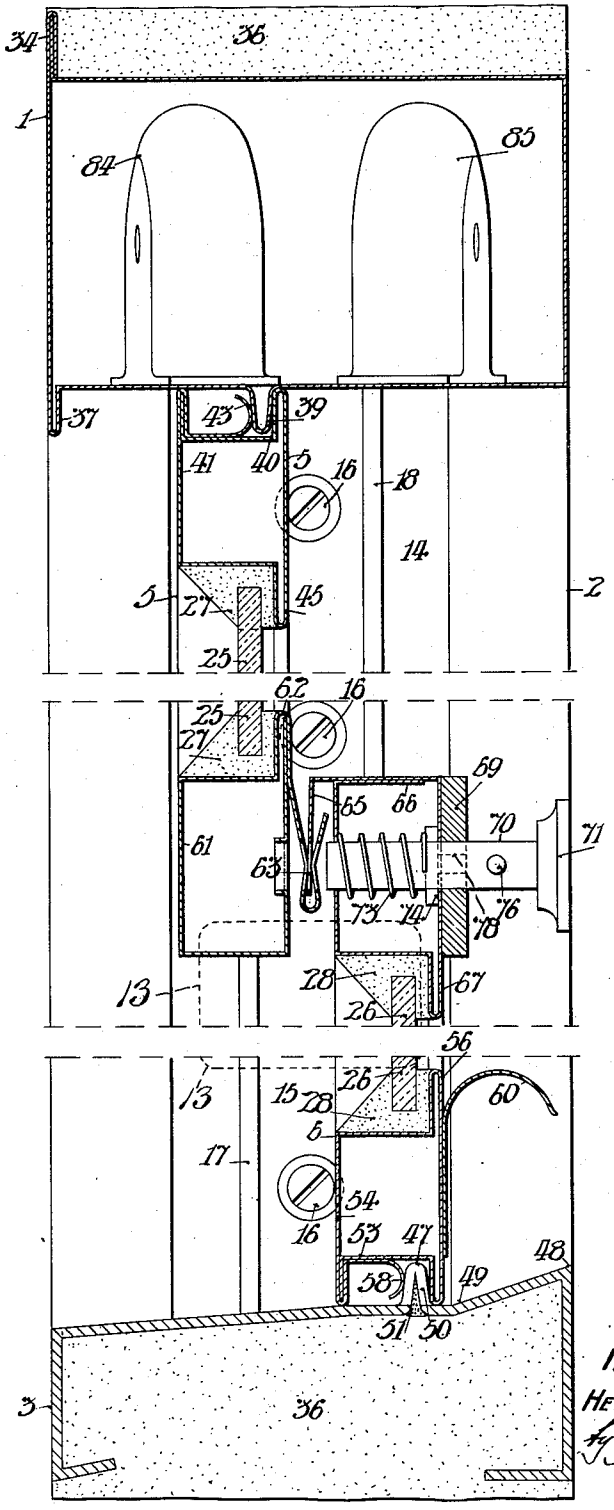
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FIG. III.



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Patented Sept. 7, 1926. 1,599,286

UNITED STATES PATENT OFFICE.

HENRY N. RENTON, OF PHILADELPHIA, PENNSYLVANIA.

METAL WINDOW FRAME AND SASH.

Application filed December 10, 1925. Serial No. 74,446.

My invention is particularly applicable to metallic frames for what are known as double hung windows including a jamb frame in which two sash frames are mounted to reciprocate parallel with each other.

As hereinafter described, my invention relates particularly to means for maintaining the sash frames in weather-tight relation with the jamb frame and with each other, without interfering with the freedom for reciprocation of the sash frames. Such means include a peculiar construction and arrangement of hollow vertical sash bars, preferably formed of sheet zinc with inwardly curled resilient edges which form water-tight joints in contact with vertical hollow guide flanges, also preferably formed of sheet zinc; the latter serving as a facing for the jamb, covering openings through which the sash weights may be removed. Such construction and arrangement is more economical than the provision of separate weather stripping which is characteristic of the prior art.

As ordinarily constructed, a complete metallic window, including a frame and sashes, costs thirty dollars or more, which is double the cost of wooden structures for the same purpose. Therefore, this invention has been designed and is adapted for such economical manufacture as to approximate the cost of such wooden structures.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In said drawings; Fig. I is an outside elevation of a window frame and sashes embodying my invention.

Fig. II is a fragmentary plan sectional view, taken on the line II, II in Fig. I.

Fig. III is a vertical sectional view of said structure, taken on the line III, III in Fig. I, in the direction of the arrows on said line.

Referring to Fig. I; the window frame includes the lintel 1, opposite jambs 2, and sill 3 in which the upper sash 5 and lower sash 6 are hung for vertical reciprocation. Each of said jambs 2 is formed of a single sheet of metal, for instance, galvanized iron, folded to form a recess 8 in the inner vertical face of the jamb and with its edges presented in flanges 9 extending outwardly from the outer face of the jamb and there engaging between them the partition plate 10 forming separate compartments for the respective sash weights 11 and 12. The inner wall of said recess has the opening 13 therein, extending from a short distance above said sill 3, to such height as to permit removal of said weights 11 and 12 through it, as indicated by dotted lines in Fig. III. However, that opening is normally closed by two vertically extending plates 14 and 15 respectively at the upper and lower portions of the jamb, as indicated in Fig. III and which are of substantially the same configuration but formed separately to facilitate their insertion and removal, each being adapted to be rigidly, but detachably, connected with the jamb by screws 16, preferably having flat heads seated in depressions in said plates and in screw threaded engagement with the inner walls of said jambs 2, as indicated in Fig. II. Said plates may be abutted, or overlapped, at the dash line indicated adjacent to the top of said opening 13 in Fig. III.

Each of said plates 14 and 15 has two hollow vertical ridges 17 and 18 which respectively extend within the recesses 20 and 21 of said sashes 5 and 6.

Each of said sash frames 5 and 6 is also formed of sheets of metal, preferably galvanized iron, folded to form said recesses 20 and 21 with the edges of each sheet interengaged at the outer faces thereof, as shown in Fig. II. The opposite inner edge of each of said frames is folded to form respective hollow flanges 23 and 24 in which the panes of glass 25 and 26 are set in cement 27 and 28.

Said sash frame recesses 20 and 21 are lined with hollow bars 30 and 31, conveniently formed of pressed sheet zinc having inwardly curled resilient flexible portions 32 and 33 respectively bearing upon said hollow ridges 17 and 18, in sliding contact and forming weather proof joints therewith.

Said lintel 1 is formed of a sheet of metal, preferably galvanized iron, with its opposite edges folded together to form the flange 34 extending upwardly at the outer face of the window frame and adapted to overlap the wall 36 in which the frame is set. The lower edge of said lintel 1 is provided with the hollow flange 37 forming a pendent edge from which rain will drip instead of flow-

ing inward upon the under surface of said lintel. Said lintel is also provided with the hollow ridge 39 adapted to extend within the recess 40 of the top rail 41 of said sash 5, where it is engaged by the resilient curled edge 43 of a sheet of metal, preferably galvanized iron, from which said rail is formed as shown in Fig. III. The opposite inner edge of said top sash rail 41 is provided with an inwardly extending hollow flange 45 similar to the hollow flanges 23 and adapted to hold said glass 25 set in said cement 27.

Said sill 3 is also conveniently formed of a single sheet of metal having its opposite edges inwardly turned to engage said wall 36; said sill having the hollow ridge 47 extending upwardly therefrom parallel with the upwardly inclined inner corner 48 of said sill; forming a gutter 49 for reception of moisture condensed upon the inner faces of said sash, which is permitted to escape through notches 50 in said ridge 47, the latter being filled with solder 51 at said notches to prevent access of such water of condensation to the interior of said sill.

As shown in Fig. III, said sill ridge 47 projects upwardly into the recess 53 of the hollow lower sash frame rail 54 which is formed of a single piece of metal like the top rail 41 of the upper sash frame 5 and has the inwardly extending flange 56 to receive the glass 26 set in cement 28. Said piece has one edge curled, at 58, for resilient flexible contact with said sill ridge 47 to form a weather proof joint therewith. Said lower sash rail 54 is conveniently provided with one or more handles 60, formed of strips of metal welded or otherwise secured thereto.

The bottom rail 61 of the top sash 5, is also formed of a single sheet of metal folded to form the upwardly extending hollow flange 62 which holds said glass 25 mounted in said cement 27. However, one edge of said sheet metal forming said sash rail 61 is folded to depend from said flange 62 in spaced relation with the inner face of said sash and form a resilient bight 63 having its opposite faces inwardly converged to receive between them the pendent edge 65 of the sheet metal plate forming the top rail 66 of the bottom sash 6 which is similarly folded to form the pendent hollow flange 67 to hold the glass 26 set in cement 28. It is to be understood that the joint between said members 63 and 65 is substantially weather tight.

Said top rail 66 of the bottom sash 6 is provided at its inner face with a plate 69 conveniently located intermediate of the width of said sash and welded or otherwise secured thereto; which plate has an opening therethrough for the plunger 70 which is provided with the knob 71 by which it may be thrust outwardly to extend through said overlapping sash members 63 and 65 to interlock them. However, said plunger 70 is normally held in the unlocked position shown in Fig. III by the spring 73 which encircles it, within said sash rail 66, and bears against the cross pin 74 which extends through said plunger 70. Said plunger 70 is also provided with the cross pin 76 which is normally presented exterior to said plate 69, when said plunger 70 is in the unlocked position shown. However, said plate 69 has diametrically opposite radial slots 78 extending from the opening in which said plunger 70 is fitted, to permit said pin 76 to pass through said plate 69 when said plunger 70 is thrust outwardly; whereupon, said plunger 70 may be turned to present said cross pin 76 out of registry with said slots 78 to thus detain said plunger in locked position until it is manually released, by rotating it to again present said pin 76 in registry with said slots 78; in which position said plunger may be thrust outward by its spring 73 to the position shown.

Said weights 11 and 12 are pendent from flexible connectors 80 and 81 extending over pulleys 82 and 83 in casings 84 and 85 placed in said lintel 1, as indicated in Figs. I and III; so that said flexible connectors 80 and 81 extend downwardly through suitable openings in the underface of said lintel directly into the hollow sash bars 30 and 31 in which they are detachably connected with the respective sashes 5 and 6 by any suitable means. For instance, said connectors may be cords, provided with knots at their ends extending within the hollows of said sashes 5 and 6, through suitable openings in said bars 30 and 31.

It is to be noted that the construction and arrangement above described requires less metal for its formation, and is consequently less costly to manufacture, than similar structures of the prior art; that said face plates 14 and 15, with their hollow ridges 17 and 18, serve three purposes; first, as closures, second, as guide rails, and third, as weathering devices. That the configuration of the same effects a radical change from the weather stripping of the prior art, in that the area of sliding contact is reduced to narrow lines, and with air spaces between those lines, to prevent the flow of water through the joints by capillary attraction; and that the construction and arrangement for suspending the weights, including the disposal of the pulleys 82 and 83 in inwardly converging planes, is such as to permit the weight boxes to be made smaller, and to require less metal in the weights, than heretofore, and impose less strain on the flexible connectors supporting them.

Therefore, I do not desire to limit myself to the precise details of construction and arrangement herein set forth as it is obvious that various modifications may be made

therein without departing from the essential features of my invention as defined in the appended claims.

I claim:

1. A metal window frame jamb; comprising a sheet of metal folded to hollow rectangular configuration, with a recess in the inner face thereof and with its edges brought together in parallel relation and projecting from the outside of said jamb, intermediate of the width thereof, and transversely to the outer face of said jamb; a partition plate extending between said flanged edges and into the hollow of said jamb, separating two weight compartments in said jamb; the inner wall of said recess having an opening therethrough affording access to said weight compartments; an inner facing for said jamb, including two plates, of similar construction, fitted in said recess and adapted to conjointly extend from the top to the bottom thereof, each of said plates having two hollow flanges, extending in parallel relation and respectively adapted to enter the edges of respective, double hung, sashes; and means arranged to detachably connect said face plates with said jamb, including screws seated in sockets in said plates and in threaded engagement with the inner wall of said jamb recess.

2. A metal window sash, having opposite vertical side members each formed of a single sheet of metal folded to substantially rectangular hollow configuration, forming a channel recess at the outer edge thereof and a hollow flange at one inner edge, the latter flange being adapted to receive a glass panel, and hollow weathering bars formed of respective sheets of zinc, folded to fit in said sash recesses and having their edges inwardly curled in opposite directions at the outer edge of said sash, and adapted to slide in weather tight relation with the jamb flanges projecting between said curled edges.

3. A metal window sash having a horizontal rail formed of a single sheet of metal bent to substantially rectangular hollow configuration and forming a channel recess, with flanges upon opposite sides thereof at the outer edge of said rail, one edge of said sheet being curled in said recess for sliding engagement with a window frame flange; the inner side of said rail having a projecting hollow flange adapted to receive a glass panel.

4. In a window frame, the combination with a hollow jamb, having an opening in its inner wall, through which a sash weight may be inserted and removed; of a face plate for said jamb, having means for detachable connection with said jamb, and serving as a closure for said opening; said plate being formed of sheet metal with a vertically extending ridge therein, arranged to serve as a sash guide and weathering strip.

5. In a window structure, such as described in claim 4, a face plate having two hollow ridges in parallel spaced relation arranged to guide a pair of sashes in cooperative double hung relation.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this 28th day of October, 1925.

HENRY N. RENTON.