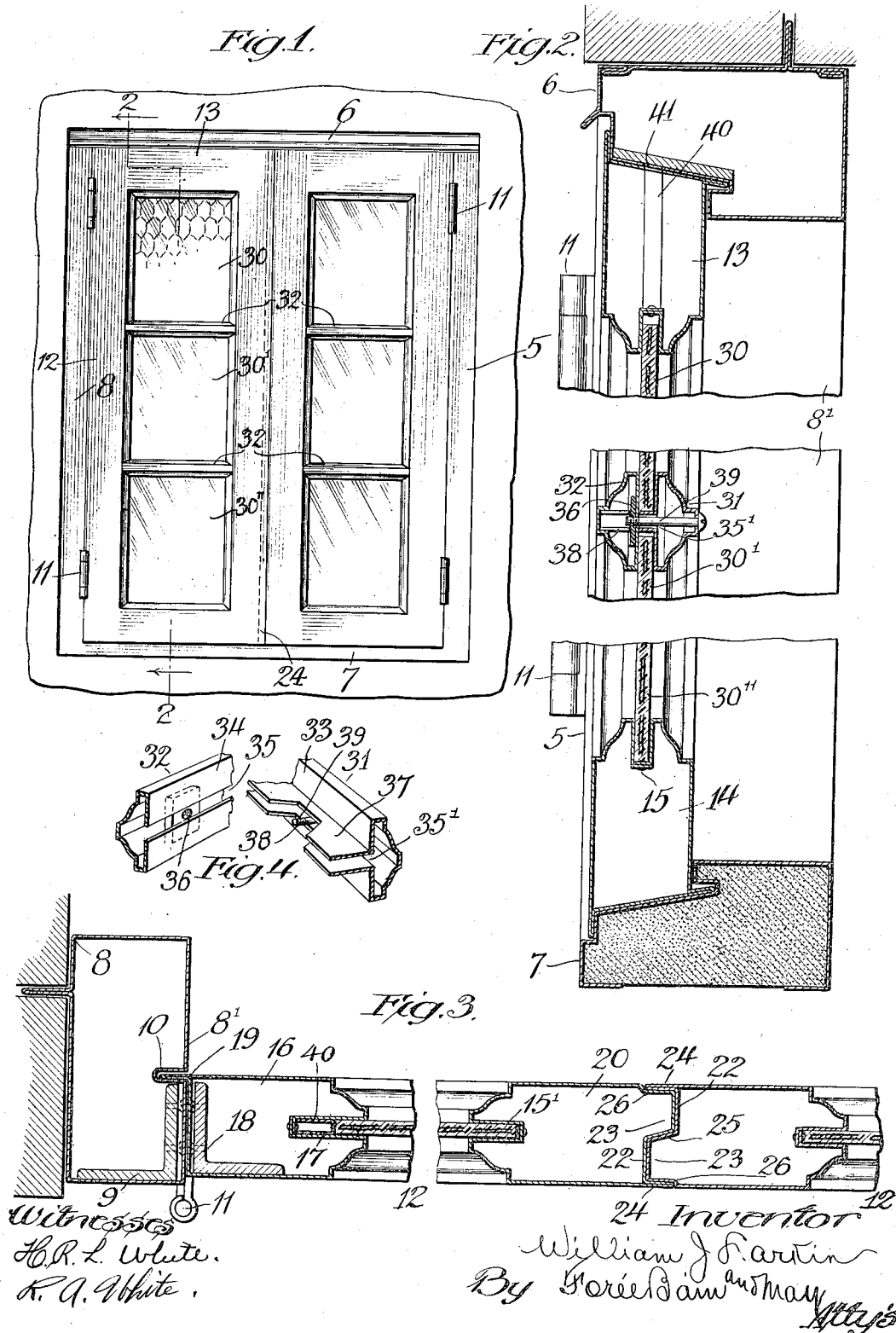


W. J. LARKIN.
FIREPROOF WINDOW CONSTRUCTION.
APPLICATION FILED MAY 17, 1909.

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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent. Patented Feb. 22, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM J. LARKIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fireproof Window Construction, of which the following is a specification.

My invention relates to improvements in fire-proof window construction, by which I mean the construction of glazed light-admitting openings for the purpose of providing efficient fire retardation.

The salient object of my invention is to provide a structure having a high heat resisting efficiency in virtue of its mechanical construction and arrangement and yet which is mechanically advantageous in simplicity of construction, facility of assembling the parts, and ease of operation.

Some of the features of my invention relate particularly to what are commonly termed casement windows, or to doors, wherein the movable sashes are hinged at opposite side edges to swing toward and from a central meeting point. This form of window is ordinarily particularly vulnerable to fire because of the difficulty of forming an efficient joint between the meeting rails and between the jambs and side rails, and one of the objects of my invention is to provide an improved structure of this type which will afford effective joints at such points.

A further object of my invention is to provide a novel glass positioning construction, and still other objects will hereinafter become apparent.

In the accompanying drawing, illustrating an embodiment of my invention, Figure 1 is a front elevation from the exterior of a casement window in accordance with my invention; Fig. 2 is a central vertical section through one of the sashes with the parts broken away; Fig. 3 is a horizontal section through fragments of the two sashes; and Fig. 4 is a perspective detail of the muntin structure appropriate to the embodiment of my invention.

In the drawings, 5 indicates a frame, preferably of sheet metal formation, surrounding the closable opening, said frame comprising the head 6 and sill 7 of approved construction and hollow sheet metal jambs 8, internally reinforced by angle bars 9 along what I will term their exterior, inner cor-

ners—using “exterior” with reference to the building, and “inner” with reference to the planar center of the frame. The inner faces 8' of the jamb have formed therein vertical grooves 10, which preferably fall immediately in rear of or interiorly from the reinforcing angles 9; but otherwise the frame may all be of approved construction.

Hinged to the jambs 8 by suitable hinges 11 are the two coacting casements or sashes 12, 12, which are structurally similar, each preferably having top and bottom rails 13 and 14 of identical construction interfitting accurately with the corresponding head 6 and sill 7, each of said parts being of approved sheet metal construction, and providing a glass recess 15 of customary depth. The outer or hinging side rail 16 of each sash is formed of sheet metal to provide on its inner edge a deep glass recess 17, about double the normal depth of a glass recess 15, and is likewise internally provided with an angular reinforcing strip 18 along its exterior, outer edge to receive and afford support to the appropriate element of the hinges 11. Each such rail 16 is likewise provided at its interior, outer corner with an outwardly extending flange 19 adapted to interfit in the recess 10 in the frame jamb.

The inner or meeting rails 20 of the window are of sheet metal provided with glass grooves 15' of ordinary depth. The adjoining edges of the meeting rails are formed each to provide a groove 22 wholly between its exterior and interior edges and a projection 23 arranged to interfit into the groove 22 of the opposite rail, the two rails being of similar but opposite construction, each providing a double wall or fin 24 along one edge forming one boundary of the recess 22, and a wall 25 forming a shoulder connecting the recess 22 and the projection 23, said wall extending obliquely across the median line of the joint, and an edge recess 26 adjoining the projection 23. The fin 24 and projection 23 extend about the same distance beyond the median line of the joint and the groove 22 and recess 26 terminate at about the same distance short of such line. Thus the two rails make an S-shaped joint, preferably angular, although not necessarily so, and with the middle course of the joint which traverses the median line thereof intermediate the exterior and interior edges of the sashes, arranged at an angle such that the taper of the adjoining

projections 23 will enable them to disengage from their recesses without binding during the outward swing of the sashes.

Where the structure is a glazed window, the glazing material is preferably wire-glass, divided into a plurality of panes with the divisions running at right angles to the deep glass receiving grooves 17 of the sashes and the glass divisions being separated by muntins. Thus in the construction illustrated, 30, 30', and 30'' are vertically separated panes of wire-glass, the lines of separation being at right angles to the vertical deep grooves 17. These panes are separated by the sheet metal muntins, 31, each comprising a female member 32 and a male member 33. The female member is a folded strip of metal providing a planar face 34 having a longitudinal opening 35 extending its full length and exposing at intervals nuts 36 arranged within the tubular structure. The male member is of similar construction save that it provides parallel flanges or webs 37 extending outward from the edges of its longitudinal opening 35', said webs being recessed as at 38 to straddle the nut 36 and provided with bolts 39 for engaging such nuts 36.

For holding the glass in place against displacement in deep groove 17, I provide a U-shaped retaining or locking strip 40 extending lengthwise in the groove 17 and inserted therein through an aperture 41 in the upper rail of the sash.

In glazing the window, the male members of the muntins are all removed and then, as will be apparent, the lower glass pane may be inserted into the sash by lifting the pane entirely above the bottom rail 14, sliding it laterally into the deep groove 17 and then back into the shallower normal groove 15', and then dropping it down into the bottom groove 15. This operation may be repeated with respect to the several panes and then the panes may be appropriately separated to bring the uppermost pane into its normal groove 15 on the upper rail, and separation of the panes is maintained by the insertion of the web 37 of the male muntin-member between the adjoining panes of glass. When the parts are thus assembled, the lock strip 40 may be inserted into the deep recesses 17 and thereby all parts of the glass structure safely secured.

It will be observed that the construction described provides a closure for the window orifice providing two oppositely hinged sashes but wherein every vertical joint is broken, the tongues 19 engaging in the grooves 10 at the interior, outer corners of the sashes forming a broken joint which will prevent ready passage of flame, and the inter-engaging tongues and grooves in the meeting rails providing an S-shaped joint for a similar purpose, yet neither of these

joints interfering in any way with the swinging of the casings on their hinges 11, though they make the structure remarkably strong to resist direct outward pressure. It will also be observed that the structure provides a glazing arrangement in which the glass when in place is held against displacement in any direction to open through passage to flame and yet upon removal of the muntin and the spacing strip 40 any or all of the glass panes may be removed.

While I have herein described in some detail a particular embodiment of my invention, it will be apparent that variations might be made in the structural details without departure from the spirit of my invention and within the scope of the appended claims.

What I claim is:

1. The combination with a frame for an opening, of a closure therefor, comprising two sashes hinged at their opposite edges to swing in the same direction in opening and at their meeting edges provided each with a projection and a groove wholly between the exterior and interior surfaces of the closure, said grooves and projections being arranged for inter-engagement when closed and arranged to permit hinging movement of the sashes without interference.

2. The combination with a frame for an opening, of a closure therefor comprising two sashes hinged at their opposite edges, effecting an S-shaped joint when closed.

3. In a hinged closure for an opening, two opposite sashes hinged at their opposite edges, and providing meeting rails of similar configuration but oppositely disposed, each rail providing on its edge a lip 24, a recess 22, an obliquely disposed shoulder 25, a projection 23, and a recess 26 in successive order, for effecting an S-shaped joint when the sashes are closed and permitting the hinging movement of said sashes without interference.

4. A fire-proof closure comprising an open frame having vertical recesses 10 in its jambs, sashes 12 hinged to said jambs for movement in the same direction, each said sash providing a projecting fin 19 for engagement in the recess in the jamb, and inter-engaging tongues and grooves upon the meeting edges of the sashes, arranged when the sashes are closed to afford an S-shaped joint.

5. In a fire-proof window, a sash provided with a glass receiving recess throughout its entire perimeter, one of said vertical recesses being of abnormal depth to permit the insertion of glass therein to clear the opposite edge of the sash; panes of glass separated upon horizontal lines; removable muntins for interposition between the panes of glass proportioned to maintain the separate panes in separated relation, holding the vertically opposite edges of the extreme panes in en-

gagement with the glass receiving recesses in the horizontal rails; and a locking strip in the deep vertical recess.

5 6. In a fire-proof window structure, a sheet metal sash having glass receiving recesses in opposite rails, one of said recesses being approximately double the depth of the other, and a locking strip for the deep recess.

10 7. In a fire-proof window structure, a sheet metal sash having glass receiving recesses in opposite rails, one of said recesses being approximately double the depth of the other, and a removable U-shaped locking
15 strip filling approximately half of the deeper recess.

20 8. In a fire-proof window structure, a sash of sheet metal providing in the integral structure of its rails, glass receiving recesses, the glass receiving recesses along one rail being of approximately double the depth

of the recesses in the other rail; a plurality of panes of glass, separated on lines at right angles to the deeper recessed rail, and in their conjoint measurement parallel to the
25 deeply recessed rail not exceeding the length of the clear opening of the sash and one normal glass recess; a detachable muntin for insertion between the glass panes to separate the latter, proportioned to space the
30 panes apart to bring the extreme panes at opposite edges into engagement with the opposing glass recesses of normal depth; and a locking strip 40 removably inserted in the
35 deeper glass recess.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM J. LARKIN.

In the presence of—

W. LINN ALLEN,
MARY F. ALLEN.