A. C. SOULE.

WINDOW.

APPLICATION FILED MAR. 5, 1914.

1,124,671.

Patented Jan. 12, 1915.

2 SHEETS—SHEET 1.

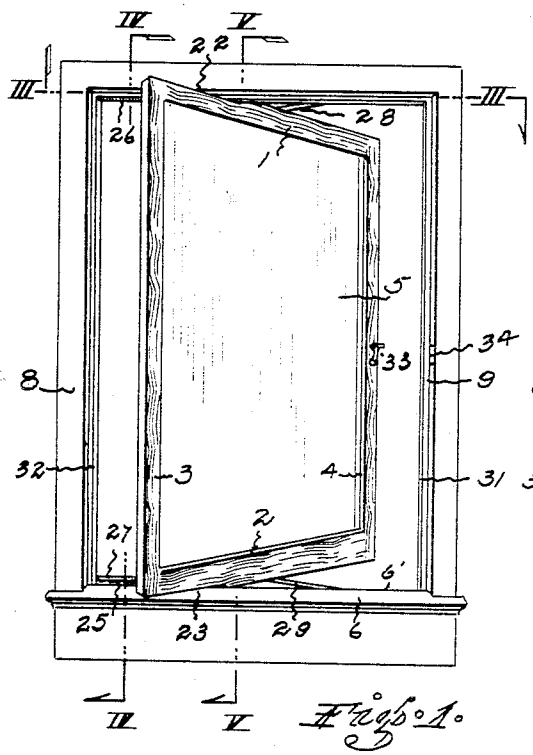


Fig. 1.

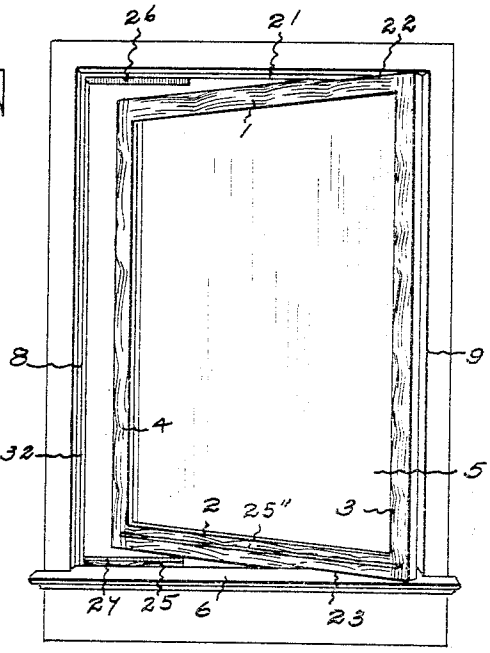


Fig. 2.

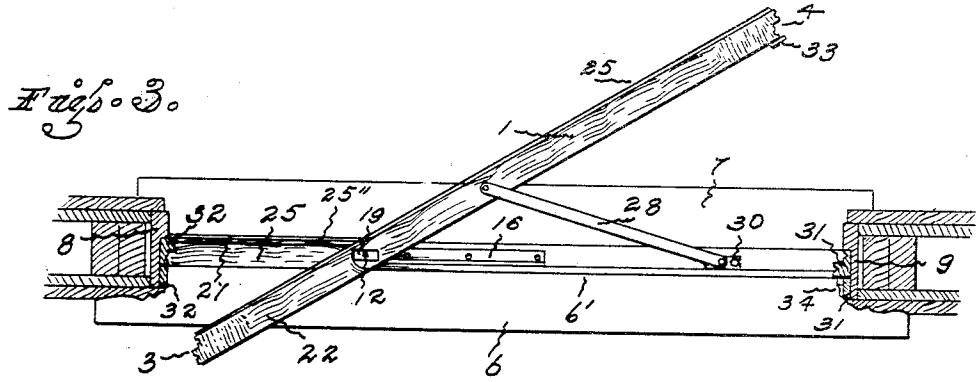


Fig. 3.

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2 SHEETS—SHEET 2

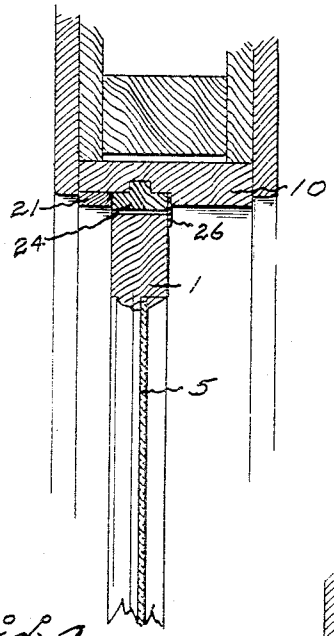


Fig. 4.

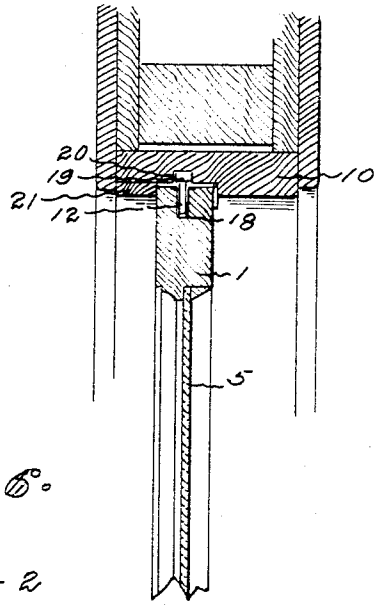
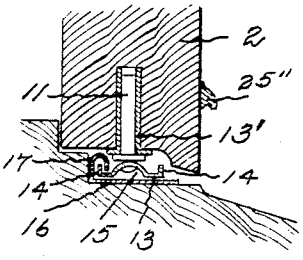
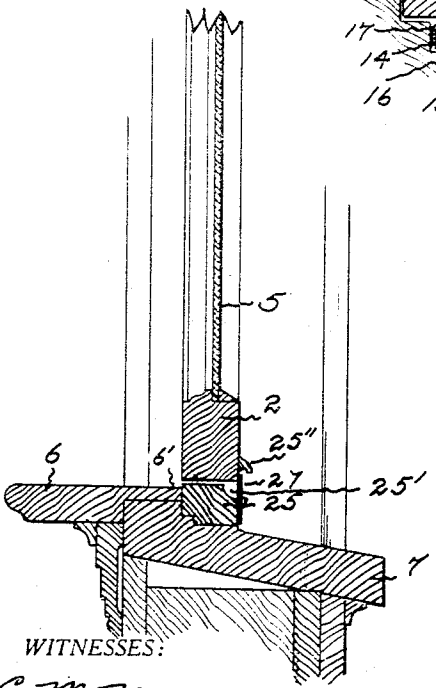
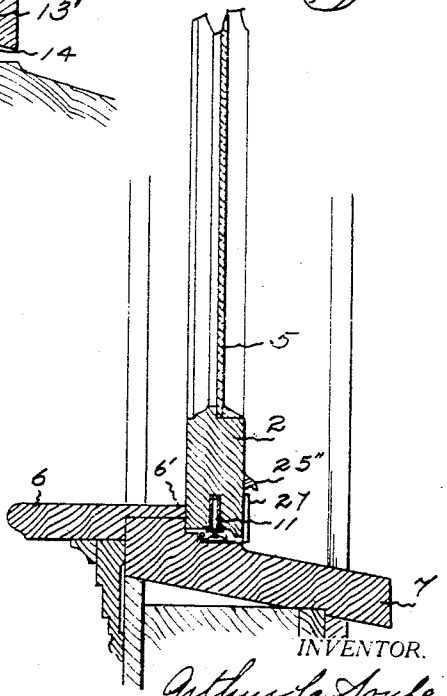


Fig. 5.

Fig. 6.







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ARTHUR C. SOULE, OF SAN FRANCISCO, CALIFORNIA.

WINDOW.

1,124,671. Specification of Letters Patent. Patented Jan. 12, 1915.

Application filed March 5, 1914. Serial No. 822,668.

To all whom it may concern:

Be it known that I, ARTHUR C. SOULE, a citizen of the United States, residing at and whose post-office address is 226 Judah street, in the city and county of San Francisco, State of California, have invented a new and useful Improvement in Windows, of which the following is a specification.

This invention relates more particularly to that class of windows known as casement windows, in which the sash or sashes are to that class of windows known as casement in the open position.

Among the objects of this invention are to counter balance the weight of the sash on both sides of the pivots; whereby extremely heavy sashes, of large dimensions can be operated with the minimum of effort, and with the minimum of strain upon the sash, the fixtures, and the casement structure; to render the engagement of the closed sash with the casement storm and weather proof; to prevent the dislodgment of the sash from engagement with the casement; and to make the structure architecturally and mechanically pleasing to the eye.

Architectural advancement demands increasingly large window areas, with the maximum opening, and the minimum of visual obstruction. The maximum opening requires a sash mounting, that will swing the sash at right angles to the plane of the casement, thus presenting only the thickness of the sash as an obstruction within the window opening. Other considerations require that the sash be as near as may be, completely reversible within the casement.

Unobstructed vision through the closed sash requires that the glazing be undivided, that is, a single pane of glass. The demands in public buildings often call for sashes ten feet in height, and of proportionate width, with heavy plate glass. These specifications result in sashes weighing as much as two hundred pounds and more; too great a weight to counterbalance by the old method, even if the specifications would permit the use of such structures. The great width makes it impracticable to pivot the sash in the center; and the weight precludes the use of corner pivots, that would be torn out of engagement with the casement, or the sash, making the sash a source of great danger and expense.

This invention meets the most exacting requirements of modern practice, by providing a vertically pivoted sash, having its pivotal point off the center of the sash, to cause the major portion thereof to swing outward from the casement, avoiding undue projection within the room in the open position, while retaining the counterbalancing effect to a sufficient extent, rendering the operation of the sash easy, the weight of that portion of the sash projecting within the room, counter balancing an equal weight of the sash on the opposite side of the pivot, relieving the sash as a whole, from excessive strain.

The reversal of the sash in the opening requires that the pivot be capable of approaching or passing the vertical center of the opening; this action is accomplished by the sliding pivots guided in the casement. The sliding pivots require that the sash be controlled to preserve its perpendicularity, and compel its horizontally uniform movements; this is accomplished by the controlling means disclosed. Means for rendering the window weatherproof in the closed position, are also included in the invention.

While the invention is applicable to windows irrespective of their size and weight, it is intended primarily for heavy sashes of large dimensions.

The invention possesses other advantageous features that, with the foregoing will be set forth at length in the following description, wherein I shall outline in full that form of the invention selected for illustration in the drawings accompanying and forming part of the present specification.

The novelty of the invention will be included in the claims succeeding said description. From this it will be apparent that I do not restrict myself to the disclosures made by said description and drawings, as I may adopt many variations within the scope of my invention as expressed in said claims.

In the drawings: Figure 1—is a front elevation of a casement window constructed in accordance with this invention, showing the sash partly open. Fig. 2—is a similar view of the same, showing the sash almost wholly reversed within the opening, that is with the outside of the sash presented to the inside of the room, in the wall of which it is installed. Fig. 3—is a plan view from above in enlarged detail in cross section, below the line III—III, showing the sash normally opened part way. Fig. 4—is an enlarged

detail in vertical cross section on the line IV—IV, showing the sash closed, illustrating the weather strip, and the filling blocks at the top and bottom of the casement, to insure proper weather protection around the sash. Fig. 5—is a similar view of the same, illustrating the sliding pivot hangers at the top and bottom of the sash, engaging their respective runways or grooves. Fig. 6—is a fragmentary detail in cross section showing the engagement of the lower sliding pivot with the bearing strip fixed to the sill.

In detail the construction illustrated in the drawings, to which corresponding reference characters have been applied, includes the sash composed of the top and bottom rails 1 and 2, the side stiles 3 and 4, and the heavy plate glass 5, fixed therein. The window frame or casement includes the usual stool 6, attached to the sill 7, the sides 8 and 9, and the overhead lintel 10, with associated trimming, studding and headers as usual.

The sash is supported upon the vertical, sliding pivots 11 and 12. The pivot 11 is fixed in the plate 13, and revolves in the sleeve 13′ fixed in the sash rail 2. The plate 13 is provided with the upstanding flanges 14—14, and the groove 15 in which the riveted end of the pivot is set. The plate slides upon the strip 16 fixed to the sill, and has a length equal to the distance that the pivot moves laterally on the sill. The upstanding inturned edge of the strip 17, overhangs the contiguous flange of the plate, to prevent the accidental displacement of the plate, and the consequent disengagement of the sash with the window sill. The sash and sill are rabbeted to inclose the pivot mechanism, and render the joint between sash and sill weather tight when closed.

The sash is provided at the top with the pivot 12, revolving in the sleeve 18 fixed in the top rail 1, and riveted in the sliding shoe 19, engaging the groove 20 in the top lintel 10. The top rail 1 abuts the stop 21, to make a weather tight joint at this point.

The top and bottom pivots 11 and 12 are set in the sash alinement, off the center, preferably about one-third or one-quarter of the distance from the sides. This placement of the pivots makes it necessary for a portion of the sash to swing into the room, when the sash is in the open position; necessitating the reduction of the height of the sash to permit it to swing over the stool stop at the bottom, and the stop 21 at the top; for this reason the sash rails are cut away at 22 and 23, from the edge to the point where the sash projects beyond the stop 21 and the stool stop 6′. The height that the sash is thus reduced is replaced by the blocks 24 and 25, respectively fixed in the casement at the top and bottom, corresponding to the said reduced portions. These blocks are provided with the thin metal weather strips 26 and 27 fixed thereto, and laying against the outside of the sash rails 1 and 2 from the edge, to and overlapping the pivot centers, to render the outside of the sash weather tight, in its engagement with the casement, for that distance that the sash is reduced in height as described. The block 25 is provided with the gutter groove 25′, to catch and discharge any seepage past the strip 27. The sash is also provided with the molding 25″ across its width, to shed any water draining down the outside of the sash.

The controlling arms 28 and 29 are pivoted to the top and bottom sash rails, preferably about the center of the width of the sash, the opposite ends being pivoted to the adjustable plates 30, attached to the sill 7 and the top jamb 10, of the casement. These arms control the swing of the sash, tending to retain it in the position it may be placed, by resisting any wind pressure, or other moving force applied to the whole surface of the sash; the arms being pivoted at the center of the sash the wind pressure would be equal on both sides of the said pivot and would therefore be neutralized. These controlling arms, with the casement and the sash form a triangulation of leverage tending to lock the sash, in any position placed, against the friction of the sliding pivots 11 and 12, in their respective engagements with the casement.

To render the engagement of the sash with the casement at each side weather tight, the sides 8 and 9 are provided with the rabbeted stops 31 and 32 facing in opposite directions, to match the similarly rabbeted stiles 3 and 4 of the sash, in the closed position. The sash is locked in the closed position by the latch 33, pivoted on the sash and engaging the fixture 34 fixed on the casement.

Having thus described this invention what is claimed and desired to secure by Letters Patent is:

1. A window including a casement; a sash; pivots on said sash fixed near the center thereof, and slidably engaging said casement; and controlling arms pivoted to said sash near the center thereof and to said casement.

2. A window including a casement; a sash; vertical pivots fixed to the top and bottom of said sash near the vertical center thereof, and slidably engaging said casement; controlling arms having one end pivoted near the vertical center of said sash, and the other end pivoted to said casement.

3. A window including a casement; a sash rotatable in said casement; pivots fixed on said sash between the side and the center thereof, and slidably engaging said case-

ment; reduced portions on said sash extending from near said pivots to the edge of the sash; filling blocks on said casement corresponding to said reduced portions on the sash, in the closed position; and controlling arms pivoted to said sash and said casement.

4. A window including a casement having a sill, a top lintel and top and bottom stops; sliding pivots engaging said sill and top lintel; a sash engaging said pivots and having reduced portions adapted to swing past said stops; blocks fixed in said casement corresponding to said reduced portions of the sash and having weather strips thereon laying against said sash in the closed position; and controlling arms pivoted to said sash and said casement.

5. A window including a casement having a sill, a top lintel, and top and bottom stops; pivots slidable on said sill and top lintel; a sash engaging said pivots, and having reduced portions adapted to swing past said stops; blocks fixed in said sill and top lintel, corresponding to said reduced portions of the sash; rabbeted stops fixed to opposite sides of the casement and facing in opposite directions, to match the similarly rabbeted sides of the sash; and controlling arms pivoted to said sash and said casement.

In testimony whereof, I have hereunto set my hand this 24th day of February, 1914.

ARTHUR C. SOULE.

Witnesses:
BALDWIN VALE,
H. A. BULLARD.