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CASEMENT WINDOW HINGE

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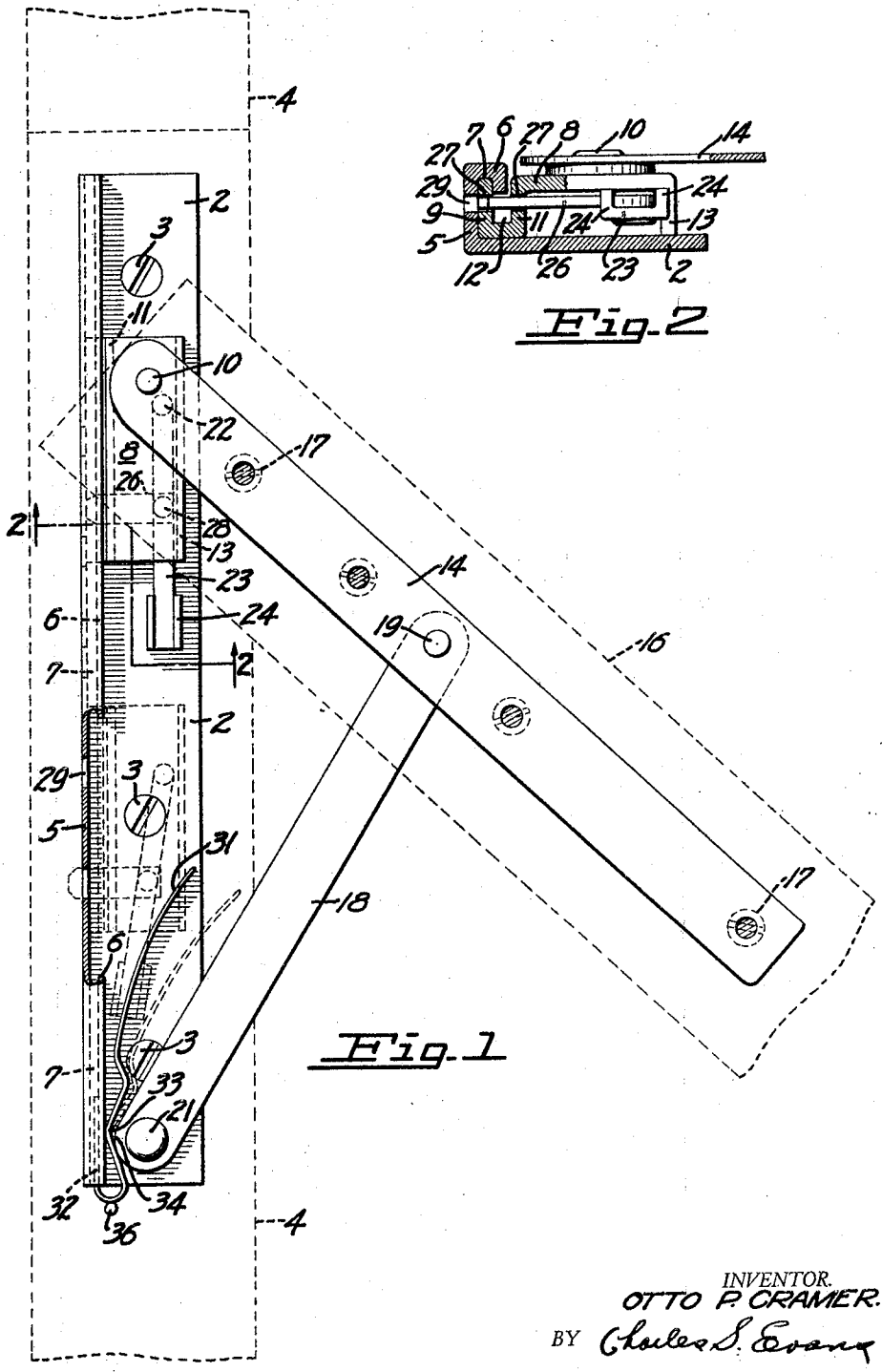


Fig. 1

Fig. 2

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CASEMENT WINDOW HINGE

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My invention relates to a casement window hinge, and particularly to such a hinge having a latch operable therewith.

It is among the objects of my invention to provide a hinge which will maintain an open window in a selected position.

A further object of my invention is the provision, in a hinge of the character described, of means for automatically locking the window in open position in the event that it is blown open by wind due to failure to engage the manual latching means, or to accidental disengagement of the latching means.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of my invention. It is to be understood that I do not limit myself to this disclosure of species of my invention, as I may adopt variant embodiments thereof within the scope of the claims.

Referring to the drawing:

Figure 1 is a plan view of the hinge embodying my invention; portions of a casement and casement frame being shown in dotted lines to indicate the operative relationship.

Figure 2 is a vertical sectional view taken in a plane indicated by the line 2—2 of Figure 1; the figure being drawn to a larger scale than Figure 1 to show the construction more clearly.

In terms of broad inclusion the casement window hinge of my invention comprises a base plate adapted to be secured to a window frame and having a shoe slidably arranged thereon. A swing plate, adapted to be secured to the window sash is pivoted on the shoe and has a link pivotally connecting it with the base plate. A latch is provided in the shoe for locking the shoe to the base plate at selected intervals, and means are provided for automatically engaging the latch at a predetermined position.

In greater detail, the hinge of my invention comprises a base plate 2 which is adapted to be secured, by means of the screws 3, to a casement frame, indicated in the drawing by dotted lines 4. The base plate is preferably formed with a side wall 5 rising vertically therefrom and provided with a downwardly hooked flange 6, spaced from the side wall to form a guide groove 7.

A shoe 8, slidable along the base plate, has formed along one of its sides a U-shaped flange, comprising the walls 9 and 11 spaced apart to form a channel 12 in which the flange 6 of the base plate is adapted to slidably engage. The upper portion of the wall 9 engages in the groove 7 and completes an interlocking joint between the base plate and the shoe. It will be seen that, since the guide groove 7 is inverted and the flange 6 does not completely fill the channel 12, the chance of dirt, paint or other foreign matter accumulating on the sliding surfaces is reduced to a minimum. The other side of the shoe is provided with a flange 13 extending downwardly to bear on the base plate 2. Due to the fact that the bearing surface of this flange is narrow, the possibility of matter collecting thereon, which would hinder its free movement, is extremely remote.

A swing plate 14 is provided, and is pivotally mounted on the shoe 8 by means of a suitable pivot pin, such as the rivet 10. The swing plate is adapted to support a window sash, indicated in the drawing by the dotted lines 16; connection between the casing and swing plate being effected by the screws 17. A link 18 is provided, and is pivotally connected to the swing plate and the base plate by suitable pins, such as the rivets 19 and 21.

Means are provided for locking the shoe to the base plate at selected intervals. Pivotally secured in the shoe by means of the pin 22, and extending outwardly therefrom, is a lever 23 provided at its outer end with a pair of upturned flanges 24, which serve to form a handle by which the lever is actuated.

A latch bolt 26, slidably positioned in apertures 27 in the walls 9 and 11 of the shoe, is pivotally engaged with the lever 23 thru a pin 28. Suitable apertures 29 adapted to receive the bolt 26 are formed in the side wall 5 and are spaced at intervals therealong. Manual operation of the lever 23 causes the latch bolt to pass into engagement with one of the apertures 29 to effectively lock the shoe in a selected position.

Means are provided for automatically engaging the latch bolt at a predetermined position, and means are further provided for removably positioning the automatic means. A resilient arm 31 is positioned adjacent the outer limit of travel of the shoe, and is provided with a hooked portion 32 which engages in the groove 7 between the side wall 5 and the flange 6. When the sash 16 is swung outwardly the shoe 8 is caused to slide along the base plate until the end of the lever 23 impinges against the arm 31, whereupon the lever is deflected to effect automatic engagement of the latch bolt in the outermost of the base plate apertures 29. The final position of the shoe is indicated by dotted lines in Figure 1. The engagement of the lever 23 with the arm 31 is timed to occur before the latch bolt is aligned with the final aperture 29, so as to flex the arm outwardly, thereby creating a thrust upon the latch bolt which causes it to snap into engagement with the aperture when correlation between the two is attained.

Each time the arm is flexed a considerable force is exerted thereon tending to dislodge the hooked portion 32 from its seat. To preclude such dislodgement a concavity 33 is formed in the arm 31 adapted to seat over the rounded end 34 of the link 18. In positioning the arm it is inserted between the base plate flange and the end of the link and forcibly driven until it snaps into place. As an added precaution a nail 36 may be driven into the window sill immediately behind the arm 31 to hold it in place.

The casement hanger above described is capable of being readily installed in any type of swinging casement, whether it be hung to swing horizontally or vertically. The features of a manually operable latch by means of which the casement may be locked in a selected position, and of automatically functioning latching means, for securing the casement in open position, make the hanger of my invention desirable, especially in localities where strong winds prevail. A window employing this hanger may be left open in unlatched position, with the knowledge that should a sudden strong breeze arise, the outward swing of the casement caused thereby will actuate the automatic latching means and prevent further buffeting thereof with its consequent damage to glass, frame and other component parts.

The absence of loose parts which would tend to rattle is another important feature. It is also to be noted that the positioning of the latch apertures 29 prevents their being clogged by accumulations of dirt. A further important feature is the fact that loosening of screws will not block the action of the hinge. These features of construction, coupled with the fact that the working parts are concealed and protected from the elements as well as from the accumulation of paint and grit, make the casement hanger of my invention particularly desirable in practical applications.

I claim:

1. A casement window hinge comprising a base plate, a shoe slidably arranged on the base plate, a swing plate pivotally connected to the shoe, a link pivotally connecting the base plate and the swing plate, a latch for locking the shoe to the base plate at selected intervals, and means for automatically rendering the latch operative at a predetermined position.

2. A casement window hinge comprising a base plate having a plurality of apertures, a shoe slidably arranged on the base plate and having an aperture registrable with a selected aperture in the base plate, a swing plate pivotally connected to the shoe, a link pivotally connecting the base plate and the swing plate, a latch on the shoe adapted to project thru the shoe aperture, manually operable means for extending the latch thru the shoe aperture and a selected base plate aperture, and means for automatically extending the latch thru the shoe aperture and a base plate aperture to lock the shoe in a predetermined position.

3. A casement window hinge comprising a base plate, a shoe slidably arranged on the base plate, a swing plate pivotally connected to the shoe, a link pivotally connecting the base plate and the swing plate, a latch on the shoe, a lever operatively connected with the latch, and an arm on the base plate for engaging the latch lever to actuate the latch.

4. A casement window hinge comprising a base plate, a shoe slidably arranged on the base plate, a swing plate pivotally connected to the shoe, a link pivotally connecting the base plate and the swing plate, a latch on the shoe, a lever operatively connected with the latch, and a resilient arm on the base plate for engaging the latch lever to actuate the latch.

5. A casement window hinge comprising a base plate, a shoe slidably arranged on the base plate, a swing plate pivotally connected to the shoe, a link pivotally connecting the base plate and the swing plate, a latch on the shoe, a lever operatively connected with the latch, and an arm removably positioned on the base plate for actuating the latch lever to actuate the latch.

6. A casement window hinge comprising a base plate having apertures therein, a shoe in interlocking engagement with the base plate and slidable therealong, a swing plate pivotally connected to the shoe, a link pivotally connecting the base plate and the swing plate, a latch on the shoe adapted to engage with said apertures, manually operable means for engaging the latch with a selected aperture, and a resilient arm removably mounted on the base plate for automatically engaging the latch with an aperture to dog the shoe at the outer limit of its travel.

In testimony whereof, I have hereunto set my hand.

OTTO P. CRAMER.