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CASEMENT WINDOW STRUCTURE

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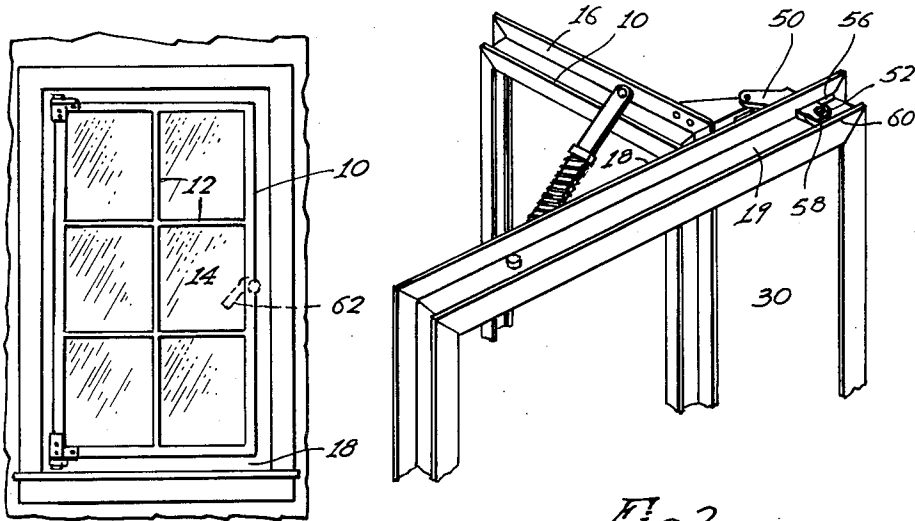


Fig. 1.

Fig. 2.

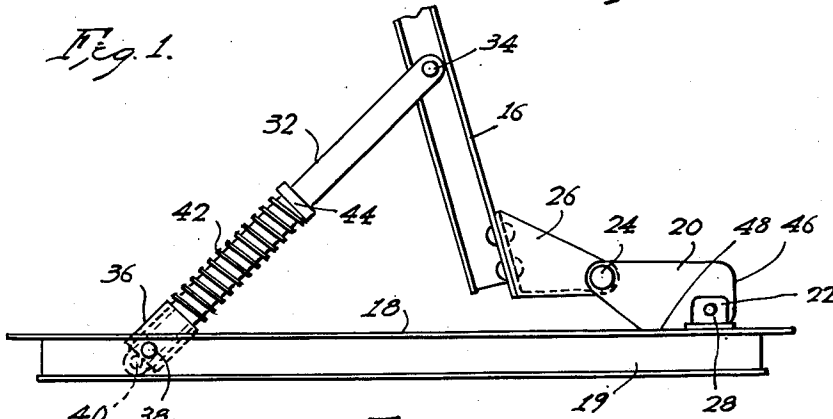


Fig. 3.

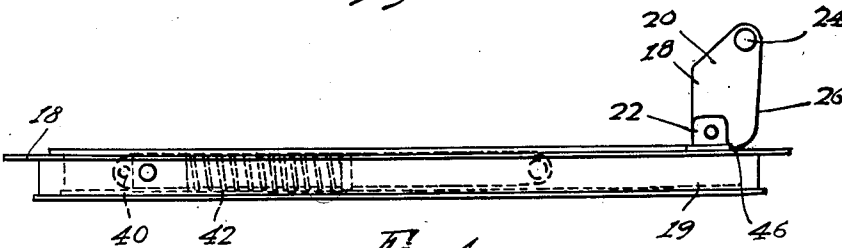


Fig. 4.

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CASEMENT WINDOW STRUCTURE

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2 Claims. (Cl. 20-53)

This invention relates to casement windows. More particularly, the invention relates to casement windows which are hinged to swing outwardly with hinges which carry the sash a substantial distance away from the window jamb to permit cleaning of both sides of the window panes from the inside of the building.

The inside of a casement window can readily be washed from the inside of a building and many attempts have been made to swing the windows outwardly into a position where the outside of the window may be cleaned from the inside of a building. A commonly used type of hinge does provide a gap between the window jamb and the hinged edge of the window sash but the gap is quite narrow and is not satisfactory for cleaning the outside of a window from the inside of a building. Certain windows use a sliding ledge which is designed to give a better opening, but which has inherent mechanical difficulties which my invention overcomes.

The primary object of the present invention is to provide a hinge mounting for a casement window which will permit the sash to be easily opened and closed and will support the sash in opened position where it may easily be cleaned from the inside of the building.

Another object of the invention is to provide guides in the hinge mounting of a casement window which steady and facilitate the opening and closing operation of the sash and act to hold the sash open and to keep the sash in a tightly closed position.

A further object of the invention is to provide a hinge mounting for a casement window in which the hinge parts act as stops for the full open and closed positions of the sash to prevent the placing of strain on the hinge pivots.

With these and other objects in view, the invention consists in the hinge mounting for a casement window as hereinafter illustrated and described and particularly defined in the appended claims.

The various features of the invention are illustrated in the accompanying drawings in which:

Fig. 1 is a view in front elevation of a casement window to which the hinge mounting of the present invention is applied;

Fig. 2 is a perspective view of a casement window in open position with one hinge mounting of the present invention thereon;

Fig. 3 is a top plan view of an opened casement window in a window jamb with the preferred hinge mounting of the window in the jamb; and

Fig. 4 is a top plan view of an edge of a casement window in closed position in the window jamb showing the preferred hinge mounting of the window.

The casement windows to which the present invention are preferably adaptable are metal casement windows which are made of steel or aluminum. Referring to the drawings, the sash is made up of an outer rail member 10 with cross bars 12 for holding the glass 14. The window sash is hinged by a hinge at the top and the bottom of the window. Each of these hinges has the same construction and arrangement so that Figs. 2, 3

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and 4 shows only the top hinge. The sash rails 10 each have an outwardly projecting flange 16 which bears against a flat face 18 of the window frame 19. The flange 16 extends entirely around the sash and the flat face of the frame extends entirely around the window opening so that when the window sash closes, a flat surface contact is made to make a broad closing fit in the frame.

The hinge is made up of two parts consisting of a hinge arm 20 which is pivotally connected to a bracket 22 attached to the flat face 18 of the window jamb 19. The outer end of the arm 20 is pivotally connected by a pin 24 to an arm 26 fixed on the flange 16 of the sash rail. The pivot 28 of the hinged arm 20 is positioned a substantial distance from the edge of the frame so that when the hinge is moved from the position shown in Fig. 4 to the position shown in Fig. 3, the sash will be moved over to substantially the central portion of the opening in the window frame and the sash will stand at approximately right angles to the face of the frame. In this position shown in Figs. 2 and 3, a wide space 30 is provided through which a person may extend an arm to wash the outside of the sash while standing in the inside of a room in which the window is located. When the sash is moved from open to closed position, or vice-versa, the arm 20 moves about the hinge pins 28 and 24 in order to bring the sash from the position shown in Figs. 2 and 3 to the position shown in Figs. 1 and 4.

To cause the sash to open and close smoothly without binding, guide arms 32 are pivotally connected to the window rail 10 by a pin 34 and to the rail 19 of the frame by a hinged keeper 36. The guide 32 is slidably mounted in the keeper 36 and the keeper is pivoted to the frame by a pin 38. A stop pin 40 is mounted in the end of the guide to limit the movement of the guide in the keeper. A flat coiled compression spring 42 is mounted around the guide 32 and held between the keeper 36 and a stop 44 fixed on the guide. As the window is moved into and out of position in the jamb, the guide slides through the keeper 36 to provide for the complex hinged movement of the hinges. The arrangement of the hinge arms and the guides allows the sash to be moved easily and steadily from an open to closed position and vice-versa and the spring 42 allows the guide arm 32 to assume the necessary position in providing for the hinge movement. The guides act to accurately position the sash against the frame and the springs 42 at the top and bottom of the window yieldingly press the sash flange 16 against the face 18 of the jamb to maintain a close contact of the sash with the window frame.

It will be noted that the movement of the sash outwardly and toward the center of the opening of the window frame is all obtained by the pivotal movement of the hinge arms 20 and 26 and there are no sliding parts to stick or get out of order.

The hinge arm 20 has a flat face 46 which rests against the face of the frame 18 when the window is closed and a flat face 48 which rests against the frame face 18 when the window is open. These two faces limit the movement of the hinge and prevent the hinge pivots from being subjected to undue strain when the sash is opened and closed.

In Fig. 2 is shown a modified form of the frame hinge arm 50 which is hinged by a pin 52 to the sill 19 of the window frame. The hinge arm 50 extends through a slot 56 in the sill or header, as the case may be and has a flat face 58 which engages a flange 60 on the frame member 19 when the window is moved into open position. When the window is in closed position a flat face on the arm 50 similar to the arm face 48 engages the top of the face 18 to limit the movement of the hinge arm.

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While the present invention has special application to metal casement windows, it is obvious that the hinge mounting of the invention may be applied to a wooden casement sash in a wooden window frame. The attachment of the hinges to a wooden window and a metal frame would have a similar construction.

To facilitate the movement of the sash from the inside, a locking handle 62 is pivoted to the rail 10 of the sash on the inside which also serves for locking the sash in closed position in the frame.

An incidental advantage of my invention is that it gives improved room ventilation because of the window being more nearly centralized when open.

The preferred form of the invention having thus been described, what is claimed as new is:

1. The combination with a window frame and sash fitted into the frame, of a hinge supporting the frame in the sash in such manner as to move the sash laterally as the window opens, the hinge comprising an arm-like hinge member pivoted at one end on the window frame and having surfaces thereon which engage the frame to limit the swinging movement of said member to an arc of 90° from a position parallel with the plane of the window frame to a position perpendicular to such plane, a second hinge member fixed on the exterior of the sash and projecting normally from the plane of the sash, the projecting end being pivotally secured to the free end

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of the first member, and a resiliently-extensible link pivoted to the frame at one of its ends at a point on the frame intermediate the side of the frame opposite the one on which the hinge is mounted and the middle of the frame, said link having its other end pivotally secured to the sash intermediate the two vertical edges of the sash.

2. The combination with a window frame and sash as defined in claim 1 in which the extensible link is comprised of two slidably engaged sections having abutments thereon between which a compression spring is confined, said link acting to yieldably resist opening of the sash from a closed position.

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