

April 22, 1941.

E. A. KERN

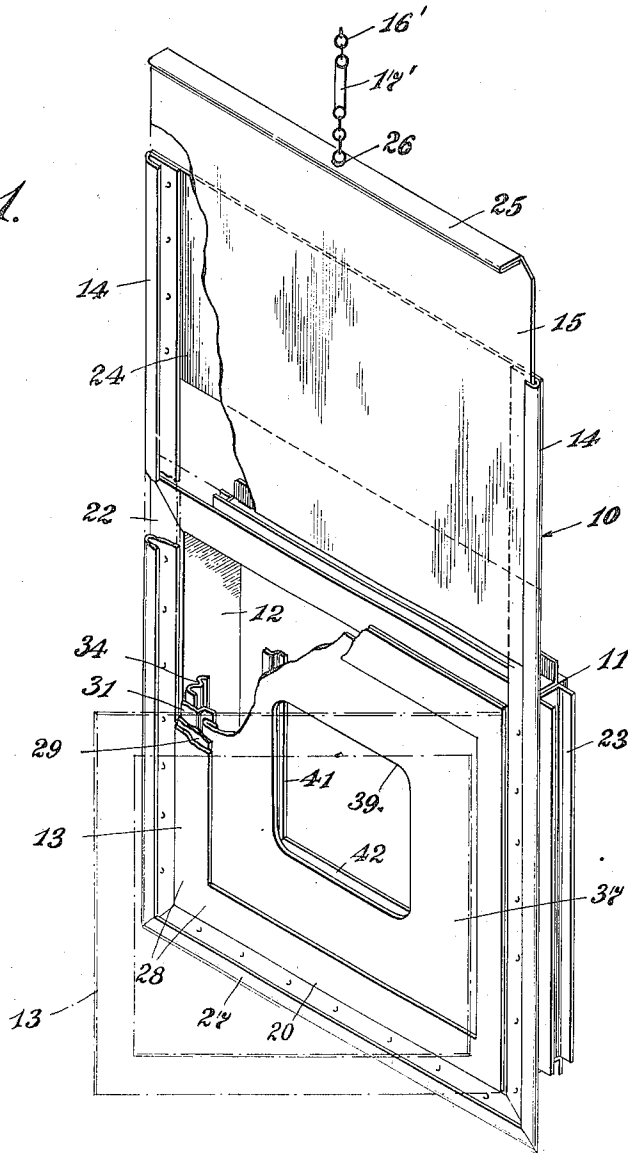
2,239,104

COMBINED FIRE SHUTTER AND OBSERVATION WINDOW FOR
MOTION PICTURE PROJECTION BOOTHS

Filed Feb. 7, 1938

2 Sheets-Sheet 1

Fig. 1.



INVENTOR.

Emil A. Kern

April 22, 1941.

E. A. KERN

2,239,104

COMBINED FIRE SHUTTER AND OBSERVATION WINDOW FOR
MOTION PICTURE PROJECTION BOOTHS

Filed Feb. 7, 1938

2 Sheets-Sheet 2

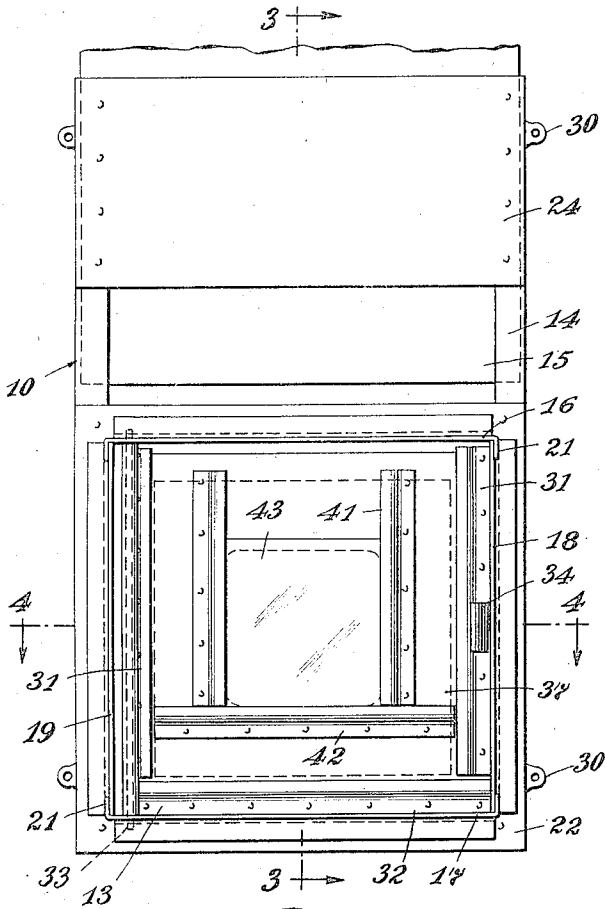


Fig. 2.

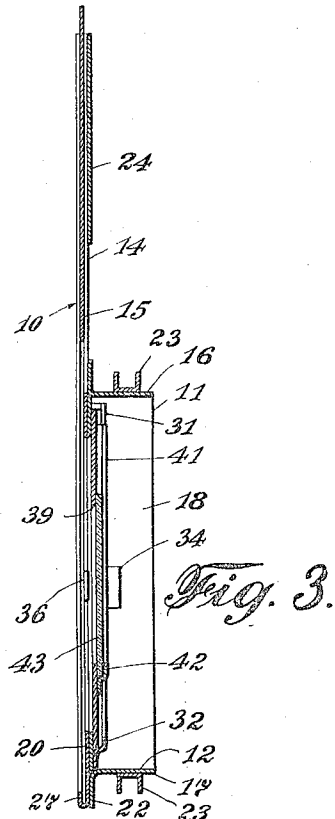


Fig. 3.

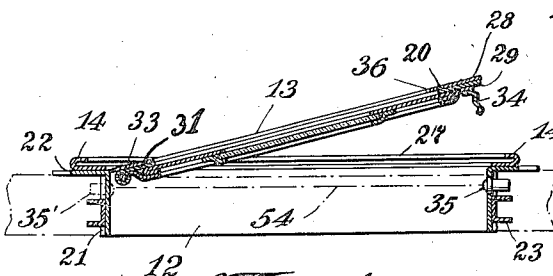


Fig. 4.

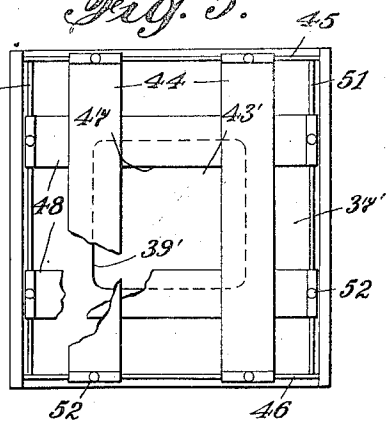


Fig. 5.

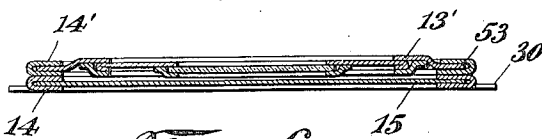


Fig. 6.

INVENTOR.

Emil A. Kern

UNITED STATES PATENT OFFICE

2,239,104

COMBINED FIRE SHUTTER AND OBSERVATION WINDOW FOR MOTION PICTURE PROJECTION BOOTHS

Emil A. Kern, South Orange, N. J.

Application February 7, 1938, Serial No. 189,112

3 Claims. (Cl. 189-45)

This invention relates to window constructions and more particularly to casements adaptable for use in motion picture projection booths or similar locations.

The improved construction comprises essentially a frame which may be embodied in the wall of a motion picture projection booth or the like, and which is adapted to hold glass panes of sufficient size to allow the projected beam to pass therethrough while effectively insulating the theatre against extraneous noises incident to the operation of the projection equipment. The improved construction also embodies means for supporting a fire door or shutter which is normally held suspended above the window by a fusible link.

The principal objects of the present invention are to provide a window frame of simplified and improved construction which may be embodied directly in the wall of a motion picture projection booth; to provide in such a frame improved means for supporting a safety door capable of being released at high temperatures so as to automatically drop into a position to prevent smoke or fire from penetrating into the theatre or auditorium; to provide improved means for gaining access to the window for maintenance or replacement purposes; and to provide means whereby a window pane of various sizes may be interchangeably supported within the frame. These and other objects of the invention will become more readily apparent from the appended drawings in conjunction with the following specification.

In the drawings:

Fig. 1 is an isometric view of the improved casement with the safety door shown held in suspended relation to the window;

Fig. 2 is a rear elevational view of the improved frame;

Fig. 3 is a longitudinal cross-sectional view taken on the line 3-3 of Fig. 2;

Fig. 4 is a cross-sectional view taken on the line 4-4 of Fig. 2;

Fig. 5 is a detail elevational view of a modified window insert or panel; and

Fig. 6 is a cross-sectional view similar to Fig. 4 of a modified window construction.

The improved casement 10 comprises a generally rectangular casement frame 11 provided with the usual window opening 12. A sash 13 is detachably, pivotally, or otherwise held against the frame 11 so as to cover the opening 12 when in the closed position, and to expose the opening when in the open position. A pair of ver-

tically extending guides 14 are rigidly secured to the frame 11, projecting upwardly therefrom at either side. A shutter, blind or safety door 15 is slidably held within the guides but is normally retained in an elevated position as shown in Fig. 1 by means of a chain 16' and a fusible link 17'.

Referring again to the drawings, the window includes a casement frame 11 preferably comprising four sheet-metal plates secured perpendicularly to one another as by spot welding to form a rectangular frame. As shown in Fig. 2 the plates may consist of horizontal upper and lower members 16 and 17 respectively and vertical side members 18 and 19. The respective plates or frame members are secured together at the corners in any convenient manner as for example by providing the ends of certain of the members with overlapping ears 21 which may be welded, brazed or similarly secured to the ends of the adjoining members. The respective members 16, 17, 18, and 19 are provided with a bent reinforcement, which in the assembled position forms a continuous flange 22 which stiffens the casement frame and forms a flat surface to which the guides 14 may be attached. The frame is intended to be secured in any suitable manner to or against the wall of a room, theatre projection booth or the like. The window may be held against the inner surface of the wall in any suitable manner such as with screws or bolts, or the frame 11 may be provided with integrally secured bonding members such as channels 23 by which the frame may be secured directly to the wall. The sash is intended to open inwardly as shown by broken lines in Fig. 1 so that the outer portion of the window pane may be easily cleaned by the operator.

A pair of vertical guide members 14 are spot welded or similarly secured to the front surface of the vertical portions of the flange 22 so as to form a pair of parallel tracks along which the safety door 15 may slide. The guide members 14 extend above the top of the casement frame 11 and are reinforced near their upper extremity by a spacer plate 24 which may be spot welded to the guides 14. The members 14 preferably comprise sheet metal strips bent into the form of channels. The blind or safety door 15 is composed preferably of fire-resistant material such as sheet metal, slidably mounted within the guides 14. The safety door 15 terminates at its upper extremity in a forwardly bent flange 25 provided at its midpoint with an aperture 26 through which a chain 16' or similar retaining

device may be passed. The chain 16' includes a fusible link 17' which is adapted to melt at a predetermined temperature so as to release the safety door and allow it to fall downwardly along the guides 14 to its lower position, whereby the safety door covers the opening in the sash 13 and thereby prevents the penetration or infiltration of smoke or fire into the auditorium. In its downward motion, the safety door 15 is arrested by a bottom strip 27, similar in shape to the guides 14, which strip is supported by the lower portion of the flange 22.

The sash 13 comprises a rectangular frame 20 of sheet metal corresponding closely in its outline to the shape of the opening 12. The inner edges of the guides 14 and of the bottom strip 27 are spaced slightly away from the inner contour of the opening 12 so as to form an abutting shoulder about the opening in the casement frame 11 against which the sash closes. The sash frame 20 is constructed of flat metal strips 23 which may be mitered at the corners and secured together in any convenient manner to form a rectangular frame, or the frame may be formed of a single section of metal. The sash frame is lined with a second series of strips 29 similar in size and shape to the strips 23, welded or similarly fastened thereto so as to form a reinforced frame.

The sash is provided with means for securing therein a pane of window or optical glass which may be either approximately of the size of the opening in the sash frame or of considerably smaller size for mounting within a panel which in turn is detachably secured within the sash frame. Vertical slideways 31 are secured to the outer surface of the respective vertical members 28 of the sash frame as by spot welding or the like to retain the window pane in position and to permit the pane to be slidably removed as for cleaning or replacement. The slideways 31 as shown in Figs. 1, 2 and 4 comprise bent metallic or other suitable strips forming a groove or channel on the opposite sides of the sash. A horizontal stopping strip 32 of similar design is secured in any convenient manner along the outside surface of the lower sash member 29 and limits the downward motion of the sash-pane or panel.

The sash frame 20 is hinged or otherwise removably supported within the casement frame 11 as by projecting a vertical hinge pin 33 between the members 16 and 17, close to one vertical edge of the window as shown in Fig. 4. The reinforcing strip 29 adjacent to the pin is curved around the same to form the hinge body. A catch 34 consisting of a bent strip of metal is welded or otherwise secured to the slideway 31 on the side opposite the hinge. The catch 34 is adapted to engage a spring-loaded ball type retainer 35 fastened to the member 16 with the ball projecting so as to engage the catch 34. A sash pull or knob 36 of any suitable design may be attached to the inner portion of the sash frame to assist in opening the window.

If desired a relatively large pane of glass or other similar transparent material may be inserted within the slideways 31 so that the entire area within the sash frame 20 is available for window purposes. For example, if the casement window is installed within a projection booth of the type employed in theatres, the entire sash opening may be occupied by glass so as to provide unrestricted view by the operator for observation purposes. Where a plurality of windows

of the type described are employed within such a projection booth one or more of the windows may be employed for projecting therethrough the motion picture beam or a spot light as desired.

Under such circumstances it is desirable that the transparent portion of the window be restricted in its size to the requirements of the projection apparatus. Accordingly it has been found advantageous under such circumstances to restrict a relatively large portion of the opening in the sash frame by substituting an opaque panel 37 for the previously described window pane which panel is provided with a relatively small central aperture across which a sheet of transparent material extends.

The opaque panel 37 preferably comprises a sheet metal mask of unitary construction, the outer configuration of which corresponds closely with the shape and size of the window pane. The vertical edges may be lapped backwardly as shown in Fig. 1 so as to provide smoother edges and so as to allow the panel to conform more closely with the groove formed by the slideways 31. The panel 37 is provided with a relatively small central aperture 39 along the edges of which vertical retaining members 41 and a horizontal retainer 42 are fastened. The retaining members may be of any suitable design capable of permitting a pane of glass or similar transparent material to be detachably held in position adjacent to the panel so as to extend across the opening 39. As shown in the drawings the retaining members comprise bent angle strips which form a slideway for a small sheet 43 of glass or like material.

Accordingly if it is desired to substitute such a panel 37 for a large section of glass, the sash is swung inwardly into partly open position as illustrated in full lines in Fig. 4 and in broken lines in Fig. 1. At this time the window or the panel may be interchangeably mounted within the slideways 31 simply by lifting one from its normal position and sliding the other in place. If the panel is employed to permit the use of a relatively small opening 39 it is possible to interchange the small pane 43 held across the opening so as to permit the use of transparent material of various colors or in certain circumstances to permit the use of an opaque slide to replace the pane 43. The pane 43 may be detachably removed by opening the sash to the position shown in Fig. 4 and simply sliding the pane upwardly along the retaining members 41.

Under certain conditions it may be desirable to alter the size and relative position of the opening 39 in the panel 37. This may be accomplished as shown in Fig. 5 by providing a sash insert comprising a panel 37' having an opening 39' therein. A pane of glass 43' is attached in any convenient manner so as to cover the opening 39'. A pair of vertically extending masks 44 are supported closely adjacent to the panel 37' as by means of horizontally extending rods 45 and 46 which permit the masks 44 to move sideways to define the vertical walls of the effective aperture 47. A similar pair of horizontally extending masks 48 are slidable along vertical rods 49 and 51 so as to permit regulation of the horizontal confines of the effective aperture 47. Machine screws or similar means 52 may be employed to hold the masks 44 and 48 in predetermined position. Although the aperture 47 in Fig. 5 is shown concentrically disposed with respect to the opening 39' it will be understood that the position of the aperture 47 as

well as its size may be varied by properly positioning the respective members 44 and 48.

Mounting-lugs 30 may be secured to the sides of the frame as shown in Figs. 2 and 4, so that the frame may be supported directly against the wall as by mounting-screws. Such lugs may serve as the sole means of support in the event that it is desired to eliminate the members 16, 17, 18, and 19 and their associated bonding members 23 comprising the frame 11.

One form of the invention in which the members surrounding the rectangular opening 12 have been eliminated is shown in Fig. 6, wherein the entire frame is supported by lugs 30, welded or similarly secured thereto. In this modification, use is made of the usual guides 14 for slidably receiving the shutter 15, illustrated in its lower position. A sash 13', similar in construction to the sash 13, is provided with offset track members 53 for sliding engagement with a second set of guides 14' which are secured against the inner face of the respective guides 14, but are shorter in length so that the sash 13' may be removed by lifting it above the guides 14'. Accordingly the hinge 33 is not required, the sash opening and closing by vertical motion, and avoiding the shutter 15 by the offset relation of the track members 53.

The hinge 33 may be eliminated from the form of the invention shown in Fig. 4, if desired, by providing a second snap retainer 35' on the side opposite the retainer 35, as shown, and by providing a corresponding catch 34 on the sash 13. A stop strip 54 may be secured to the frame to assist in aligning the sash 13 when it is inserted. The advantage of this form of construction lies in the fact that the sash is either in fully closed or fully open position and cannot obstruct the path of the shutter 15. The insert shown in Fig. 5 may be employed with any of the modifications described.

Other modifications of the hereinbefore described invention will suggest themselves to one skilled in the art without departing from the spirit of the invention or sacrificing its advantages.

I claim:

1. In combination, a face flanged rectangular frame, parallel guides along opposite face flanges and extending beyond the frame, a slidable frame closure member in said guides movable to positions exposing or concealing the opening of the rectangular frame, a transparency frame hinged in the opening of the rectangular frame flush with the face flanges and opening only in the direction of said slidable frame closure member whereby said transparency frame is locked closed by the closing of the slidable frame closure member.

2. In combination, a face flanged rectangular frame, parallel vertical guides along opposite face flanges and extending beyond the frame, a gravity closing slidable frame closure member in said guides movable to positions exposing or concealing the opening of the rectangular frame, fusible means normally suspending said member in a position to expose the frame opening, a transparency frame hinged in the opening of the rectangular frame flush with the face flanges and opening only in the direction of said slidable frame closure member whereby said transparency frame is locked closed by the closure of the slidable frame closure member when its fusible suspending means releases it.

3. In combination, a face flanged rectangular frame, parallel guides along opposite face flanges and extending beyond the frame, a slidable frame closure member in said guides movable to positions exposing or concealing the opening of the rectangular frame, a transparency frame having one open side and hinged in said opening of the rectangular frame flush with the face flanges and opening only in the direction of said slidable frame closure member, a transparency in said frame rendered non-removable when the frame is in the closed position, said frame also being locked against opening movement by the closing of the slidable frame closure member.

EMIL A. KERN.