July 25, 1944. T. T. TUCKER 2,354,489

BLACK-OUT MEANS

Filed April 7, 1942 3 Sheets-Sheet 1

FIG. 1.

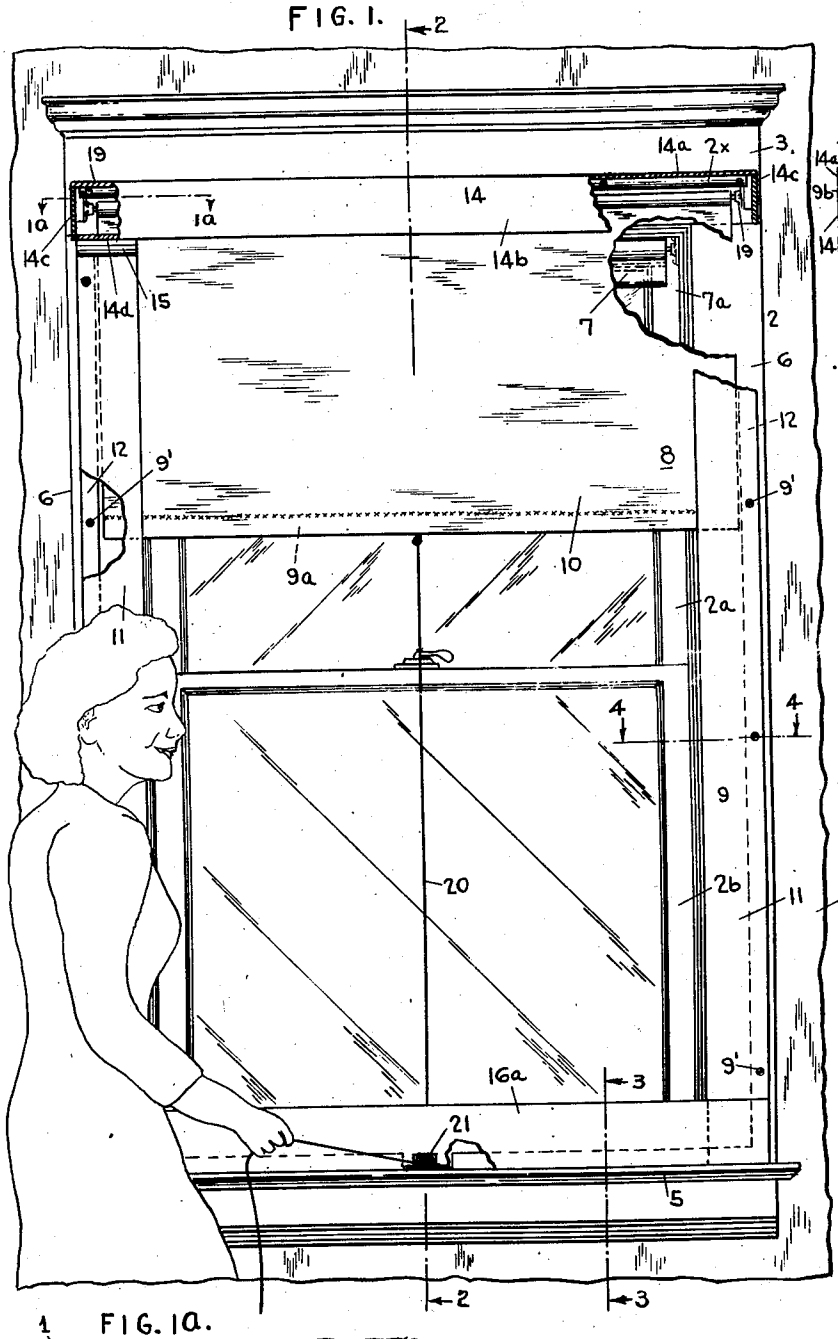


FIG. 2.

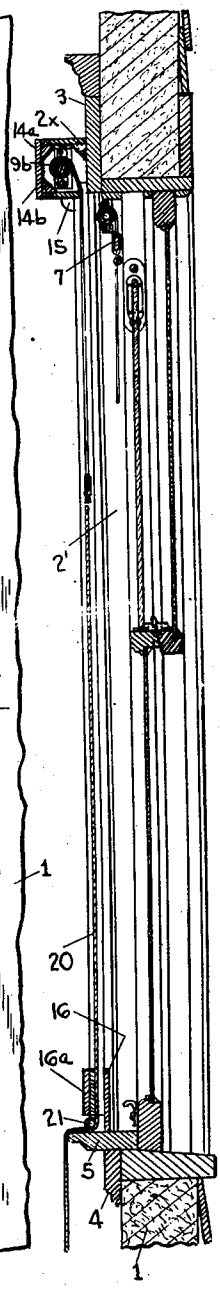
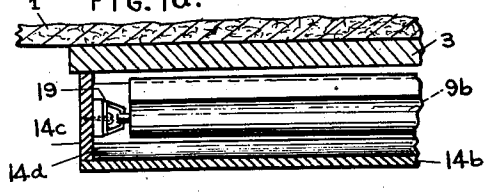


FIG. 1a.



INVENTOR.
THOMAS T. TUCKER.

BY Geo. B. Pitts

ATTORNEY.

July 25, 1944. T. T. TUCKER 2,354,489

BLACK-OUT MEANS

Filed April 7, 1942 3 Sheets-Sheet 2

FIG. 4.

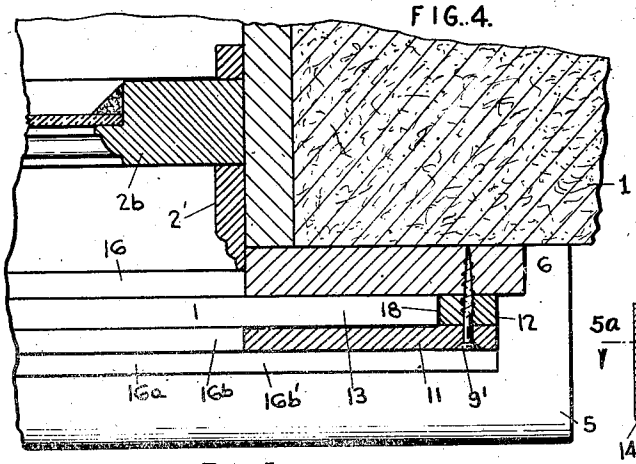


FIG. 5.

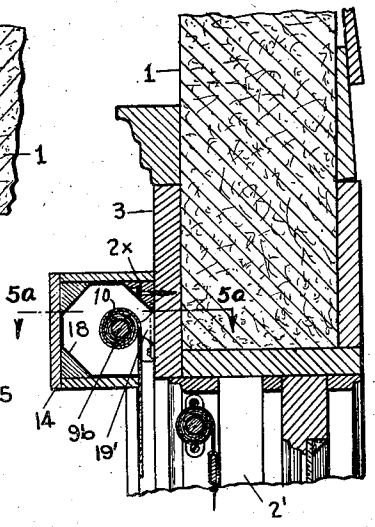


FIG. 5a.

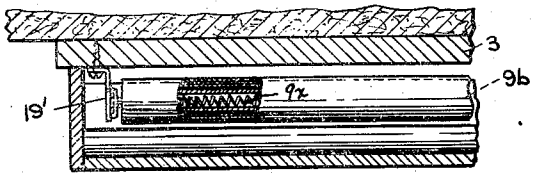


FIG. 4a

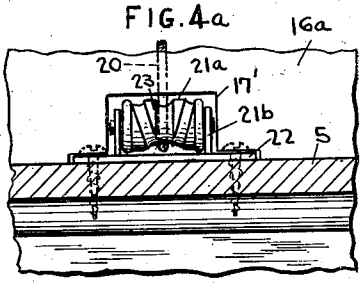


FIG. 6.

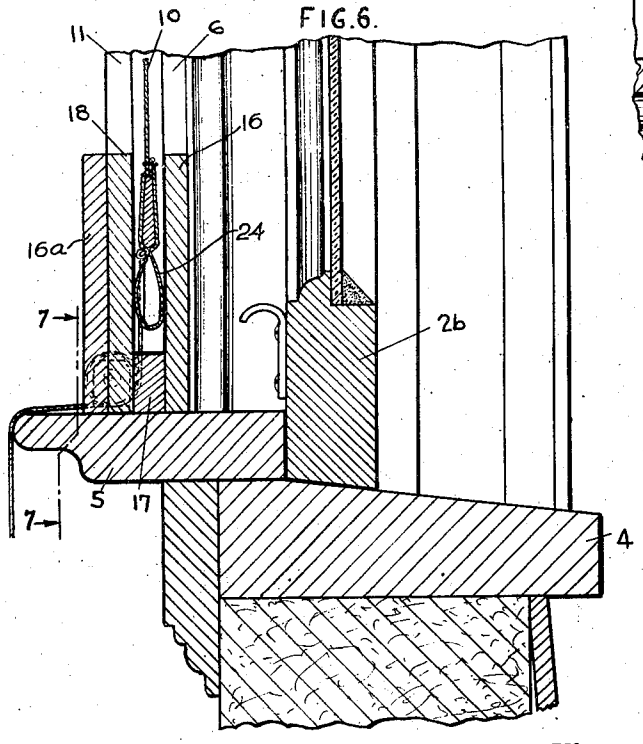
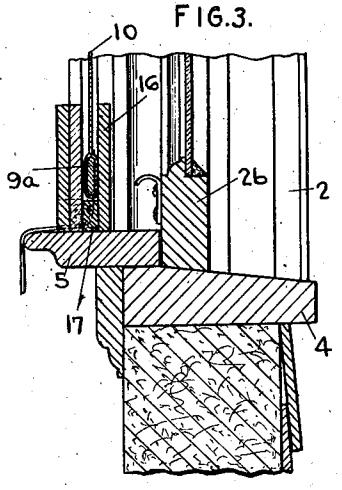


FIG. 3.



INVENTOR.
THOMAS T. TUCKER.

BY Geo. B. Pitts

ATTORNEY.

July 25, 1944. T. T. TUCKER 2,354,489

BLACK-OUT MEANS

Filed April 7, 1942 3 Sheets-Sheet 3

FIG. 9.

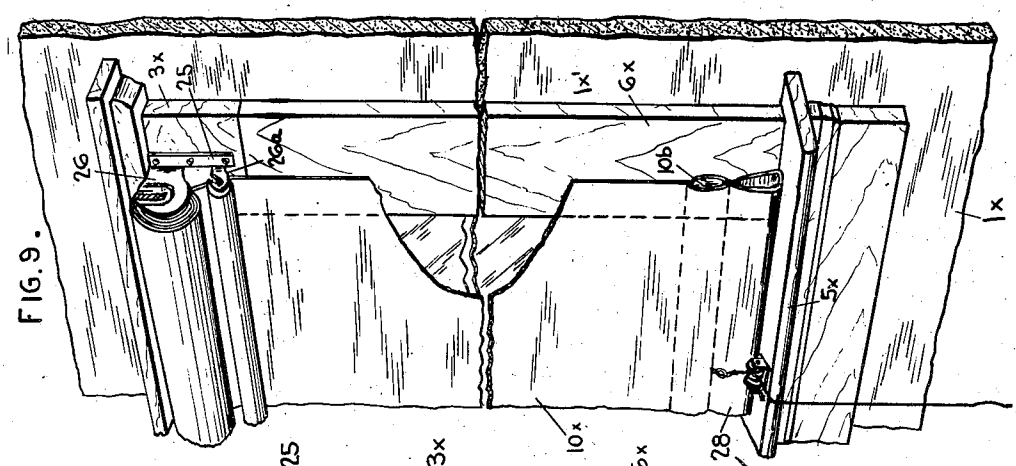


FIG. 8.

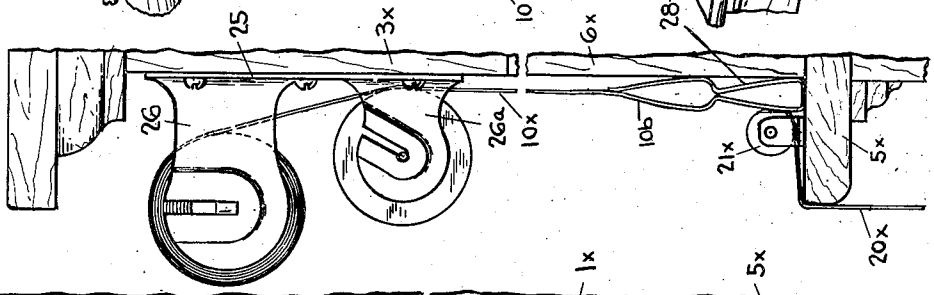
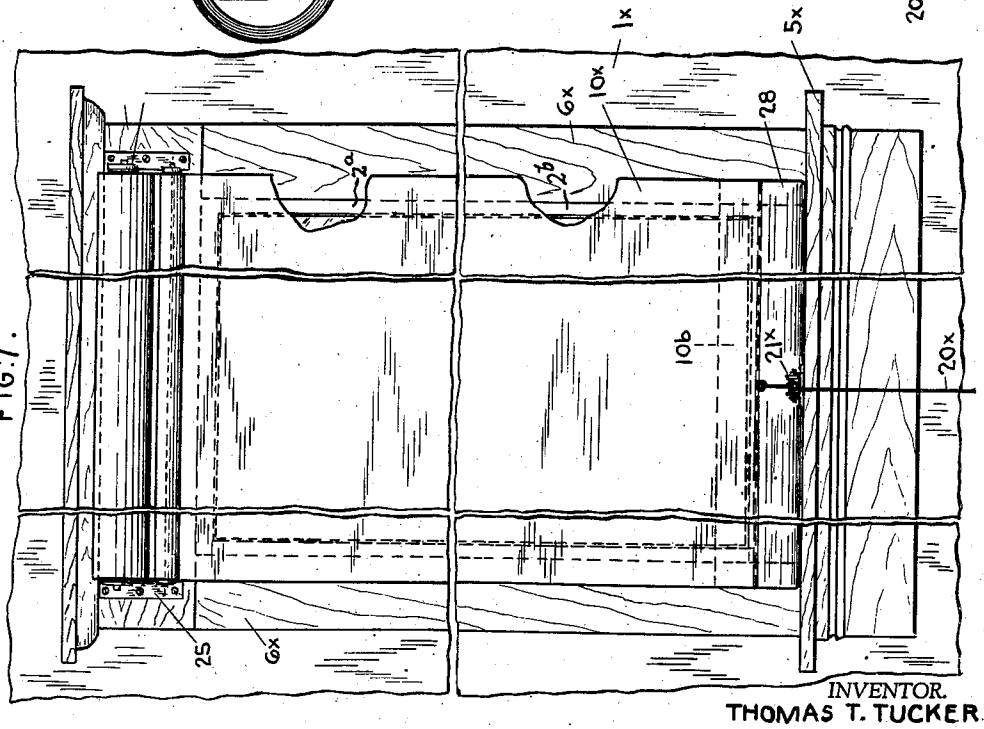


FIG. 7.



INVENTOR.
THOMAS T. TUCKER.

BY Geo. B. Pitts

ATTORNEY.

Patented July 25, 1944 2,354,489

UNITED STATES PATENT OFFICE

2,354,489

BLACK-OUT MEANS

Thomas T. Tucker, Atlanta, Ga.

Application April 7, 1942, Serial No. 437,969

5 Claims. (Cl. 160—23)

This invention relates to black-out means for openings in the walls of a building, whereby light rays originating in the building are completely shut off or trapped; that is, each opening is sealed against the passage or escape of light or light rays so that danger of visibility of light resulting from a light source within the building, from a position exteriorly thereof, is entirely eliminated.

One object of the invention is to provide an improved black-out means adapted to be related to an opening in the wall of a building, whereby light or light rays originating from a light source or due to reflection within the building are trapped to prevent passage thereof through the opening.

Another object of the invention is to provide an improved black-out means for an opening comprising a support adapted to be removably attached to the walls of the opening, guide means and an opaque shade mounted for movement between the guide means and walls.

Another object of the invention is to provide an improved black-out means comprising a skeleton frame adapted to be removably related to the facing walls of an opening and a pull-down opaque shade, the frame having side portions forming with the facing walls closed guide-ways for the shade, whereby the opening is sealed against the passage of light therethrough when the shade is in pull-down position.

A further object of the invention is to provide an improved black-out means for a window, comprising a frame and an opaque roll shade, the frame being constructed to co-operate with the sides of the window to enclose the shade roll and the side portions of the shade when the latter is in pull-down position.

Other objects of the invention will be apparent to those skilled in the art to which my invention relates from the following description taken in connection with the accompanying drawings, wherein

Fig. 1 is an elevational view showing a fragmentary portion of a building wall having a window therein and a black-out means embodying my invention;

Fig. 1*a* is a fragmentary section on the line 1*a*—1*a* of Fig. 1;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Figs. 3 and 4 are fragmentary sections on the lines 3—3 and 4—4 respectively of Fig. 1;

Fig. 4*a* is a fragmentary front elevation of parts shown in Fig. 1, enlarged;

Fig. 5 is a fragmentary sectional view showing a modified form of construction;

Fig. 5*a* is a section on the line 5*a*—5*a* of Fig. 5;

Fig. 6 is a fragmentary sectional view showing another modified form of construction;

Fig. 7 is an elevational view showing a fragmentary portion of a building wall having a window therein and a different embodiment of my invention in black-out means;

Fig. 8 is an end elevation of the parts shown in Fig. 7; and

Fig. 9 is a fragmentary perspective view of the parts shown in Figs. 7 and 8.

In the drawings, 1 indicates the wall of a building having therein an opening in which is mounted a frame 2. The disclosed embodiment of my invention is shown associated with a frame for a window; accordingly, the frame 2 consists of side members 2' provided with guides for the upper and lower sashes 2*a*, 2*b*, of the window, a cross member 3 secured to the wall 1 at the upper end of the frame 2, a base member 4, to which is secured a sill 5, and side members 6 extending from the sill 5 to the cross member 3. 2*x* indicates a supporting or alining device suitably secured to the cross member 3; the purpose of this device will be later set forth.

7 indicates a suitable shade mounted on a roller, the opposite ends of which are provided with supporting elements engaging suitable brackets 7*a*, which are secured to the side members 2' of the frame 2. As will be understood, one of the supporting elements non-rotatably engages the adjacent bracket 7*a* and is connected to one end of a spring (not shown), the opposite end of the latter being anchored within the roller, so that by relative rotative movement between the roller and the supporting element (to which the spring is secured), the roller may be put under tension and locked by a dog pivoted on the roller and engaging an abutment on the supporting element; this arrangement permitting the shade to be lowered any desired distance and raised.

8 indicates as an entirety a black-out means adapted to be removably attached or mounted on either the exterior or interior side of the frame 2, the latter position being shown as being the preferred arrangement. The black-out means 8 comprise a frame indicated as an entirety at 9 and an opaque shade 10 having a width greater than the spacing between the side members 6 of the frame 2, so that the lateral portions of the shade 10 overlap the side members 6 when in black-out position, as shown in dotted lines in Fig. 1. The frame 9 consists of the following: 11 indicates side members each having on its inner face, preferably adjacent its

outer edge, a strip 12 extending from end to end of the side member and arranged to engage the adjacent side member 6 when the frame 9 is secured in position, as later set forth. Each strip 12 is suitably secured to the side member 11 by glue, screws or other devices. As will be observed from Fig. 4, each side member 11 and the strip 12 attached thereto co-operate with the adjacent sash frame side member 6 to form a channel 13 closed along its outer side. The strips 12 have a predetermined thickness, whereby the resulting channel 13 will slidably accommodate the opposite ends of the rod or reinforcing member 9a incorporated in the free or outer end of the opaque shade 10 during movement of the latter. 14 indicates a casing disposed at the upper ends of the side members 11 and rigidly connected thereto by means of blocks 15. The casing 14 preferably extends at its opposite ends to the outer side edges of the side members 11 and consists of a top wall 14a, arranged to rest on the supporting device 2x in engagement with the cross member 3, a front wall 14b, end walls 14c and a bottom wall 14d. As shown in Fig. 2, these walls are related to the cross member 3, when the frame 9 is in position, so as to enclose the roller and shade 9 thereon. As shown, the bottom wall 14d is of less width than the top wall 14a, so that its inner edge is spaced from the cross member 3 to form a slot or opening through which the opaque shade 10 moves when operated to and from the black-out position. The inner edge of the bottom wall 14d is disposed substantially flush with the inner walls or faces of the channels 13, so that the slot or opening between this wall and the cross member 3 is equal in width to the channels 13 to permit the rod 9a to pass therethrough. 16, 16a, indicate inner and outer guards extending between the side members 11 and having between them a spacer 17 extending along their lower edges to form a pocket for the outer or free end of the shade 10 when the latter is operated to black-out position. As shown, the guards 16, 16a, extend to a point above the lower horizontal bar for the window sash 2b. The guards 16, 16a, are rigidly secured to the spacer 17 in any desired manner. The outer guard 16a preferably consists of two sections 16b, 16b', secured together face to face, the inner section 16b fitting between the side members 11 and suitably secured at its opposite ends thereto. The outer section 16b' extends beyond the opposite ends of the section 16b so as to lap over the lower ends of the side members 11 to which it is rigidly secured in any desired manner. The inner guard 16 is reduced in length, as compared with the outer guard section 16b', so as to fit within the sash frame 2 and engage the inner side edges of the side members 6 thereof. As will be understood, the thickness of the spacer 17 corresponds to that of the strips 12 so that the pocket formed between the guards 16, 16a, will accommodate the rod 9a.

The inner walls or faces of the side members 11, strip 12, casing 14 and guards 16, 16a, are preferably coated with a light absorbing material such as black paint 18.

From the foregoing description it will be noted that the frame 9 is a unitary structure which enables it to be attached to and removed from the frame 2 as a unit; also, that it is constructed so as to be related to the frame 2, whereby the frame 2 and frame 9 co-operate with the opaque shade 10 to insure a black-out result. The frame 9 is removably secured to the frame 2 by screws 9' or other suitable devices. When the frame 9 is to be positioned, the supporting member 2x is first fixed to the cross member 3 at such elevation above the sill 5, that the top wall of the casing 14 will engage the member 2x and the lower ends of the side members 11 will engage the sill 5. Thereafter the screws 9' are applied to secure frame 9 to the side members 11.

The black-out shade 10 is formed of suitable material or combination of materials to make it completely opaque so as to exclude the passage of light therethrough. In practice I have used a suitable textile material, such as cotton fabric, one or both sides thereof are coated with black paint. The shade 10 is wound on a suitable roller 9b, which is provided interiorly with a spring 9x (see Fig. 5a) for operating it in the wind-up direction, provided at its opposite ends with supporting elements, which engage brackets 19 preferably supported on the end walls 14c of the casing 14. As will be understood, one of the supporting elements is connected to the spring for the roller 9b and non-rotatively connected to the adjacent bracket, so that when the spring is put under tension it will normally tend to wind the curtain on the roller 9b. The free or outer end of the shade 10 is provided with a pull-down cord or chain 20, the outer end portion of which is arranged to be engaged by a clamping device, indicated as an entirety at 21, whereby, upon pull of the cord 20 and unwinding of the shade 10 from the roller 9b against the tension of the spring therefor, the cord may be secured to the clamping device and the shade held in pull-down position under tension. The clamping device 21 preferably consists of a roll 21a around which the cord 20 is reeved, the roll 21a being rotatably mounted at its opposite ends in standards 21b fixed to a base 22, which is suitably secured to the sill 5. The roll 21a is formed with a centrally disposed annular groove 23 and spiral grooves leading from the opposite sides of the annular groove and merging at the outer ends with the periphery of the roll, so that upon pulling the shade down and then guiding the cord into one of the spiral grooves (see Figures 1 and 4a), the latter becomes wedged between the roll 21a and base 22. The guard 16a and spacer 17 are cut-away, as shown at 17' to form an opening for the cord 20 and accommodate the clamping device 17 in position to permit engagement of the cord 20 therewith. It will be observed that the black-out shade 10 is of maximum width dependent upon the spacing of the strips 12, to permit the lateral portions of the shade to overlap a major portion of the side members; by preference, the shade is of such width that its opposite side edges move in close relation to the inner faces of the strips 12, this overlapping and close sliding relation serving to trap the light along the sides of the shade. When the shade 10 is pulled down to its full limit, its outer or free end enters the pocket formed by the guards 16, 16a, so that the light is trapped at the bottom of the window. As the casing 14 is connected to the side members 11 and fits against the cross member 3, it completely encloses the shade roller 9b to trap light at the upper end of the frame 9.

Figs. 5 and 5a illustrate a modified form of construction wherein the roller 9b for the black-out shade 10 is mounted on brackets 19' which are secured to the cross member 3. The brackets

19' are mounted in close relation to and below the supporting device 2x so that when the frame 9 is in position the casing 14 encloses the roller 9b and that portion of the shade wound thereon.

Fig. 6 illustrates a different modification wherein the outer or free end of the black-out shade 10 is provided with a light lock device or apron 24 co-extensive in length to the rod 9a. The device 24 is formed of flexible material, such as cotton fabric, of loop shape in cross section, being stitched to and depending from the shade material looped around the rod 9a. The material of the device 24 being flexible, it may be distorted and compressed into the bottom of the pocket between the guards 16, 16a, to effect a complete closing of the pocket, when the shade 10 is pulled down to substantially the limit of its movement.

It will be observed that the frame 9, as shown in Figs. 1 to 6, inclusive, consists of rectilinear sections whereby the material thereof may be readily cut to desired lengths and widths and then fabricated into the unitary structure. Where these sections are formed of wood (the material herein illustrated), each may be cut from ply-board, which insures lightness for easy handling, as well as rigidity throughout the frame.

Figs. 7, 8 and 9 illustrate a different embodiment of the invention. In these views, 1x indicates the wall of the building, 1x' indicates the frame in which the window sashes 2a', 2b', are mounted and comprising side members 6x, a cross member 3x at the upper ends of the side members and a sill 5x. 25 indicates supports suitably secured to the cross member 3x and each provided with upper and lower brackets 26, 26a, respectively alined with corresponding brackets provided on the other support 25, and arranged to support the lower bracket 26a above the lower side edge of the cross member 3x. 10x indicates the black-out shade formed of textile material and suitably painted to insure complete opaqueness. The width of the shade 10x is greater than the spacing of the side members 6x, whereby the lateral sides thereof lap over a wide portion of these members. The shade 10x is wound on a roller 10a which is provided at its opposite ends with supporting elements mounted in the alined brackets 26. As will be understood the roller 10a is provided interiorly with a spring (not shown), one end of which is anchored to the roller. The other end of the spring is secured to the adjacent supporting element (shown at 10a' in Fig. 8), which non-rotatably engages the adjacent bracket 26, so that by putting the spring under tension, by relative rotative movement between the roller and the supporting element and engaging the latter with the bracket 26, the roller will normally tend to wind the shade thereon. By preference, I provide dog and ratchet devices (not shown) between the roller and the element to which the spring is connected, to facilitate putting the spring under tension and mounting the shade roller on the brackets 26. The outer or free end of the shade 10a is provided with a cord 20x which is arranged to be engaged by a clamping device 21x mounted on the sill 5x. The clamping device 21x is similar in construction and operation to the clamping device 21. 27 indicates means for guiding the shade 10x when the latter is unwound from the roller 10a and pulled down into black-out position as shown in Figs. 7, 8 and 9 or re-wound thereon. The guide means 27 consists of a roller mounted at its opposite ends in the alined brackets 26a and arranged to guide and free to be rotated by the shade 10x when the latter is pulled down or raised. The inner side of the guide roller 27 is spaced from the cross member 3x a distance substantially equal to one-half the thickness of the rod 10b, so that during unwinding of the shade from the roller 10a the advancing portion thereof is guided into a predetermined relation to the cross member 3x and the clamping device 21x is so positioned on the sill 5x relative to the inner side of the roller 27, that when the cord 20x is pulled to effect a pull-down of the shade 10x the advancing portion of the latter will move in a plane parallel to the side members 6x; also, when the cord 20x is clamped by the device 21x, the latter will co-act with the guide roller to maintain the shade in this parallel relation to the side members 6x. It will be observed that when the shade 10x is moved into black-out position by a pull on the cord 20x the tension of the spring in the roller 10a is increased and the cord 20x is clamped by the device 21x with the spring in the roller 10a under tension normally tending to re-wind the shade on the latter, so that the shade is held taut between its roller and the clamping device, whereby the latter device and guide roller 27 are effective to hold the shade in close relation to the side members 6x and thus prevent any light rays from passing through the window at either side of the shade. To insure trapping of the light rays at the free end of the shade when in pull-down or black-out position, I provide on such end a light lock device 28, which is similar in construction to the device 24. When the shade 10x is operated to black-out position, its free end is moved into close relation to the sill 5x, the effect of which is to distort the device 28 and cause portions thereof to flatten out on the sill and thus seal the space between the latter and the rod 10b.

To those skilled in the art to which my invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope thereof. My disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

What I claim is:

1. A black-out means for an opening in the wall of a building, comprising an opaque shade on a spring operated roll adapted to be mounted above the opening and provided on its free end with a transverse rod, an enclosure for the shade roll, the lateral portions of said shade extending beyond the lateral sides of the opening when in a pull-down position, a unitary frame consisting of side channel members adapted to be removably secured to the building wall, a bottom channel member and an enclosure for the roll at the upper ends of said side channel members, said channel members extending a substantial distance inwardly around the edges of the shade when in pull-down position to hold the shade therebeneath and prevent the escape of light, the channels of said side channel members being connected at their upper ends with said enclosure, and a freely flexible apron normally of tubular form co-extensive in length to the width of said shade extending beyond said rod and engaging and lying in the bottom channel when said shade is in pull-down position.

2. A black-out means as claimed in claim 1 wherein is provided a flexible pull-down device connected to said rod, upper and lower devices engaging said shade and pull-down device, respectively, for guiding the shade during winding

thereof on said roller and unwinding of the shade therefrom, in close parallel relation to the faces of the wall, the upper device consisting of the inner edge on the bottom wall of said enclosure and the lower device consisting of a clamp adapted to be fixedly related to the wall below the opening and arranged to secure said flexible pull-down device against movement, whereby said shade is held taut throughout the length of the side channel members in opposition to the tension of the spring for said shade roll and said apron is held in compressed engagement with the sill of the opening.

3. In a black-out device for an opening in a building wall comprising an opaque shade on a shade roll adapted to be mounted on the wall above the opening therein, an alining device adapted to be fixed to the wall above said roll, side channel members adapted to be removably secured to the wall at opposite sides of the opening therein and extend along the latter, a bottom channel member connected to the lower ends of said side channel members, said channel members extending a substantial distance inwardly around the edges of the shade when the latter is in pull-down position to hold the shade in position, an enclosure for said roll secured to said side channel members and having a top wall engaging said alining device, the bottom wall of said enclosure being connected to said side channel members and providing an opening for the passage of said shade thereto, and a cross member spacedly connected to said bottom channel member and completing therewith the bottom channel to form therewith a light trap for the outer end portion of said shade when the latter is in pull-down position, the opposite ends of said cross member being adapted to engage the opposed and inner faces of the side walls of the opening and co-operate with said alining device to relate the channel members to the opening and the enclosure to said roll.

4. A black-out means for an opening in the wall of a building, comprising an opaque shade on a roll adapted to be mounted above the opening, the lateral portions of said shade extending beyond the lateral sides of the opening when in the pull-down position, a unitary frame consisting of side channel members adapted to be removably secured to the building wall, a bottom channel member and an enclosure for the roll at the upper ends of said side channel members, said channel members extending a substantial distance inwardly around the edges of the shade when in pull-down position to hold the shade in position and prevent the escape of light, the channels of said side channel members being connected at their upper ends with said enclosure, a cross member spacedly connected to said bottom channel member for completing therewith the bottom channel and forming a pocket into which the outer end of the shade projects when the latter is in pull-down position, said bottom channel member being formed with an opening, and a flexible device connected to the outer end of said shade and reeved through the opening formed in said bottom channel member for unwinding the shade from said roll.

5. In a device of the class described, a shade, a roll for mounting the upper end of the shade on and in close relation to a window frame, a loop in the shade adjacent to its lower end, a rod in said loop, means for securing said rod together with its loop against a portion of the window frame, and an apron extending beyond the loop and lying on the sill of the window frame when the shade is in pull-down position.

THOMAS T. TUCKER.