Aug. 8, 1939. V. E. HUFF 2,168,347

TROPICAL LOUVER

Filed Nov. 12, 1937 5 Sheets-Sheet 1

Fig. 1.

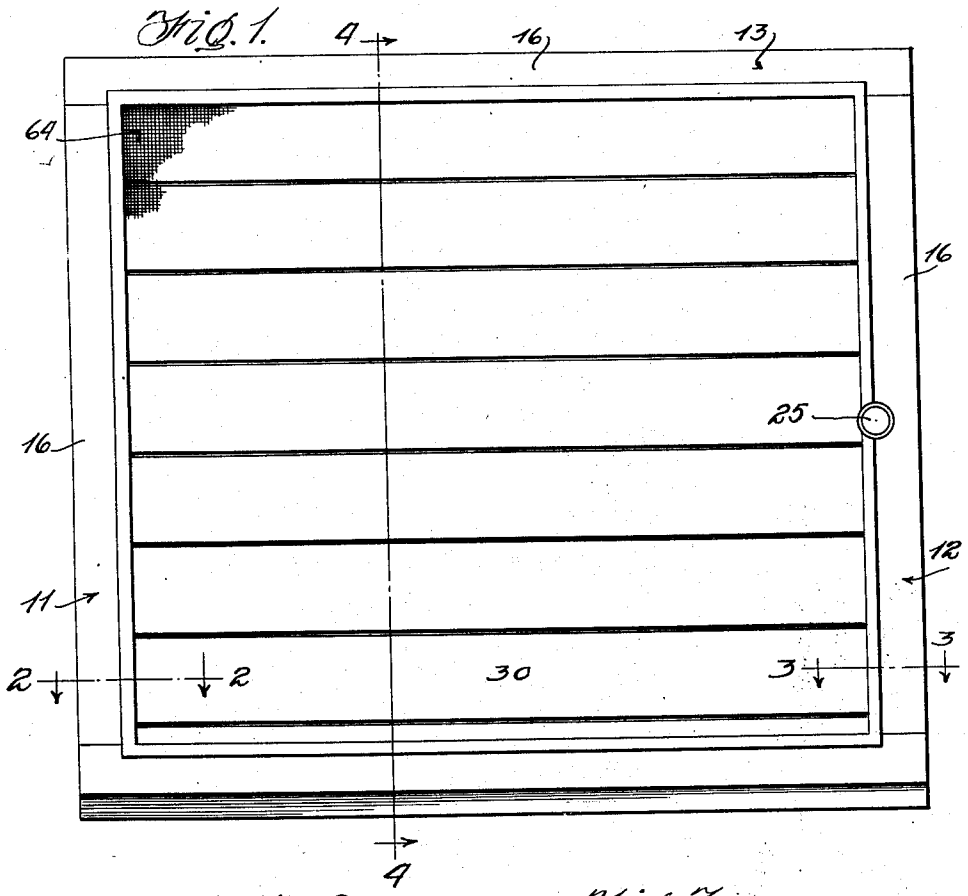


Fig. 2.

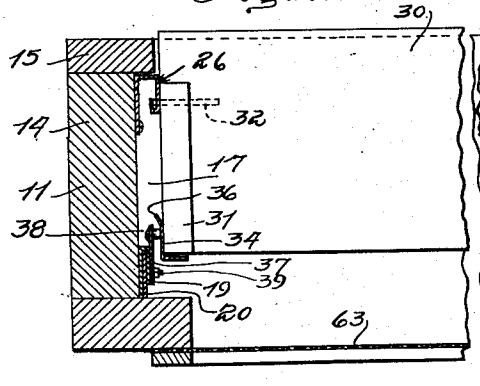
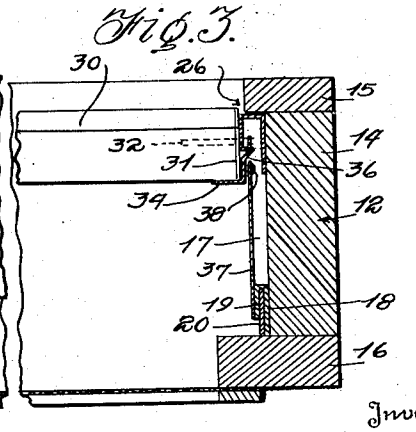


Fig. 3.



Inventor,

Van E. Huff

By Ivan P. Jackson,

Attorney

Aug. 8, 1939. V. E. HUFF 2,168,347

TROPICAL LOUVER

Filed Nov. 12, 1937 5 Sheets-Sheet 2

Fig. 4.

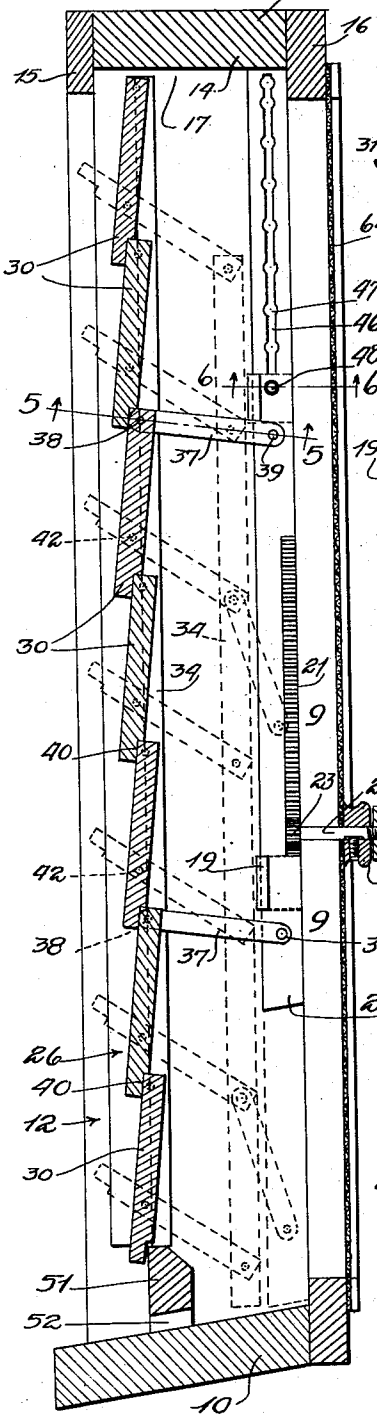


Fig. 5.

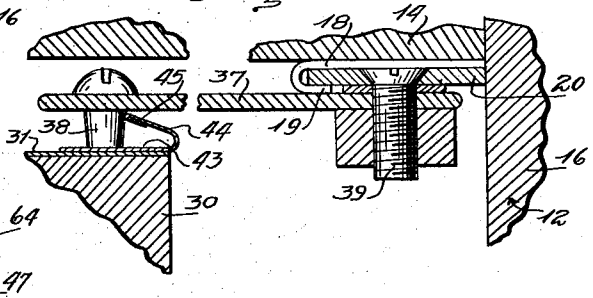


Fig. 7.

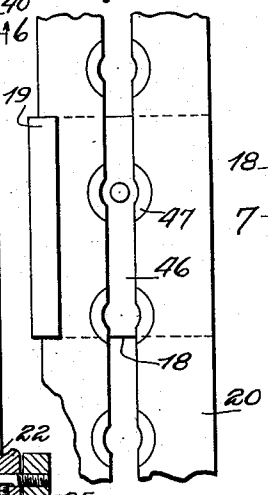


Fig. 6.

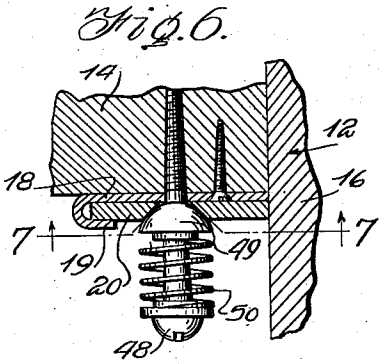


Fig. 8.

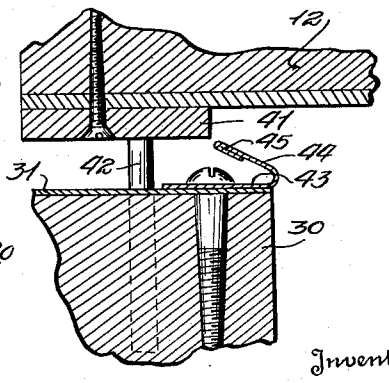
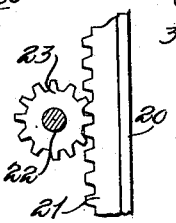


Fig. 9.



Inventor,

Vern E. Huff

By Ivan P. Jaskiff,

Attorney

Aug. 8, 1939. V. E. HUFF 2,168,347

TROPICAL LOUVER

Filed Nov. 12, 1937 5 Sheets-Sheet 3

Fig. 10.

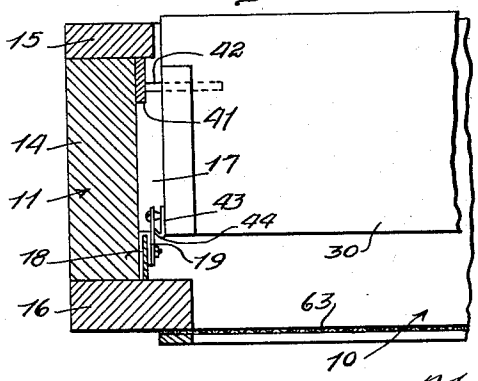


Fig. 11.

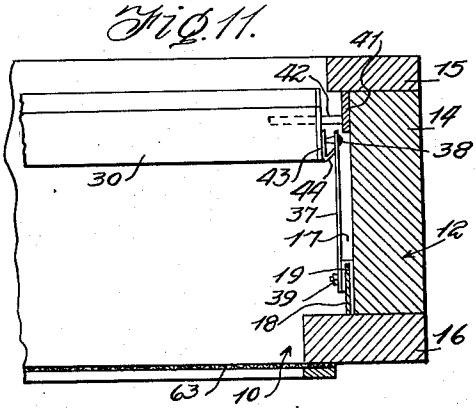


Fig. 12.

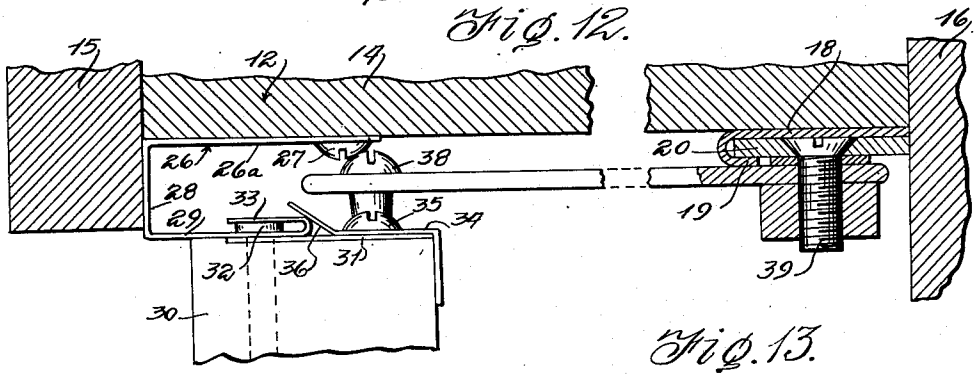


Fig. 13.

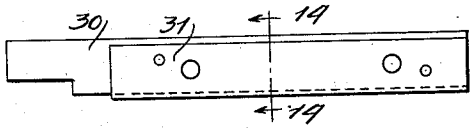


Fig. 16.

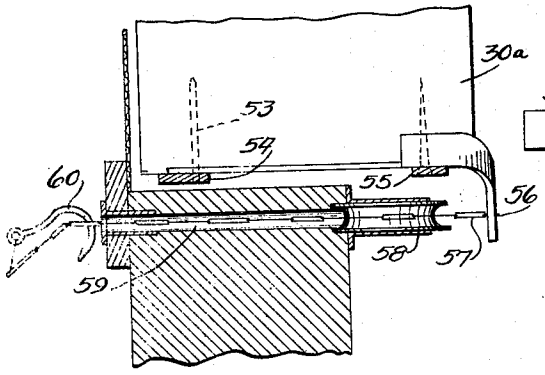


Fig. 17.

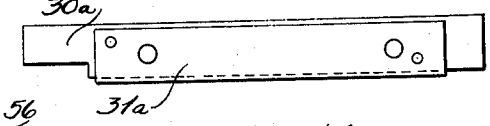
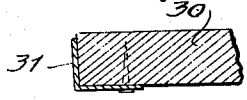


Fig. 14.



Inventor,

Van E. Huff

By Ivan P. Jacobs,

Attorney

Aug. 8, 1939. V. E. HUFF 2,168,347

TROPICAL LOUVER

Filed Nov. 12, 1937 5 Sheets-Sheet 4

Fig. 15.

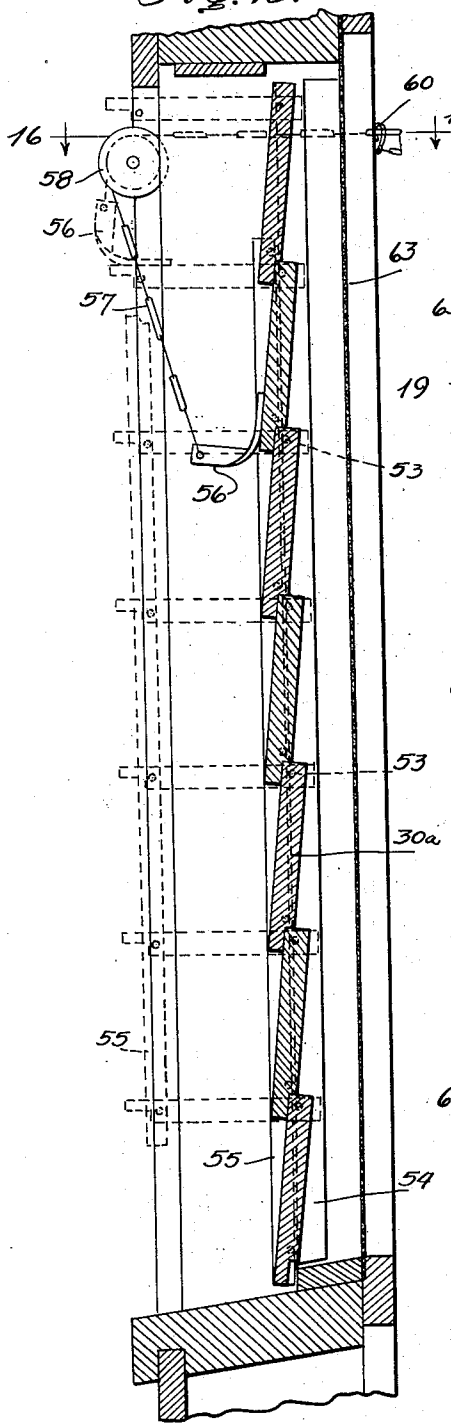


Fig. 18.

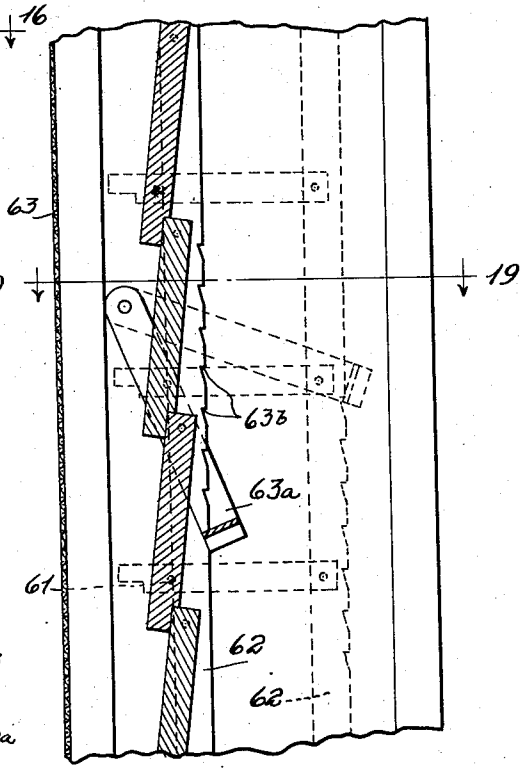
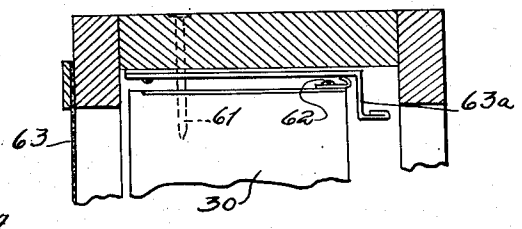


Fig. 19.



Inventor,
Van E. Huff,
By Ivan P. Dashoff,
Attorney

Aug. 8, 1939. V. E. HUFF 2,168,347

TROPICAL LOUVER

Filed Nov. 12, 1937 5 Sheets-Sheet 5

Fig. 20.

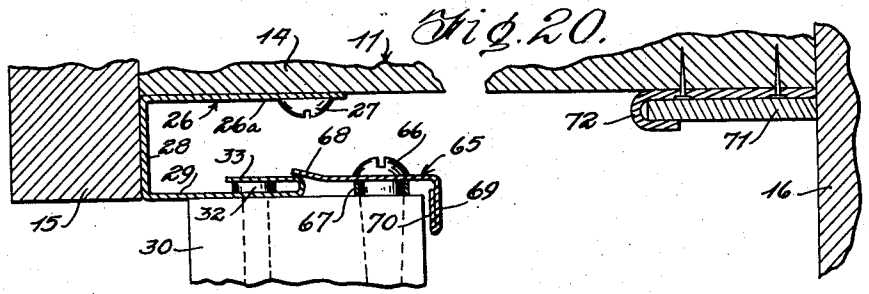


Fig. 21.

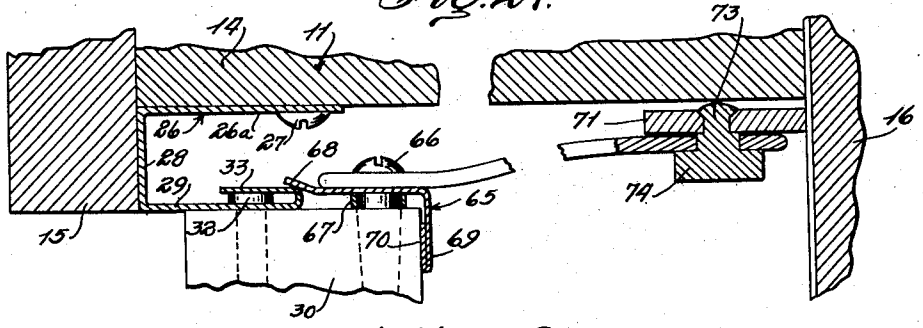


Fig. 22.

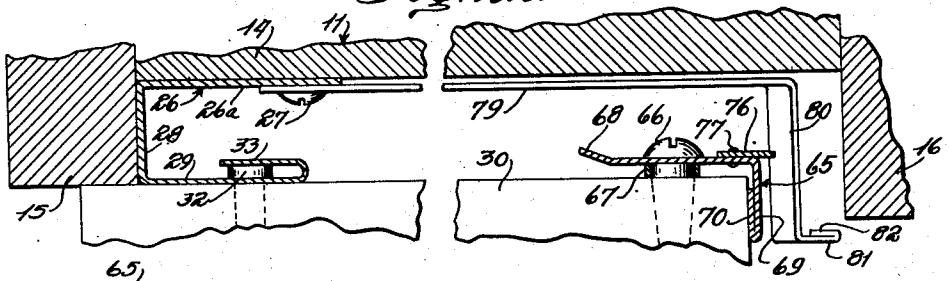


Fig. 23.

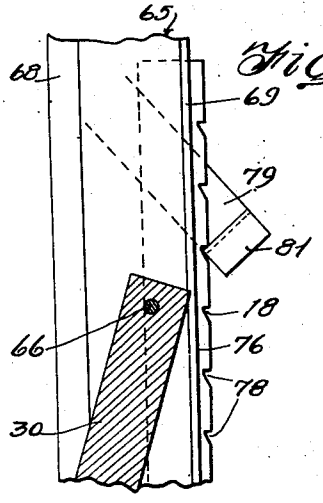
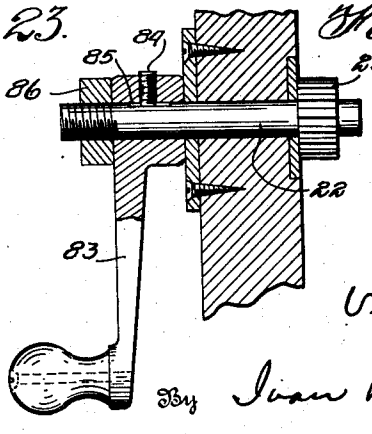


Fig. 24.



Inventor,
Van E. Huff
By Ivan P. Jacobs,
Attorney

Patented Aug. 8, 1939 2,168,347

UNITED STATES PATENT OFFICE

2,168,347

TROPICAL LOUVER

Van E. Huff, Miami, Fla.

Application November 12, 1937, Serial No. 174,235

6 Claims. (Cl. 20—62)

The present invention relates to louver constructions and more particularly to louvers designed for openings, such as window openings, porch openings, openings in doors and the like.

More particularly, the invention relates to a louver provided with pivotally mounted slats, and with means for opening and closing the same.

One important object of the present invention is to provide a louver particularly adapted for use in tropical climates to serve as storm protection.

A second important object of the invention is to provide a louver for use in such window openings as are unprovided with glazed sash, as well as an adjunct to the ordinary glazed sash window.

A third important object of the invention is to provide novel and improved means for securing the louver in fully open and closed positions and in desired positions between open and closed positions.

A fourth important object of the invention is to provide novel and improved operating means for such a louver.

A fifth important object of the invention is to provide novel and improved means for rendering such a louver storm and rainproof.

A sixth important object of the invention is to provide an improved and novel weather stripping arrangement for louvers.

With the above and other objects in view, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and particularly pointed out in the appended claims.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Figure 1 is an inside face view of a louver window constructed in accordance with one form of the invention.

Figure 2 is a fragmentary enlarged section on the line 2—2 of Fig. 1, but showing the louver open.

Figure 3 is a similar section on the line 3—3 of Fig. 1 and showing the louver closed.

Figure 4 is an enlarged section on the line 4—4 of Fig. 1 and showing the louver in closed position in full lines and in open position in dotted lines.

Figure 5 is a still more enlarged fragmentary section on the line 5—5 of Fig. 4 with the louver open, the view showing a modification of the weather strip arrangement.

Figure 6 is an enlarged fragmentary section on the line 6—6 of Fig. 4.

Figure 7 is a section on the line 7—7 of Fig. 6.

Figure 8 is a view of the left portion of Fig. 5 with the louver closed.

Figure 9 is a detail of a rack and pinion used herein.

Figure 10 is a view similar to Fig. 2 but showing the modified weather strip.

Figure 11 is a view similar to Fig. 3 but showing the modified weather strip.

Figure 12 is a view to a greatly enlarged scale similar to Fig. 5, but showing the preferred form of weather strip.

Figure 13 is an end view of one of the louver slats in the preferred form.

Figure 14 is a detail section on the line 14—14 of Fig. 13.

Figure 15 is a view similar to Fig. 4 but showing a generally modified form of the invention.

Figure 16 is a section on the line 16—16 of Fig. 15.

Figure 17 is an end view of one of the slats in this modified form.

Figure 18 is a vertical transverse section through a second general modification of the invention.

Figure 19 is a detail section on the line 19—19 of Fig. 18.

Figure 20 is a transverse fragmentary section through one side of a further modification of the invention, the section being taken out of the plane of the louver actuating link.

Figure 21 is a section similar to Fig. 6 but showing the modification of Fig. 20.

Figure 22 is an enlarged fragmentary section similar to Fig. 20 but showing a modification thereof.

Figure 23 is a detail similarly to Fig. 18 but showing the modification as in Fig. 22.

Figure 24 is a fragmentary section showing a modification of the operating handle as used in Fig. 4.

In the form of the invention shown in Figures 1 to 12, there is provided a frame having a sill 10, side members 11 and 12 and a top member or lintel 13. The side and top members each comprises a main middle strip 14, an outer strip 15 and an inner strip 16. The strips 15 and 16 project inwardly of the frame so as to provide a channel 17 at each side and the top.

It is to be understood that the operating means for this louver is located at but one side of the frame and that such operating means, while preferably on the right side of the frame, may be

also located on the left side thereof. For instance, it may be found convenient to locate the operating means for double windows having a central vertical stile on such central stile side by side. In such case, an operating means would be located at the right of its window and the other operating means would be located at the left of its window.

In order to provide operating means through a screen frame or sash shoe, in this form of the invention, there is secured to one of the side strips 14 a plurality of guide clips each consisting of a flat plate 18 having one vertical edge abutting the strip 16 and its opposite vertical edge bent back to form a lip 19. Mounted in these guides is an operating bar 20 which is provided with a longitudinally extending rack 21 which is located on the edge portion of the bar 20, which lies adjacent the strip 16. Through this strip 16 extends a shaft 22 which has fixed thereon a pinion 23 which meshes with the rack 21. Splined on the shaft 22 is an operating knob 24 and screwed on the extremity of said shaft is a locking or clamping nut 25. By this means the bar 20 may be raised and lowered in a straight vertical path by rotating the knob 24 and, when in desired position, the bar may be secured in such position by rotating the nut 25 which clamps the strip 16 between the pinion and knob 24.

In the form shown in Figures 1 to 4, 6, 7, 9 and 12 to 14, there is secured to the members 14 adjacent the members 15 a pivot strip indicated in general at 26 and each comprising a sheet metal flat portion 26a which rests against the member 14, and there secured as by screws 27. Extending from this position and resting against the member 15 is an angle portion 28 from whence the metal is bent back parallel to the portion 26a to form a pivot supporting portion 29. Between the portions 29 on each side of the window is a series of louver slats 30, each having protecting end plates 31. Pivots 32 extend through the portions 29 and guard plates 31 into the slats, the pivots of each slat being alined and located adjacent the lower edge of the respective slat 30. The edges of the parts 29 are rebent back as at 33 to cover the pivot pin heads and for purposes presently apparent. At each end of the set of slats, there is a traveller bar 34 connected by pivots 35 to the respective slats adjacent their upper edges so that rotation of one slat 30 on the axis of its pivots 32 will be accompanied by simultaneous rotation of the remaining slats 30. These traveller bars each have an inclined lip 36 which engages the rebent portion 33 of the corresponding pivot strip 26 to form a rain tight seal upon closing of the louver, as shown in Figure 12.

Links 37 have their ends connected by pivots 38 and 39 to one of the traveller bars 34, and the operating bar 20 so that vertical movement of said operating bar tilts the louver slats, as shown in the full and dotted lines of Figure 4. It will be seen that the lower edges of the louver slats are rabbeted as at 40 so that the slats interlock to form a rain proof structure, when closed.

The form shown in Figures 5, 8, 10 and 11 has the same arrangement except for the pivot supporting strip and the traveller bar. In this form, straight bars 41 support the pivots 42 and the traveller bar 43 is provided with a bent back lip 44 having a flatly beaded edge 45 to cooperate with the bar 41 to constitute weather stripping.

In each of these forms, the operating bar is provided with a longitudinal slot 46 having enlarged portions 47 forming spaced detent seats. A screw 48 extends through the slot 46 into the member 14. On this screw is slidably mounted an annular hemi-spherical detent 49 urged to engage in the seats 47 by a spring 50. By this means, the operating bar may be held in desired adjustments without the use of the clamp nut 25.

The sill 10 is inclined as shown and is provided with a stop strip 51 against which the lower edge of the lower slat closes. This strip 51 is provided with weep holes 52 to permit the escape of any rain which may find its way in before the louver is fully closed.

In the form shown in Figures 15, 16 and 17, lower slats 30a are pivoted adjacent their upper edges on pivots 53 supported by pivot supporting strips 54. The louver slats thus close by gravity. The lower edge portions of these slats are connected to a traveller bar 55. Attached to one louver at its lower edge is a bracket 56 from which a chain 57 extends upwardly, passes over a pulley 58 and through an opening 59 in the frame. This chain is provided with a hook 60 on its end so that when the chain is pulled through the opening to raise and open the louver slats, this hook may be engaged in a proper link to prevent closing of the louver. The guard strip 31a of this form is slightly longer than the strip 31 of the other form.

In the form shown in Figures 18 and 19, the slats 30b are pivoted as at 61 and have their free edges connected by a traveller bar 62 which is provided with notches 63b engageable by a pivoted latch member 63a so that, upon the free edges being swung up the latch will engage one of the notches 63b and hold the slats in open adjusted position.

In the forms shown in Figures 20 to 23, the frame parts 14, 15 and 16 and the louver slats 30 are like those of the previously described forms. Also the pivot strip 26 used in Fig. 12 is also used in this form. These parts will, therefore, not be again described.

In Figures 20 to 23 there is provided a traveller bar 65. Through this traveller bar 65 extends a series of pivot screws 66 each of which engages in a louver slat 30. On each of the screws is a sleeve 67 which is interposed between the bar 65 and the end of the slat 30 so that the bar 65 is held in spaced relation to the slat end. The bar 65 has an inclined lip 68 extending along its outer edge. This lip engages the portion 33 of the pivot strip to form a weatherstrip joint upon the louver being closed, as shown in Figures 20 and 21. On the inner edge of the bar 65 is a reinforcing flange 69 having a rebent edge portion 70 for stiffening the flange. This flange overlaps the slats 30 adjacent their ends.

In the form shown in Figures 20 and 21, there is provided an actuating bar 71 and clips 72 therefor similar to the actuating bar of the prior form. Secured in an opening 72 in this bar is a rivet 73 on the outer end of which is formed a head 74 spaced from the bar. An offset link 75 connects the bar 65 and the rivet 74 so that longitudinal movement of the bar 71 opens and closes the louver.

In the form shown in Figures 22 and 23, a ratchet strip 76 is secured to the bar 65 by rivets 77, and is provided with notches 78. Mounted pivotally on the screw 27 is a latch arm 79 having an angled portion 80 provided with a finger grip 81 having a rebent end 82. This latch arm

operates in the same manner as the latch arm 63a.

As shown in Figure 24, the knob 24 and locking nut 25 are replaced by a crank arm 83 slidably but nonrotatably mounted on the shaft 22 by means of the set screw 84 and groove 85. A locking nut 86 is screwed on the end of the shaft and by screwing up on this nut the frame is clamped between the crank arm 83 and gear 23, thus preventing accidental movement of said crank arm.

Wire screening 63 may be used to keep out insects when the louver is open.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It may be noted that the louver according to the present invention has a novel reinforcing member to which all of the slats comprising a louver are attached. This reinforcing member in Figures 1 to 4, 6, 7, 9 and 12 to 14, is traveller bar 34; in Figures 5, 8, 10 and 11, traveller bar 43; in Figures 15, 16, 17, traveller bar 55, and in Figures 18 and 19, traveller bar 62.

It may be further noted that this reinforcing member does not in itself constitute the operating mechanism, as there is provided in all of the modifications shown, an additional operating means, although this operating means may be linked to the reinforcing member. By so providing a reinforcing member, the louver, according to the present invention, is exceptionally secure and storm tight.

I claim:

1. In a louver, a member connecting the edges of a plurality of pivoted slats, a weather-strip member extending from said first member and having a sliding wedging engagement with a fixed portion of said louver in order to weatherproof said slat assembly when closed.

2. In a louver, a member connecting the edges of a plurality of pivoted slats, a weather-strip member extending from said first member and having a sliding wedging engagement with a fixed portion of said louver in order to weatherproof said slat assembly when closed, and means to move said first mentioned member to open and close said louver.

3. In a louver, a fixed support, a series of pivot members extending therefrom, a plurality of slats supported on said pivot members, a traveler bar connecting with said slats and pivoted to each slat for movement toward said support as the slats are closed, said traveler bar having an inclined lip portion extending over the edges of the slats and adapted to slidably cooperate with a portion of the fixed support as the slats are closed to form a waterproof closure between the fixed support and the edges of said slats.

4. In a louver, a fixed support comprising a bracket having a portion adapted to be fastened to a window frame or the like and a pivot carrying portion spaced therefrom, a series of pivots extending from the pivot carrying portion, a plurality of slats supported on said pivot members, a traveler bar connecting said slats and pivoted to each slat for movement toward said support as the slats are closed, said traveler bar having an inclined lip portion adapted to slidably cooperate with said bracket as the slats are closed to form a waterproof closure between the bracket and the edges of said slats.

5. In a louver, a fixed support comprising a U-shaped bracket, one leg of said U being fastened to a window frame or the like, a series of pivot members extending from the free leg of said U, a plurality of slats supported on said pivot member, a traveler bar connecting said slats and pivoted to each slat for movement toward said support as the slats are closed, said traveler bar having an inclined lip portion extending over the edges of the slats and adapted to extend into said U-shaped bracket and slidably cooperate with the free leg thereof as the slats are closed to form a waterproof closure between the fixed support and the edges of said slats.

6. In a louver, a frame member, a fixed slat support having a portion spaced from said frame member, a series of pivot members extending from said support, a plurality of slats supported on said pivot members, a traveler bar connecting said slats and pivoted to each slat for movement toward said support as the slats are closed, said traveler bar having a lip portion extending over the edges of the slats and adapted to enter into the space between the aforementioned portion of the fixed support and the frame member as the slats are closed to form a waterproof closure between the fixed support and the edges of said slats.

VAN E. HUFF.