Jan. 14, 1941. B. G. VON ROEDER 2,228,935

RIDGE CAP VENT

Filed Dec. 2, 1937 3 Sheets-Sheet 1

Fig. 1.

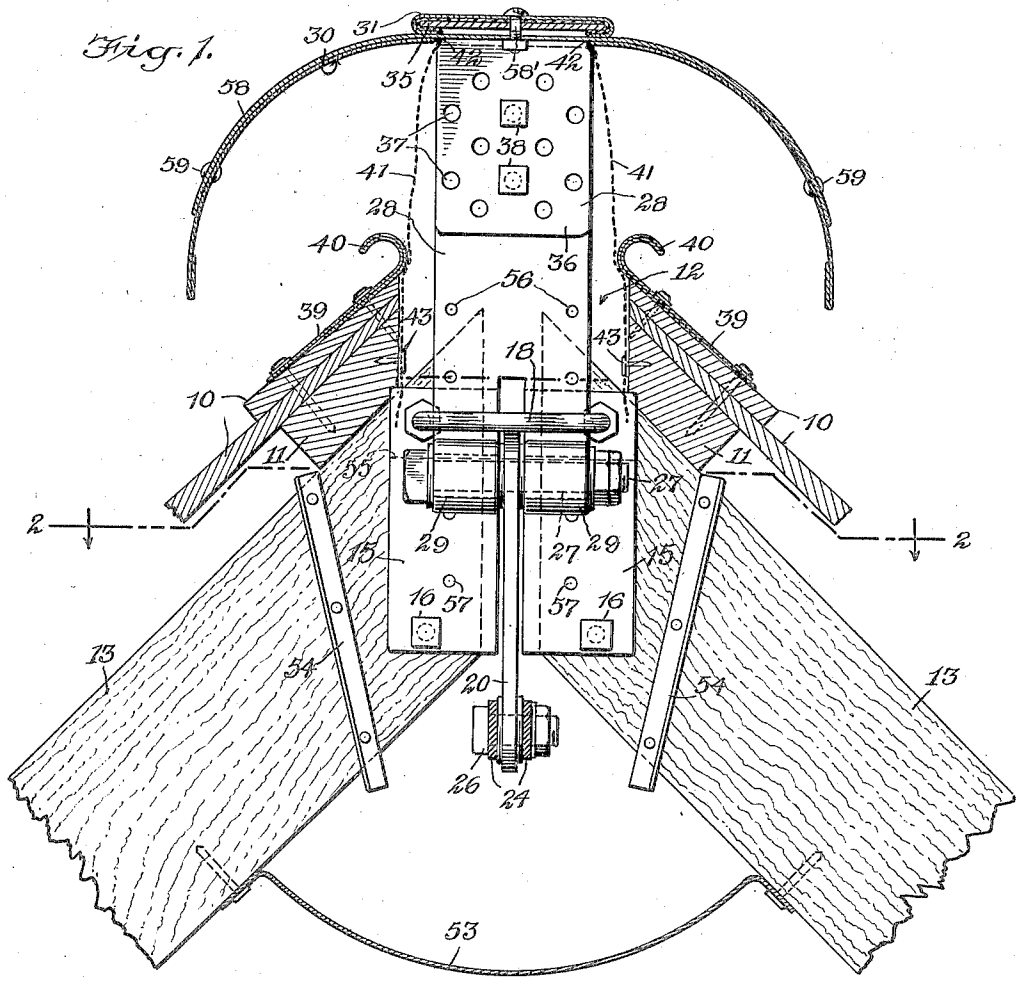
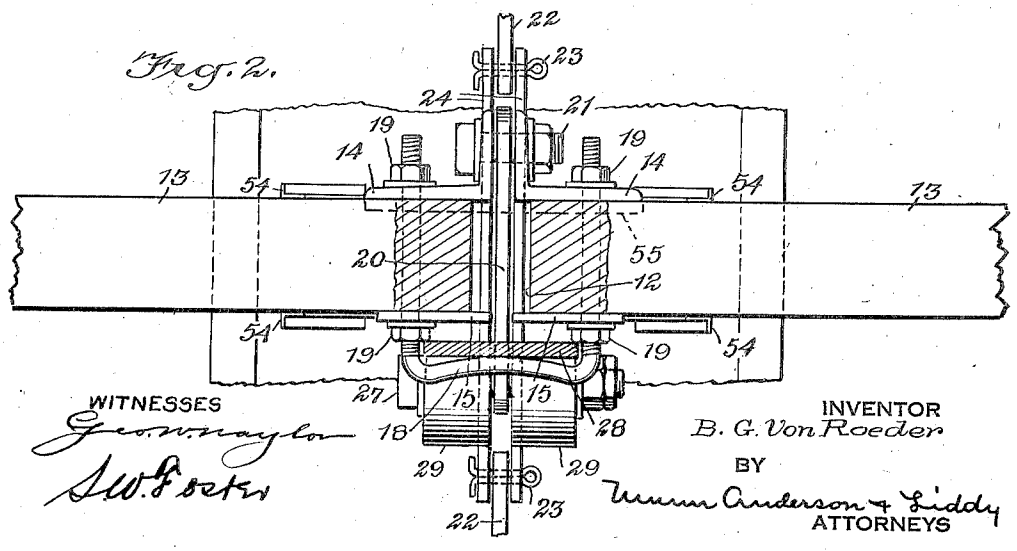


Fig. 2.



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RIDGE CAP VENT

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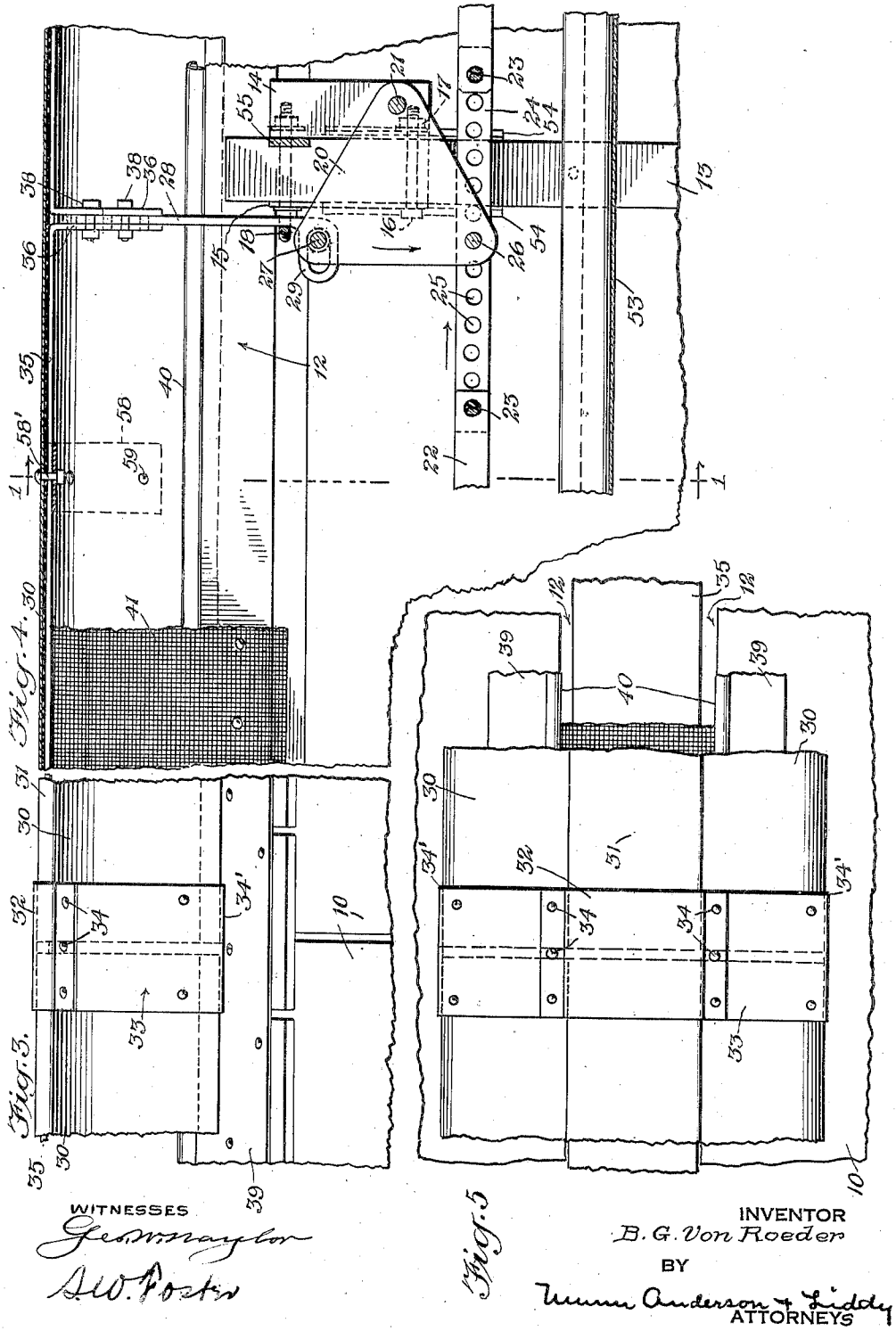


Fig. 4.

Fig. 3.

Fig. 5

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Fig. 6.

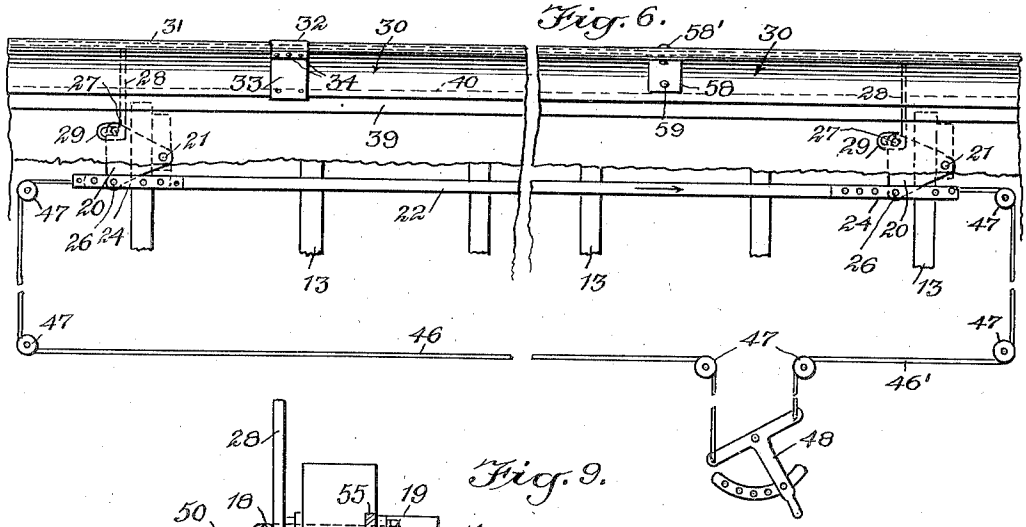


Fig. 9.

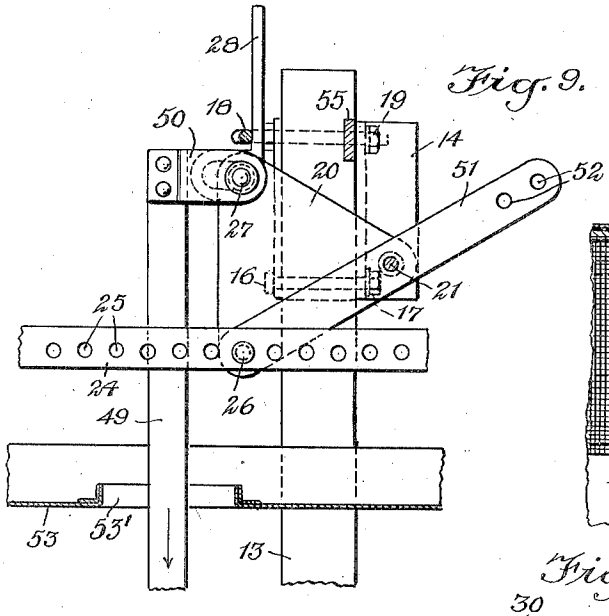


Fig. 7.

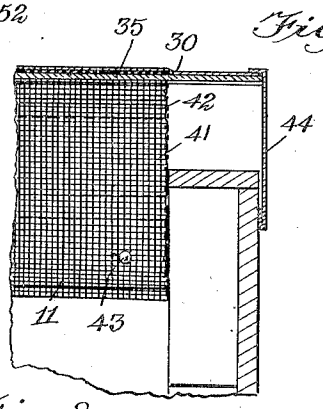
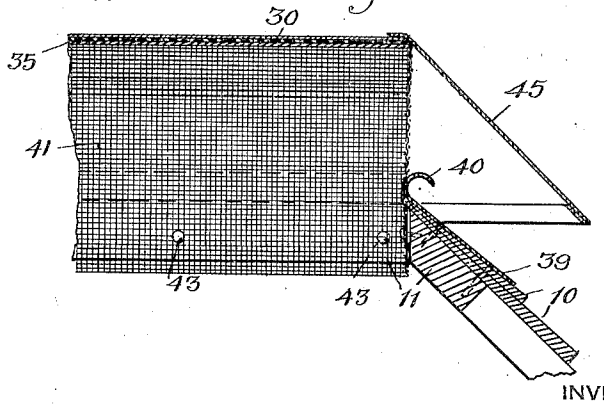


Fig. 8.



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UNITED STATES PATENT OFFICE

2,228,935

RIDGE CAP VENT

Benno G. von Roeder, Houston, Tex.

Application December 2, 1937, Serial No. 177,720

8 Claims. (Cl. 98—42)

This invention relates to ridge-cap vents and more particularly to a ventilator for buildings, an object of the invention being to provide a ventilator on the roof which may be readily opened and closed, and which when open will permit hot air in the building to escape without any danger of rain entering the building.

My ridge ventilator is a substitute for a ridge-roll that raises and lowers at will. It is applied to the crest of a roof, particularly a pitched roof, in position and place of a ridge-roll. Its purpose is to let out to the atmosphere all hot air that stagnates in the loft or attic of a building, and does not leave any pocketed, like a louver-window does. Ventilation may be easily and practically controlled from wide-open to complete shut-off by a lever. It is applicable alike to residences, barns, and industrial buildings, and it may be used alone, or in conjunction with other heating and cooling methods, with which it does not interfere, but which it will assist materially. It costs nothing to operate it.

The ventilator makes use of the roof rafters for main supports, and it becomes an integral part of the roof, as much so as the ridge-roll. It is inexpensive, simple, strong, durable, and positive in action. It is strong enough to withstand any storm, and can be operated during any storm. It is completely made in the factory, and requires only attachment, for which a minimum of tools and skill are required. Any part is readily renewable, though renewals are not necessary as there are only three wearing pivots, whose turn and wear are so slight that no part of the ventilator needs oiling or greasing. It is leakproof, and it is so adjustable that it will fit any old, dilapidated roof, and, by a change in the hood only, will fit any pitch of roof.

The design is correct, and there are no obstructions to outflow of air, except the screen, and on account of its position at the top, the screen will likely be found unnecessary.

To install the ventilator the roof is opened at the ridge, by removing the ridge-roll, cutting the upper ends of shingles and sheathing board, and cutting the centerboard in spaces between rafters, as well as between those pairs of rafters where the lifts are attached. Lifts need not be attached to all rafters. The amount of cutting back depends on width of vent-space desired, and in most cases five or six inches wide is ample to let out all hot air, especially when it is recognized that its operation is not intermittent but constant. The vent opening may, however, be made much wider.

The invention involves many novel features of construction and combinations and arrangements of parts, all of which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Fig. 1 is a view in transverse section through the upper portion of the roof showing my improved ventilator in operative position, this section being taken on the line 1—1 of Fig. 4;

Fig. 2 is a sectional plan view on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary view in side elevation;

Fig. 4 is a fragmentary view in longitudinal section through a portion of the hood or raincap and showing portions of means for operating the same;

Fig. 5 is a plan view of Fig. 3;

Fig. 6 is a broken view in longitudinal section through the ventilator;

Fig. 7 is a fragmentary view in longitudinal section of one end of the ventilator showing the same as applied to a gable roof;

Fig. 8 is a view similar to Fig. 7 showing the construction of the ventilator when applied to a hipped roof;

Fig. 9 is a detailed view in elevation illustrating a modification.

In preparing any building to receive my improved mechanism the ordinary ridge-roll is removed and the shingles 10 and sheathing boards 11 are cut back, and also center boards in spaces between rafters are cut so that a vent space 12 is provided for the escape of hot air from the building. This leaves a space between the pairs of rafters 13 and these pairs of rafters at their upper ends are secured together. The securing means constitutes angle plates 14 at one side of the rafters and flat plates 15 at the other side of the rafters which are connected at their lower portions by bolts 16 extending through the plates and the rafters and secured by nuts 17. These may be slightly modified in form, so long as they serve as attachment and spacing plates. At the upper portions of the plates a U bolt 18 is provided which extends through the plates and rafters and is secured by nuts 19.

The above-described coupling means between the rafters is utilized only at certain points throughout the length of the roof where hood moving assemblages are located, and it is desirable to have one of these assemblages adjacent each end of the roof and as many between the ends of the roof as may be deemed desirable. All of these assemblages are alike in general re-

spects and hence the description given for one assemblage will apply alike to all.

A rocker triangle 20 projects between the adjacent ends of the rafters and at one apex of the triangle a fulcrum bolt 21 is secured in the angle plates 14 and extends through the rocker triangle so as to permit the triangle to pivot on said fulcrum bolt. The several rocker triangles 20 are connected together by means of a horizontal pull bar formed of the sections 22 and 24 so that all of the triangles will pivot synchronously. The sections 22 form the main portion of the pull bar extending for the greater part of the distance between the triangles and they are connected adjacent the ends by means of cotter pins 23 to the connecting sections 24 which serve the purpose of connecting the sections 22 together and of connecting the pull bar to the triangles. It will be appreciated that the spacing between the triangles 20 will vary under different conditions. This is due partly to variations in the spaces between the rafters. To meet the variations in spacing I preferably provide the connecting sections 24 with a plurality of openings 25 so that the proper one to meet the particular situation may be selected. The triangles are connected to the sections 24 at one of the apexes thereof as shown by means of bolts 26 which pass through the proper openings to cause the triangles to operate synchronously.

In the third apex of the triangle a pivot bolt 27 is located and acts as a coupling pin between the triangle and a lifting bar 28. This lifting bar constitutes a flat plate bifurcated at its lower end and bent upon itself forming I bearings 29 receiving the pivot bolt 27 and permitting a certain amount of longitudinal movement in the I bearings which is necessary due to the fact that the pivot bolt 27 swings through an arc when the triangle 20 pivots around the pivot bolt 21. The I bearings should accordingly be at least as long as the mid-ordinate length of the arc described by the bolt 27. This lifting bar 28 is movable between the U bolt 18 and the flat plates 15, and at its upper end is operatively secured to my improved raincap or hood 30, as will more fully hereinafter appear. The lifting bar 28 is provided with holes 56 which register with holes 57 in plates 15 when the hood is in closed position and nails may be located in said openings and driven into the rafters to fixedly secure the hood in closed position.

The hood 30 may of course be of any desired shape but I have shown the same of general semi-elliptical shape and of a width appreciably greater than the width of the vent space 12 so as to shed any water which falls thereon on to the roof. The hood 30 is preferably made in sections, all of the sections being bent on their longitudinal central portions forming sheaths 31, and the ends of adjacent hood sections are positioned in a sheath 32 of a coupling strip 33. The purpose of the sheaths 31 is to receive the relatively rigid sheath bars 35 from which the hood is supported and raised and lowered as hereinafter more fully described. Accordingly the sheaths 31 should be formed so as to snugly fit the sheath bars in the manner shown in the drawings to prevent them from falling out and to eliminate side motion or play. This coupling strip with its sheath is of the same general shape in its transverse section as is the shape of the hood sections, excepting that it constitutes a strip slightly larger so as to allow the hood sections to fit under the same. The ends of the coupling strip are bent backward on themselves as shown at 34' to receive the edges of the hood sections. The sheath 32 of the coupling strip 33 constitutes a section secured by rivets 34 to the main portion of the strip 33 and to the hood sections 30 coupled thereunder.

Stiff flat-bars bent to conform to the contour of the hood (without the sheath) and piercing hood 30 below sheath 31 are placed transversely over the hood at convenient intervals, and riveted at 59 near each end to the hood. Near the center of each flat-bar or rib 58, a hole is provided to conform to one of a series of holes provided in sheath bar 35, under which it crosses substantially at right angles, and by means of which the sheath 31, rib 58, and sheath bar 35 are bolted or riveted, as shown at 58', to make a stiff, connected unit of hood 30, rib 58 and sheath bar 35, to enable the whole to withstand heavy wind and maintain its shape and position.

As stated above sheath bars 35 are located in the sheaths 31 of the hood sections, and certain of these sheath bars are provided with downwardly extending ends 36 which are formed with a plurality of more or less staggered openings corresponding with a similar arrangement of openings 37 in the lift bars 28 so that bolts 38 may be projected through any of the openings in the lift bar and sheath bar ends to properly couple the parts together and to shift the hood vertically or horizontally to fit a roof ridge not truly constructed.

On the shingles adjacent the vent 12 flashing 39 is secured and at its inner edge is formed with a hood seat and water-return roll 40. The roll 40 is flexible but when the hood is lowered to close the ventilator it rests on the roll causing it to tighten and forming a seal between the hood and roll. Flexible screens 41 are operatively connected at their upper edges to the hood as shown at 42 and extend downward, back of the water-return rolls and are secured to the inner faces of the sheathing boards 11 as shown at 43, the edges thereof to extend, as drip edges, below the lower face of sheathing 11.

When my improved ventilator is in position on a roof with an end gable, a straight end cap 44 is secured on the end of the hood 30 as shown in Fig. 7, and where my improved device is located on a roof having a hipped end, a tapering end cap 45 is employed as shown in Fig. 8.

It is of course well within the scope of my invention to employ any suitable means for manually moving the pull bar 22 to simultaneously pivot all of the triangles 20 and move the hood 30 upwardly to open position or downwardly to closed position or to any intermediate position. However, I show in Fig. 6 one means which can be effectively employed. This means consists of flexible connecting devices 46 and 46' secured to the respective ends of the pull bar 22 and passing these connecting devices around pulleys 47 and securing them to the ends of a pivoted T lever 48 which may be located anywhere in the building and which may be manually operated to raise and lower the hood. A counter weight added to 46, to balance closing weight of the lift assembly, may be employed to facilitate opening and closing.

As a modified means for operating the hood I illustrate in Fig. 9 a vertically extending bar 49 which is pivotally connected by shackles 50 with the pivot bolt 27 so that by a vertical movement of bar 29 the triangle will be pivoted around the fulcrum 21. All of the triangles are con-

nected at the points 26 by means of a pull bar similar to that described above consisting of the sections 24 and 22. Accordingly when the bar 49 is moved vertically all of the triangles are caused to pivot in this fashion and the hood is raised and lowered. In this modified type of structure I preferably employ a lever or arm 51 which is connected to the triangle at the two lower apexes thereof by means of the bolts 21 and 26. The end of the arm or lever extends upwardly at an angle beyond the bolt 21 as shown. Adjacent the upper end of the arm I provide the perforations 52 to which a counterweight may be connected to balance the weight of the hood or to which another bar similar to bar 49 may be connected whereby the triangles may be pivoted and the hood opened and closed.

While I believe that my improved device is such as would absolutely prevent the entrance of rain into the building, nevertheless, as a means for collecting any rain which might possibly enter I employ a drip pan or gutter 53 secured to the rafters 13 and connecting them, and this pan may have any suitable drain outlet. In the modified form of my invention shown in Fig. 9 the drip pan 53 is provided with an opening 53' through which the bar 49 may pass and an upwardly extending flange is preferably provided around the opening as shown so as to prevent the water in the drip pan from flowing outwardly through the opening. To prevent any possibility of water following down the rafters I may employ strips, such as shown at 54, to deflect the water into the drip pan, or I may employ any other devices which will accomplish the same result. In order to further strengthen the connection between the upper ends of the rafters, I may employ a metal strap 55 which is perforated and receives the ends of the U bolt 18 and is located between angle plates 14 and the faces of the rafters.

While I have illustrated and described what I believe to be the preferred embodiment of my invention, it is obvious that various changes might be made in the general form and arrangement of parts without departing from the invention, hence I do not limit myself to the specific details set forth but consider myself at liberty to such such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. The combination with a roof having a vent space therein, of a hood above the vent space, flashing on the roof having water-return rolls under the hood, lift bars secured to the hood and extending into the vent space, means operatively connecting the lift bars, and manually operable means for moving the last-mentioned means to raise and lower the hood, and flexible screens connecting the hood and roof.

2. The combination with a roof having a vent space therein, of a hood above and overhanging the vent space, lift bars secured to the hood and extending into the vent space, spaced rafters arranged in pairs positioned in the same vertical plane and constituting a part of the roof construction, U-bolts extending through the adjacent ends of the rafters so as to connect the pairs of rafters together and aid in supporting the same, each of the lift bars extending between the head of one of the U-bolts and the adjacent sides of the rafters to which the bolt is secured so that the U-bolts and adjacent sides of the rafters guide the vertical movements of the lift bars, and means for manually moving the lift bars to raise and lower the hood.

3. The combination with a roof having a vent space therein, of a hood above the vent space, lift bars secured to the hood and extending into the vent space, spaced rafters constituting a part of the roof construction, U bolts connecting the spaced rafters and constituting guides for the vertical movement of the lift bars, rafter plates secured to the rafters and spaced apart, rocker triangles fulcrumed in said rafter plates, means pivotally connecting the rocker triangles to the lift bars and rafter plates, and a pull bar operatively connected to all of the rocker triangles so that when said pull bar is moved longitudinally motion will be transmitted to raise or lower the hood.

4. The combination with a roof having a vent space therein, of a hood above the vent space, lift bars secured to the hood and extending into the vent space, spaced rafters constituting a part of the roof construction, U bolts connecting the spaced rafters and constituting guides for the vertical movement of the lift bars, rafter plates secured to the rafters and spaced apart, rocker triangles fulcrumed in said rafter plates, means pivotally connecting the rocker triangles to the lift bars and rafter plates, and a pull bar operatively connected to all of the rocker triangles so that when said pull bar is moved longitudinally motion will be transmitted to raise or lower the hood, flashing on the roof having water-return rolls under the hood, and screens connected to the hood and to the roof and located back of the return rolls.

5. The combination with a roof having a vent space therein, of a hood above the vent space, said hood comprising a plurality of longitudinal sections, longitudinally extending aligned sheaths on each section, coupling strips having sheaths receiving the sheaths of the hood sections, sheath bars in the sheaths of the hood sections and coupling strips, said bars having downwardly projecting ends, and lift bars secured to adjacent ends of the sheath bars.

6. The combination with a roof having a vent space therein, of a hood above the vent space, said hood comprising a plurality of longitudinal sections, longitudinally extending aligned sheaths on each section, coupling strips having sheaths receiving the sheaths of the hood sections, sheath bars in the sheaths of the hood sections and coupling strips, said bars having downwardly projecting ends, and lift bars secured to adjacent ends of the sheath bars and strengthening ribs projected through the sheath and secured to the hood.

7. The combination with a roof having a vent space therein, of a hood above the vent space, said hood comprising a plurality of longitudinal sections, longitudinally extending aligned sheaths on each section, coupling strips having sheaths receiving the sheaths of the hood sections, sheath bars in the sheaths of the hood sections and coupling strips, said bars having downwardly projecting ends, lift bars secured to adjacent ends of the sheath bars, rocker triangles operatively connected to the lift bars and to rafter plates, a pull bar operatively connecting the rocker triangles, and manually operable means for moving the pull bar to raise and lower the hood.

8. A ventilator for use with a roof having supporting rafters and a vent space therein compris-

ing a hood mounted above the vent space, means for raising and lowering the hood so as to open and close the vent space, a drip pan connected between the rafters and disposed beneath the vent space so as to receive water dripping downwardly therethrough, and deflector strips mounted substantially transversely of the rafters above the drip pan so as to intercept water flowing down the rafters and deflect it into the drip pan.

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