Nov. 12, 1946. H. KNUTSON 2,410,950

VENTILATOR

Filed July 28, 1943 2 Sheets-Sheet 1

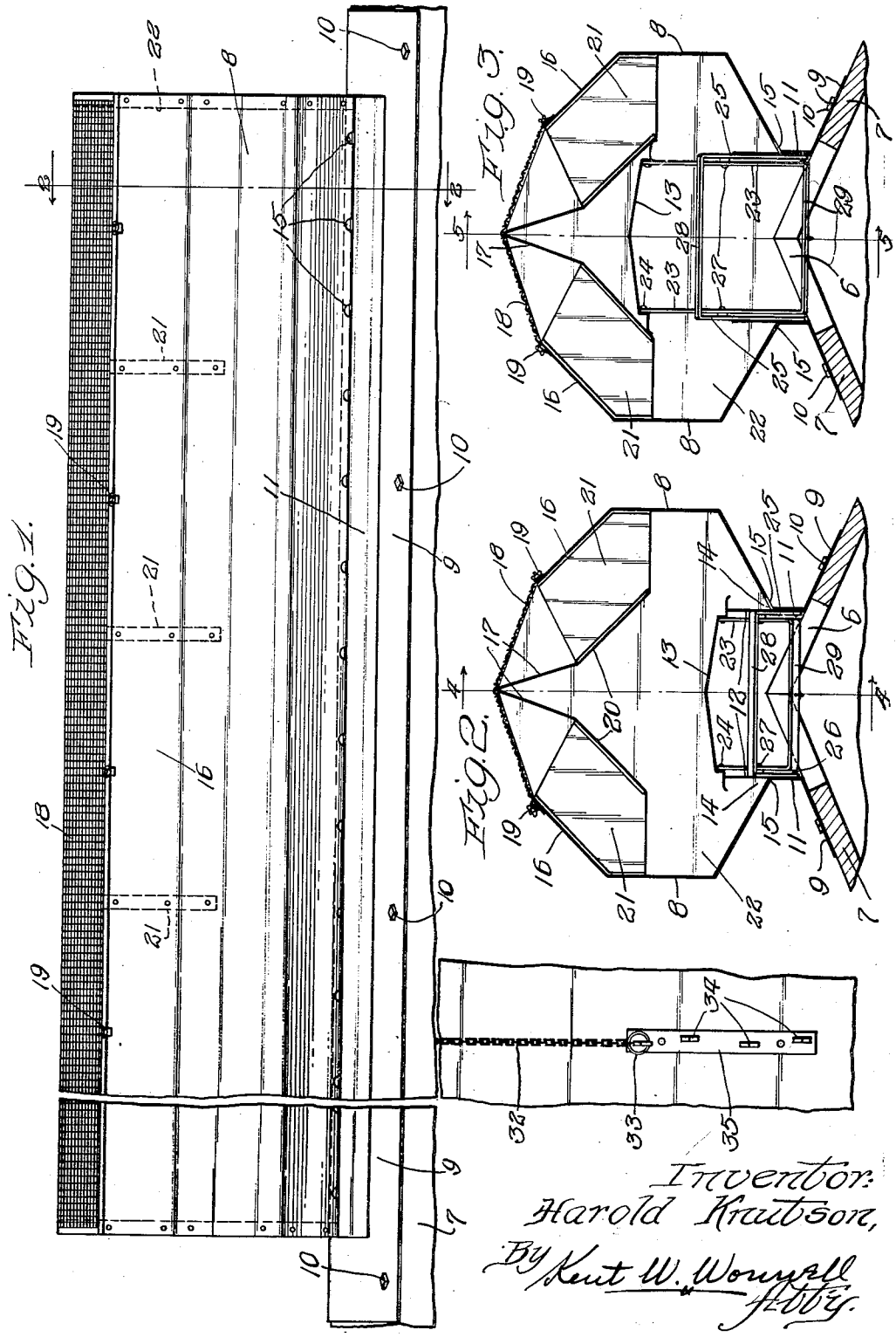


Fig. 1.

Fig. 3.

Fig. 2.

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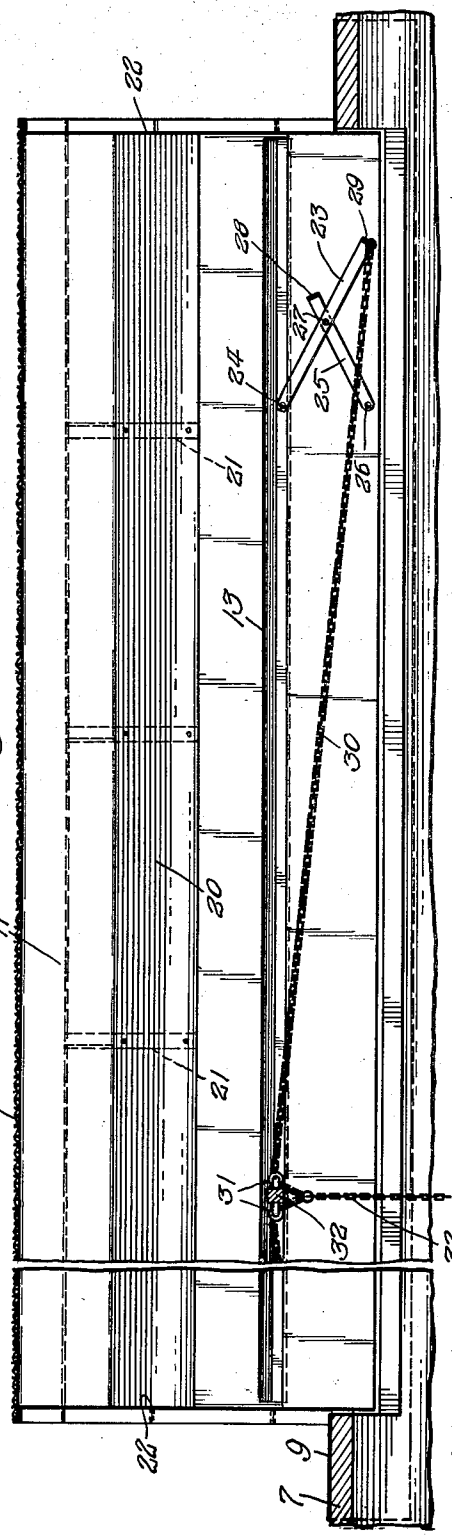


Fig. 4.

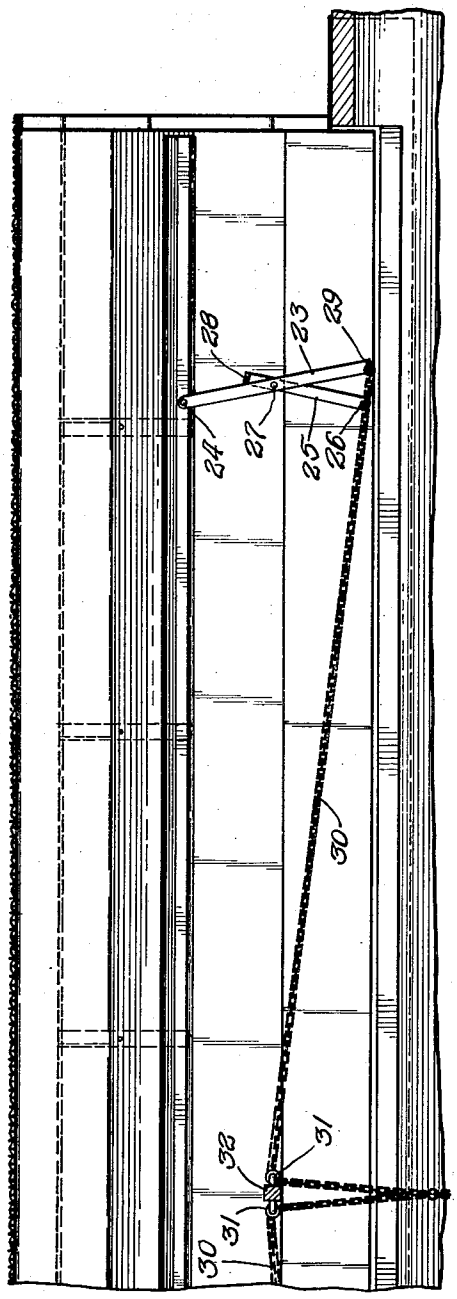


Fig. 5.

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Patented Nov. 12, 1946 2,410,950

UNITED STATES PATENT OFFICE

2,410,950

VENTILATOR

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Application July 28, 1943, Serial No. 496,493

6 Claims. (Cl. 98—42)

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This invention relates in general to a ventilator and is more particularly described as a ridge ventilator for roofs of different slopes, and may also be readily applied to decks, built up curves and roof slopes without change of construction.

An important object of the invention is to provide a ventilator of this kind which may be furnished in sections adapted to be secured together, braced and supported for individual control protected against the entry of birds, leaves and other dirt, and providing an adjustable damper for open, closed, and intermediate positions.

Other and further objects of the invention are to provide improved means for operating a damper; to provide a removable screen for the top of a ventilator; to separate the sections by strengthening partitions at the ends; to support the air ridge by internal strengthening webs; and in general, to provide the construction herein shown and described.

Other objects of the invention will appear in the specification and will be apparent from the accompanying drawings in which

Fig. 1 is a side elevation of a ventilator section in accordance with this invention;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 with a damper in lowered position;

Fig. 3 is a similar view with the damper in raised position;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2; and

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 3.

In providing a roof or other ventilators for long buildings, it is desirable to make the ventilator continuous in order that uniform ventilation may be obtained, and also to conform more favorably with the building lines and appearance. It is also desirable to afford a short path of travel for exhaust air through the ventilator and at the same time to prevent snow and rain from entering the ventilator under any condition, or with the wind from any direction; to prevent birds, leaves and other objectionable matter from entering through the ventilator, or clogging it or the damper, a removable screen is provided at the top; and drainage is afforded by small weep holes at the lower sides of the baffles.

In the present invention, the above objections are overcome and the desired objects are obtained by constructing the ventilator with an air ridge which extends above the sides, and by seating a ventilator cap upon raised sides with means for moving it upwardly below and protected by the lower flaring edges of the air ridge.

Referring now more particularly to the drawings, a ventilator of this type is applied to an

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opening 6, which may be continuous, in the ridge of a roof 7 which may have sides of the same or different slopes. For continuous ventilation, a number of ventilator sections are secured together in end to end relation, only one of the sections being shown and described herein, although it is understood that a continuous ventilator of any number of sections may be provided.

Each ventilator section comprises outer walls 8 secured to or supported by a roof plate 9 at its lower edge which is adapted to be secured to the roof by fastening bolts or other securing means 10.

Within and secured to the walls in a lower neck portion 11 are vertical side walls 12 which define the damper opening extending lengthwise of the walls and are open at the top to form a flat longitudinal support for a damper 13. The walls 8 incline outwardly and upwardly from the walls 12 intermediate the top and the bottom, leaving an angular space 14 into which the water and other materials may collect, with bleed openings 15 at the lower edges of the inclined portions for permitting the escape of water therefrom.

The outer side portions of the walls 8 are vertical and have inwardly inclined upper portions 16 which terminate at a distance from each other. Within the walls and extending lengthwise of the ventilator is a hollow angular rib 17 forming an air ridge of which the apex extends above the upper edges of the inclined wall portion 16 so that a screen 18 applied over the opening between the ends of the walls and resting upon the top of the air ridge will be inclined downwardly therefrom at the sides, the lower edges of the screen being held in contact with the outer walls by suitable fastening devices such as wing nuts 19.

Lower sides 20 of the rib 17 are inclined outwardly substantially parallel to the upper inclined portion 16 of the side walls 8, and the rib is secured in place by a plurality of webs 21 secured to these parallel wall portions 20 and 16.

At the end of each section, or at each end of the section, is a partition 22 which entirely fills the space within the walls 8 and up to the apex of the rib 17, so that any section is separate and distinct and is properly braced and supported at the end thereof. This construction will not interfere with the operation of the damper which is preferably individual to each section of the ventilator.

To operate the damper, a compound lever arrangement is provided, comprising a U-shaped member 23, or its equivalent, connected at the extremities by pivots 24 with the inner side of the damper 13. An oppositely disposed and shorter U-shaped lever 25, or its equivalent, is pivoted upon its extremities by pivots 26 with

the lower upright sides 12. Near the upper end of the lever 25, and intermediate the ends of the lever 23, they are connected together by pivots 27, the crosspiece 28 of the U-shaped lever 25 being at the side of the lever 23 opposite the location of the pivot 26.

Connected at 29 to the crosspiece of the lever 23 is a chain or cord 30 which extends inwardly from the lever 25 and over a pulley 31 connected to a central support 32 so that a pair of such operating chains 30 extending to operate mechanisms at each end of the section may be connected to a common operating chain 32 approximately at the center of the section. This chain extends downwardly for convenient access and has a ring 33 at the lower end adapted to engage any one of a plurality of hooks 34 projecting from a wall bracket 35 and adapted to be secured in upright position upon a wall 36 or other suitable support.

The weight of the damper plate 13 causes it to rest normally upon the upper ends of the walls 12, closing the damper, and in this position, the compound operating lever is within the walls 12 and covered by the damper. To raise the damper, the common chain 32 is pulled downwardly, thus swinging the lever 23 inwardly and upwardly upon the other lever 25 and raising both ends of the damper simultaneously. By suitably locating the hooks 34, the damper may be raised and held fully open or in any desired intermediate position. With this construction, there are no springs, weights, or other operating parts to get out of order or to require attention, and the operation of the ventilator is simple and easily controlled. When the damper is raised to its uppermost position, it is enclosed by the inclined sides 20 of the air rib 17 so that there is no obstruction to the air passage through the ventilator and no space is provided which would retard the flow or cause any swirling movement or back draft within the ventilator.

I claim:

1. In a ventilator comprising a casing having an inlet and an outlet, a hollow angular rib permanently attached in the casing having sides flaring outwardly and downwardly but leaving a free space between it and the casing sides at the outlet, a damper to close the inlet and means to move the damper vertically from the inlet against the sides of said rib, said means comprising a combined lever having one portion pivoted in the inlet of the casing, another portion thereof pivoted to the damper, the two portions being pivoted together intermediate the ends of one of the portions, and a pull chain connected to the free extremity of one of the lever portions for raising them together with the damper about the member which is pivoted to the inlet wall.

2. In a ridge ventilator having a casing with a bottom inlet and a top outlet, a hollow angular rib permanently attached in the casing having sides flaring outwardly and downwardly but leaving a free space between it and the casing sides at the outlet, a damper to engage the sides of the inlet and raisable therefrom against the sides of said rib, the raising means comprising lever means pivoted at the side of the inlet, another lever means pivoted at one end to the damper and pivoted intermediate its end adjacent the other end of the first lever means, and an operating chain or cord connected to the other end of the second lever for raising the lever means from a downwardly inclined to a substantially upright position when the damper is in raised position.

3. In a ventilator, a casing having a bottom inlet with side walls and an open top outlet, a hollow angular rib permanently attached in the casing having sides flaring outwardly and downwardly but leaving a free space between it and the casing sides at the outlet, a damper to engage the side walls enclosing the inlet and movable upwardly therefrom to open the damper against the sides of said rib, a combined lever arrangement connected between the side walls of the inlet and the damper adjacent each end thereof, said arrangement comprising lever means pivoted at the side of the inlet, another lever means pivoted at one end to the damper and pivoted intermediate its ends adjacent the other end of the first lever means, and common pulling means attached to the combined lever arrangements at both ends of the damper for thereby raising and lowering the damper.

4. In a ventilator, a casing with a bottom inlet having spaced walls and an open top outlet, a damper engaging the tops of the side walls of the inlet, means to raise the damper vertically from the inlet, said means comprising a pair of levers at each end, one pivoted to the side walls and extending upwardly, and the other pivoted to the underside of the damper and extending downwardly, the lower lever being pivoted intermediate the ends of and to the upper lever and having a crosspiece to engage the side of the upper lever opposite the lower pivot, and means connected to the lower end of the upper lev for swinging the two levers together upon their common pivot until the crosspiece of the lower lever engages the edge of the upper lever and limiting the movement of the damper.

5. In a ventilator, a structure in accordance with claim 4 in which the combined lever at each end of the damper comprises a U-shaped member attached to the side walls and extending upwardly, and a U-shaped member with its ends attached to the damper and extending downwardly, the crosspiece of the bottom U-shaped member engaging both sides of the downwardly extending lever, and the operating means for the combined levers being attached to the crosspiece of the downwardly extending lever.

6. In a ventilator, a casing having a bottom inlet and a top outlet, a hollow angular rib permanently attached in the casing having sides flaring outwardly and downwardly but leaving a free space between it and the casing sides at the outlet, a damper to close the inlet and raisable therefrom below and to engage the sides of the rib, a combined lever arrangement at each end of the damper for raising and lowering the damper, said arrangement comprising a pair of levers, one pivoted to the side walls of the inlet and extending upwardly, and the other pivoted to the under side of the damper and extending downwardly, and the lower lever being pivoted intermediate its ends and to the upper lever, operating means connected to each of the combined lever arrangement with a common pull cord, and a fixed bracket with a plurality of hooks thereon for variably engaging the pull cord to control the position of the damper.

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