

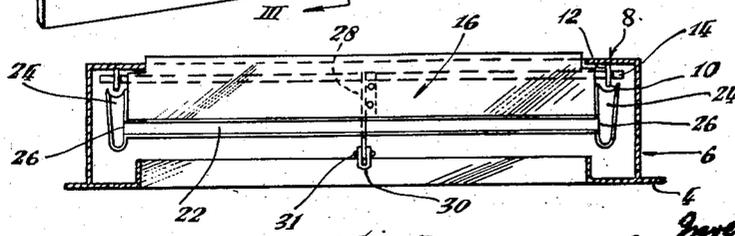
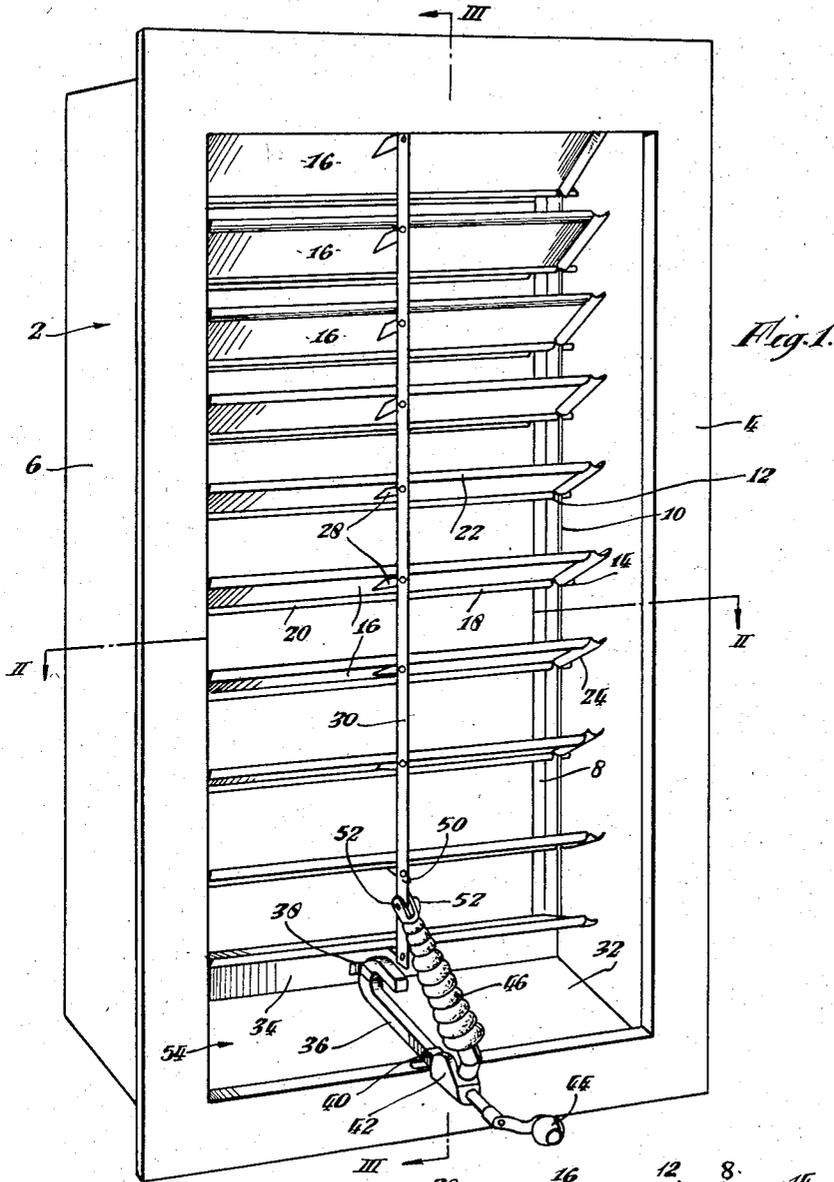
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VENTILATORS

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3 Sheets-Sheet 1



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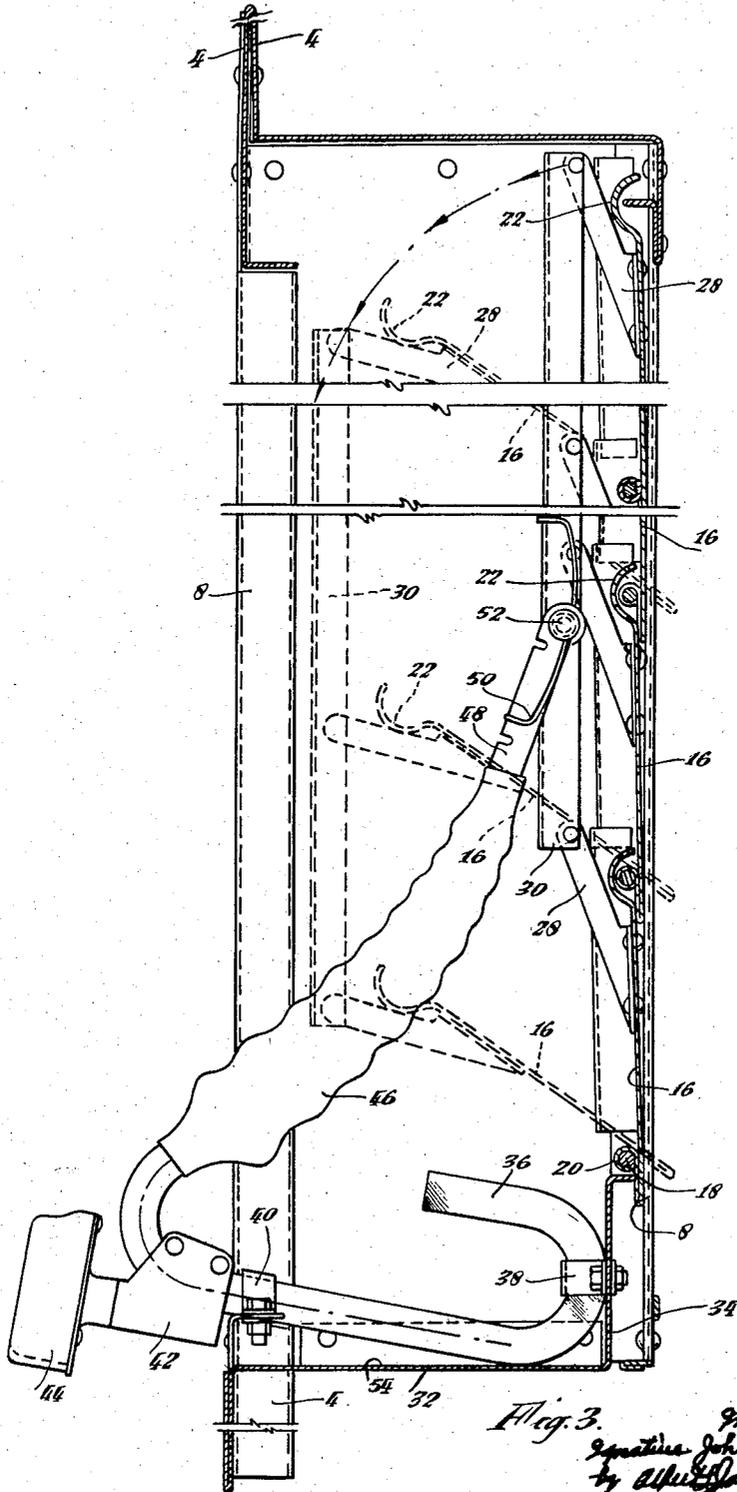


Fig. 3  
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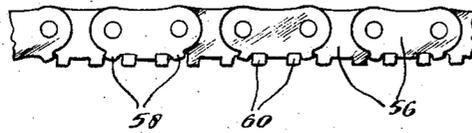
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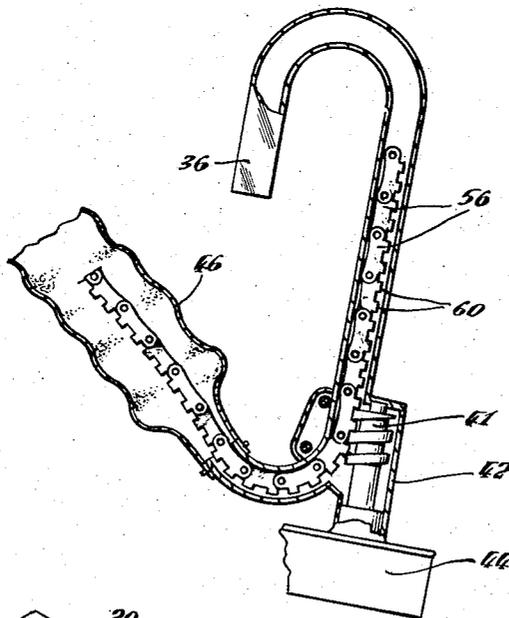
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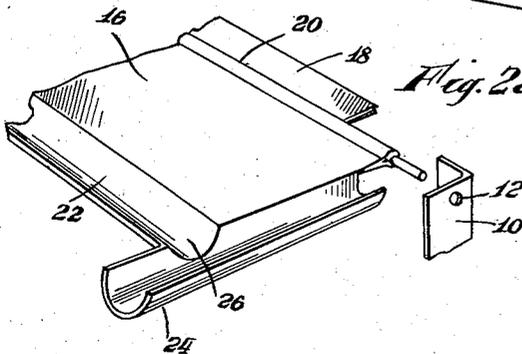
3 Sheets-Sheet 3



*Fig. 5.*



*Fig. 4.*



*Fig. 2a.*

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2,881,690

## VENTILATORS

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Claims priority, application Great Britain July 6, 1955

1 Claim. (Cl. 98—88)

This invention relates to ventilators of the kind having controllable louvers designed to be moved from a closed position to one giving a substantially unobstructed ventilation when fully opened.

Hitherto with louver type ventilators it was difficult to obtain a satisfactory closure substantially wind proof, rain proof and/or reasonably light-tight if required.

One of the objects of the present invention is to provide an improved louver-type ventilator which will overcome some or all of the above difficulties.

In a ventilator according to the present invention each louver is hingedly mounted adjacent one longitudinal edge and is so shaped adjacent the other longitudinal edge that said second longitudinal edge is adapted to engage partly around the projection formed by the hinged mounting of the next adjacent louver. Each louver may be so shaped at each of its transverse edges that said transverse edges may engage partly around a projection at the side of the mounting of each louver and may also overlap a part of the corresponding shaped portion of the transverse edges of the next adjacent louver. Said louvers may be mounted in a box type mounting which may be provided with drainage means. Said louvers may be linked together by a movable control bar connected to each louver by suitable brackets.

Referring to the drawings filed herewith:

Fig. 1 is a perspective view of one form of ventilator made in accordance with the present invention,

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

Fig. 2a is a detail perspective view of a portion of a louver plate showing its hinging and troughs,

Fig. 3 is a section on the line III—III of Fig. 1 to an enlarged scale,

Fig. 4 is a section through the bellows and winding gear shown in Fig. 3,

Fig. 5 is a detail view of the chain.

According to the embodiment illustrated in the drawings the ventilator comprises a box like frame 2 forming the throat of the ventilator, the frame 2 having a flat fascia frame 4 at the front or outside. The longitudinal sides 6 normal to the fascia frame 4 are provided with flanges 8 for the whole of their height, said flanges being at right angles to the sides 6 and parallel to the fascia frame 4. Secured to or formed integral with these flanges 8 are upstanding narrow ribs 10. Said ribs 10 in the form shown are formed of a single thickness of sheet metal angle piece disposed with one flange at right angles to the flanges 8. The ribs 10 are bolted to the flanges 8 of the frame by one flange and the other upstanding flanges are pierced by holes 12 at intervals along their length to receive and journal the hinge rods 14 running across the frame 2. Ten louvers 16 are hingedly mounted on the rods 14 inserted in the holes 12. Said louvers 16 are each formed from a single rectangular sheet of metal and appropriately shaped so that it can be formed by a pressing operation. The longitudinal edge of the louver sheet adjacent which the hinge is to

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be formed is folded to form a double thickness projection 18 (see Figure 3) the corners of which are cut away for  $\frac{7}{8}$ " on each side of the louver so that the projection 18 clears the flanges 8 by about  $\frac{1}{8}$  inch on each side. The longitudinal free edge of the double thickness projection 18 is looped into a circular section defining beading 20 adapted to receive the hinge rod 14. Beading 20 is approximately  $\frac{7}{8}$  inch from the double edge of the projection 18 and runs parallel thereto. The other longitudinal edge of the louver is shaped to define an inverted semi-circular trough or channel which faces in the opposite direction to the beading 20. Each of the transverse edges of the louver is formed with a slightly tapered trough 24 running from the hinge beading 20 to beyond the other longitudinal edge of the trough 22. Troughs 24 face in the same direction as the trough 22 and the larger ends of the tapered trough are adjacent the trough 22. Where each tapered trough 24 meets the trough 22 a partly circular piece 26 is cut away to allow one trough to communicate with the other.

The louvers 16 are mounted on the hinge rods 14 in the narrow ribs 10 with their hinged edges lowermost. A louver bracket 28 is rivetted or otherwise secured to each louver 16 near the trough 24. Each louver bracket 28 is provided with a hole at its free end adapted to receive the rivets of a linking control bar 30 for loose connection with the latter. Said control bar 30 is formed from a single sheet of metal bent to a narrow U and drilled through at spaced intervals to define holes 31. The free ends of the brackets 28 are pivoted in the holes 31 in the U in such a way that the control bar 30 can be moved relative to the said brackets 28.

The transverse base wall 32 of the box like frame 2 is provided with an extension 34 perpendicular thereto which carries a square tubular shield 36 bolted to it by a bracket 38. The upper end of the shield 36 is embraced by a bracket 40 bolted to the flat fascia frame 4. The shield 36 forms a cover for a chain hereinafter described. A worm screw 41 inside a casing 42 at the end of shield 36 is worked by a control knob 44 to drive the chain into the shield 36 when the knob is turned. The stiff section of the chain is protected by a bellow 46, and is secured to an end member 48 pivotally secured to the control bar 30 by the securing screw 52. A two-armed spring 50 is mounted on the securing screw 52. The ends of spring 50 are turned over the end member 48 and the bar 30 so that they always exert a downward pressure on the end member 48. The transverse base wall 32 also defines a trough 54 which may be provided with a drain.

Referring now to Figs. 4 and 5 the chain is of the type in which the links 56 are provided with abutments 58 and with teeth 60 forming a rack on one side of the chain. Thus in one direction the chain can only be slightly arched to form a stiff rod which can be used to transmit a longitudinal thrust, while in the other direction the chain can be freely flexed. The rack formed by the teeth 60 on the one side is adapted to co-operate with the worm screw 41 which thus forms a driving means for imparting a thrust to said chain. Since the two-armed spring 50 is always urging the end member 48 downwardly the chain links 56 emerging from the casing 42 will always be arranged in a slightly arched manner to form a stiff rod.

The ventilator is adapted to be recessed into the wall of the building in which it is to be incorporated with the flat frame 4 flush with the surface of the wall and with the hinges of the louvers lowermost. When the louvers are open they are substantially horizontal and the chain is fully retracted into the shield 36. As the control knob is turned the chain feeds out into the bellows 46 and pushes the louvers down to the closed position. In the

closed position the troughs 22 and 24 on each louver engage partly around the hinging beads 20, the upstanding portions 10 of the flanges 8, and the upper ends of the troughs 24 of the adjacent louvers immediately above them. In this way any rain which finds its way into the hinges of the louvers when they are closed will be carried across into the troughs 24 and will run down them into the trough 54 from which it will drain away through the drain which may be provided.

When the louvers are open they will give positive protection against rain since the rain water will ordinarily run down the louvers and any carried around the edge by capillary attraction will fall on to the next louver or be carried along the edges of the troughs 22 into the troughs 24.

Thus with a ventilator as described above it will be found that when closed the ventilator is substantially wind and rain proof and if made of opaque material such as metal will be reasonably light-tight. Furthermore the construction is such that when open the ventilator will prevent the entry of rain unless accompanied by a high wind.

Having thus described the invention it should be apparent that same is subject to modifications obvious to any one skilled in the art.

What is claimed is:

A ventilator comprising a frame and a plurality of louver plates hingedly mounted in said frame, each louver plate being in the form of a rectangular sheet, a trough extending the length of one longitudinal edge of each

sheet and the opposite longitudinal edge terminating in a folded back portion the free end of which forms a bead, pairs of bearing members mounted in each side of said frame, a hinge rod extending through said bead and journaled adjacent its ends in said bearing members, the distance between the centers of adjacent bearings of each pair of bearing members being equal to the distance between the centers of the hinge rod bead and the longitudinal trough on each louver, a transverse trough at each transverse edge of said louver plate facing in the same direction as said longitudinal trough and communicating therewith, said transverse troughs tapering towards the free edge of the louver plate and extending therebeyond so that when said louver plates are mounted in said frame with the hinges lowermost and positioned to close the ventilator the bead of each louver plate is received in the trough of the next adjacent louver plate and the transverse troughs overlap the hinge rod bearing members on the frame, the extensions of the transverse troughs of each louver plate overlapping the ends of the transverse troughs of the next adjacent louver plate.

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