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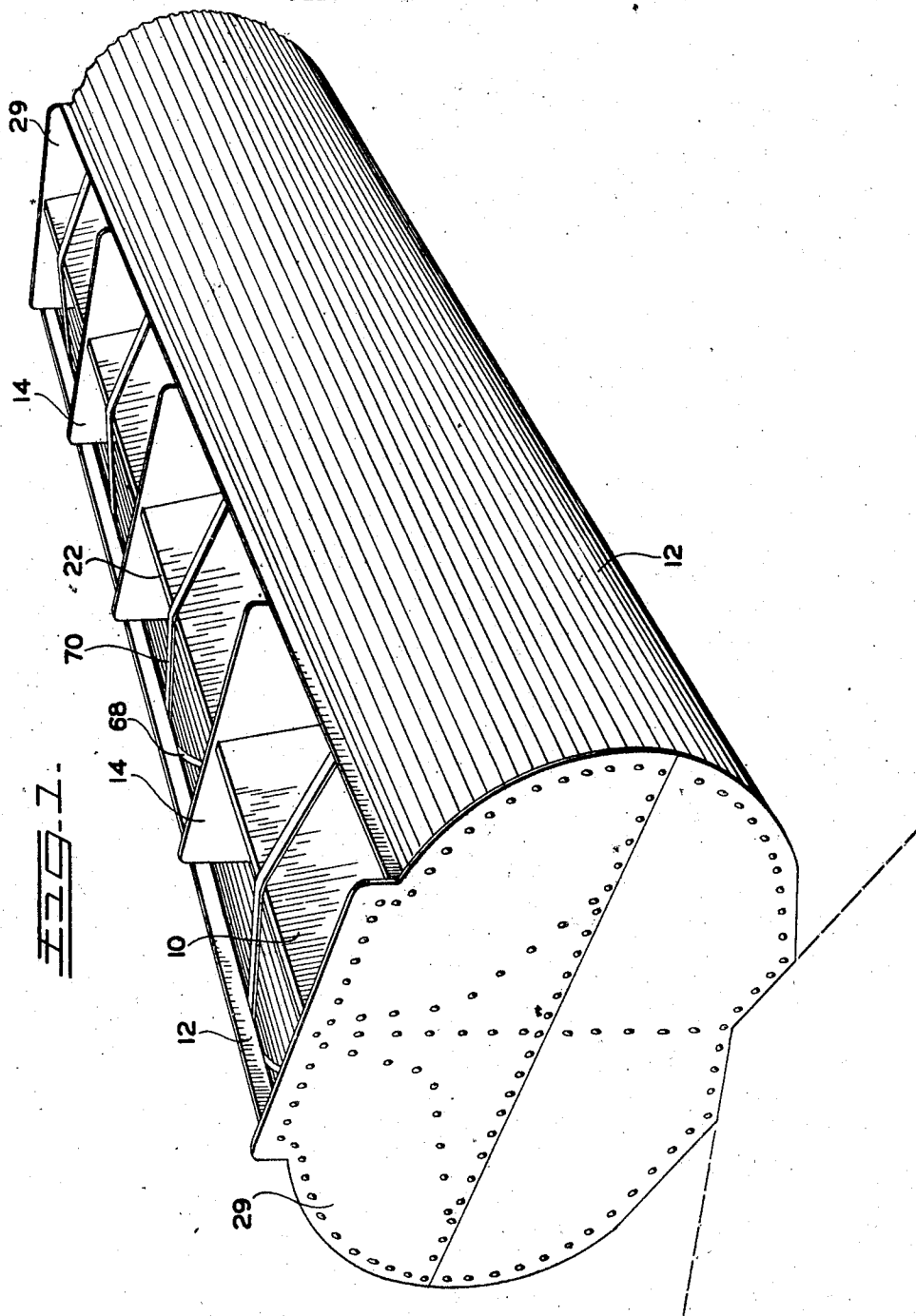
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2,232,027

VENTILATOR

Filed March 10, 1939

4 Sheets-Sheet 1



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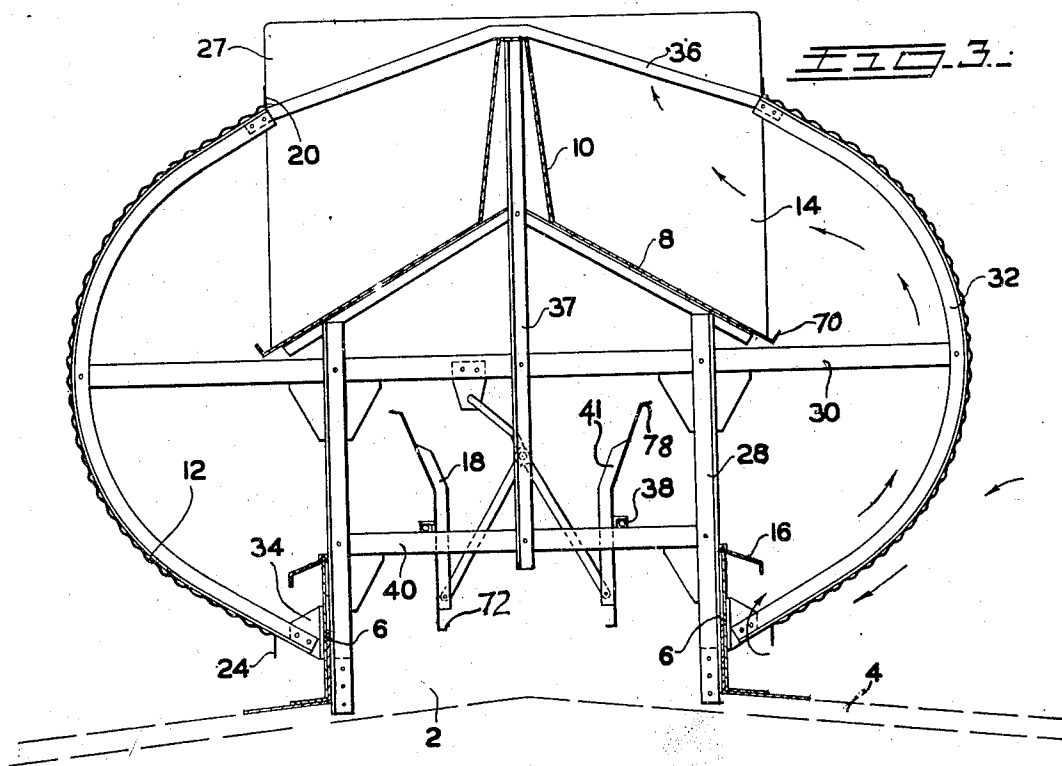
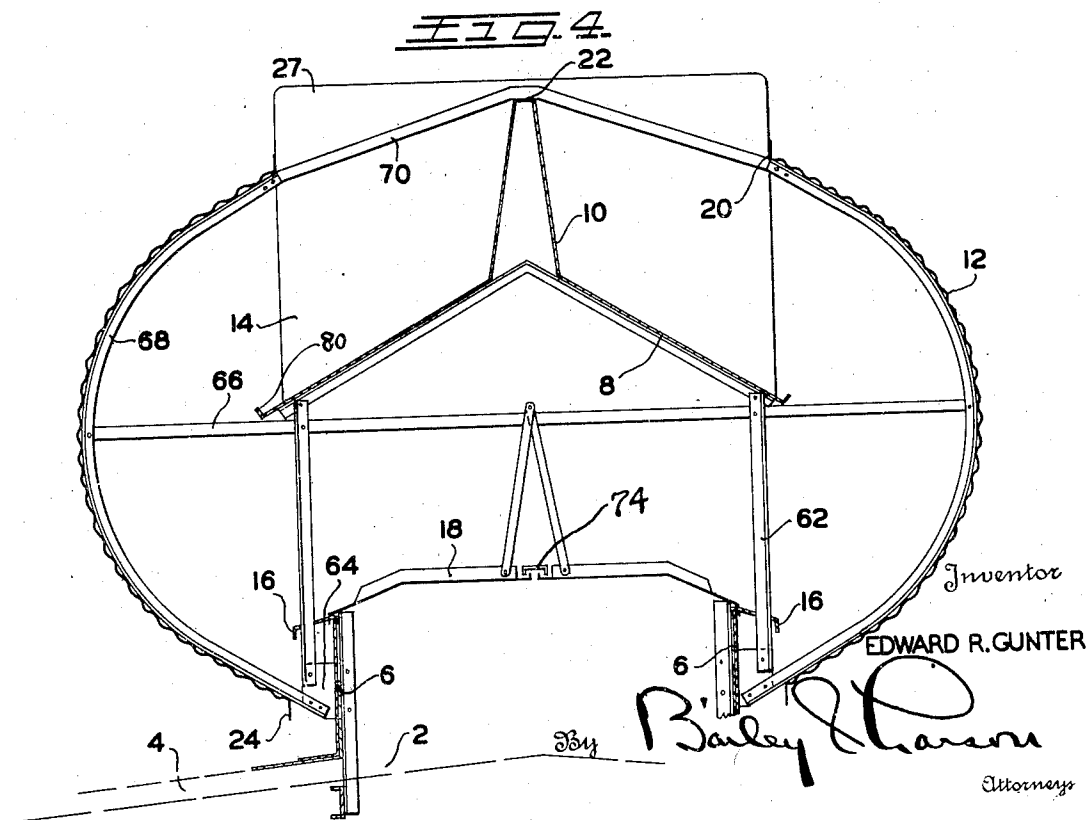
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VENTILATOR

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FIG. 5.

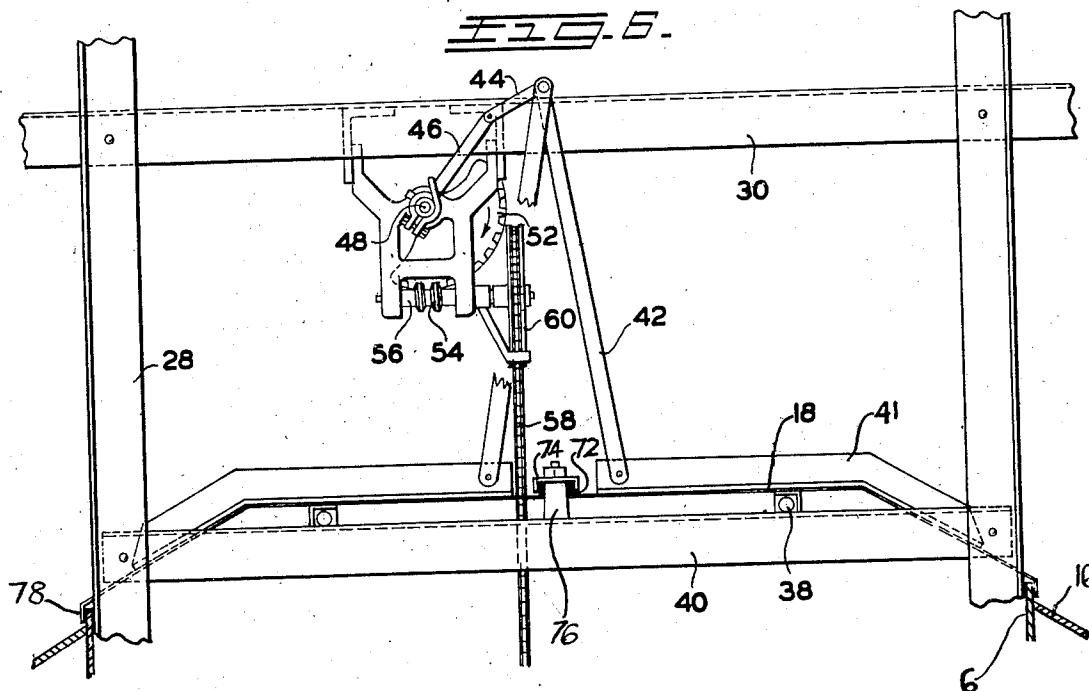
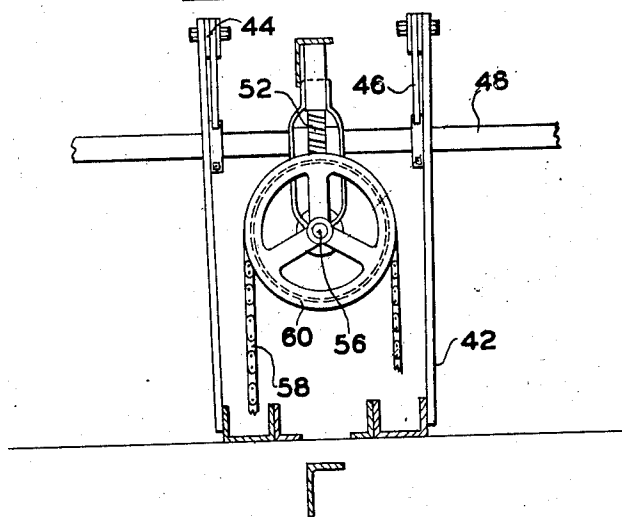


FIG. 6.



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UNITED STATES PATENT OFFICE

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VENTILATOR

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11 Claims. (Cl. 98—42)

The invention relates to ventilators and particularly to ventilators of the ridge type.

The ordinary type of roof ventilator is generally cylindrical in cross section. Such ventilators for small buildings are quite effective. For larger buildings, however, in order to produce proper ventilation, such large numbers of these ventilators are required that the presence of one is apt to interfere with the flow of air to another. The present invention relates to a ventilator of the ridge type which is designed to overcome this difficulty by covering in a single device a large ventilating aperture.

A primary object of the invention is to provide a ridge type of ventilator which is effective whatever may be the direction of the wind flowing past it. Ridge ventilators heretofore known have been effective when the wind flows transversely to the length thereof, but when the wind flows at an angle or parallel to the length thereof such ventilators are not ordinarily effective. The present invention provides in such a ventilator upstanding transverse dividing walls which serve as obstacle means for angular winds so as to insure proper ventilating action no matter what may be the direction of the wind.

Another object of the invention is to prevent downwardly inclined winds from interfering with the proper action of the ventilator. Such winds ordinarily have only a slight downward angle, but in a long ridge ventilator this slight downward angle is sufficient when the wind is blowing longitudinally of the ventilator to introduce air into the eduction pipe and thus prevent ventilation. The present invention provides means for avoiding this difficulty.

A further feature of the invention is that the same means are utilized for the two purposes mentioned above, namely, to provide ventilation whatever may be the direction of the flow of the wind and to prevent interference with ventilation by downwardly inclined air currents.

A further object of the invention resides in the provision of a novel means for increasing the suction effect of a ventilator by air which is deflected to the bottom thereof. This is accomplished by directing such air upwardly and outwardly within the ventilator so as to cause a rapid current of air and thus reduce the pressure to withdraw air from the eduction pipe.

A further object of the invention is to provide a novel framing arrangement for a ridge ventilator which is simple and yet strong. Particularly, this involves the supporting of the cap member by a framework, such framework being

provided with a cross piece which braces and supports in part the storm band of the ventilator, and the provision of means for preventing this framework from carrying water into the eduction pipe.

Still another object of the invention is to provide a novel damper construction which when closed is effective to prevent the entrance of moisture.

Further objects and advantages of the invention will appear more fully from the following description, particularly when taken in conjunction with the accompanying drawings which form a part thereof.

In the drawings:

Fig. 1 is a perspective view of a ventilator embodying my invention;

Fig. 2 is a side elevation of a part of a ventilator, with parts broken away;

Figs. 3 and 4 are cross sections on the lines 3—3 and 4—4 respectively of Fig. 2;

Figs. 5 and 6 are detail views of the damper operating mechanism.

The ventilator is intended to be applied on an elongated rectangular opening 2 in a roof 4. It may be arranged at the ridge of the roof, or at any other suitable point. It comprises as its principal elements an eduction pipe 6 of the same dimensions as the opening in the roof, preferably an elongated rectangle in cross section, a cap member 8, a divider 10 forming a part of the cap member, storm bands 12, baffling plates 14, lips 16 and dampers 18.

As will be apparent from the drawings, the cap 8 and divider 10 form a cover for the eduction pipe 6 so as to prevent water from falling vertically thereinto. The storm bands 12 are substantially semi-cylindrical in shape, or outwardly convex. They extend inwardly sufficiently far at the upper ends, as indicated at 20, to cross lines drawn through the upper edges of the eduction pipe and the outer edges of the cap so that the direct entrance of rain into the eduction pipe from the sides is prevented. However, the upper edges 20 are at considerable distances below the upper edge 22 of the divider 10.

The lower edges 24 of the storm bands 12 terminate at substantial distances away from the eduction pipe 6. Along the upper longitudinal edges of the eduction pipe 6 are provided the lips 16 extending outwardly substantially as far as the edges 24 of the storm bands 12, these lips having slight downward inclinations.

From this construction it is obvious that air

striking below the vertical center of either storm band will be deflected downwardly between the storm band and the roof and will enter the space between the storm band and the eduction pipe under considerable pressure. It will be deflected by the lip 16, and will flow at a high velocity up along the inside of the storm band to the space above the cap, the direction of this flow being indicated by the arrows (Fig. 3). This high velocity flow of air will cause a suction which will increase the effectiveness of the ventilator.

Spaced along the ventilator are a number of transverse baffles 14, having their upper edges 27 located higher than the upper edges 20 of the storm bands. These plates extend from the divider 10 out as far as the upper edges 20 of the storm bands, and downwardly to the cap 8. When air flows transversely of the ventilator or perpendicular to the length thereof these baffles have no effect. However, whenever the air flows at an angle, or even longitudinally of the ventilator, the baffles 14, particularly since they extend above the storm bands, provide a series of obstacles against which the wind strikes and which thus cause low pressure areas along the length of the ventilator. These low pressure areas serve, of course, to draw the air from the eduction pipe 6. Thus whatever the direction of the wind may be the ventilator will be effective to exhaust air from the building on which it is applied. The end walls 29 of the ventilator also extend upwardly as high as the baffles, so as to provide additional obstacles. Furthermore, even if the wind should have a slight downward inclination, it will not enter the eduction pipe since the baffles 14 will stop its flow, and their obstacle effect will produce a suction to draw air from the ventilator.

The various parts heretofore described are supported by a novel type of frame, including one type of framing located in the same transverse planes as the obstacle baffles and another type intermediate such planes. The first type of frame (Fig. 3) includes uprights 28 extending upwardly from opposite sides of the eduction pipe, on the top of which is carried the cap member 8. A series of transverse frame members 30 are secured to the uprights 28 just below the cap. On the outer ends of these transverse members are arcuate frame members 32 against which the storm bands of corrugated metal are secured. The lower ends of members 32 are connected by brackets 34 to the eduction pipe, while their upper ends are connected by a transverse member 36 to each other and to the top of the divider 10. An upright 37 secured to cross member 30 serves to support the top of the divider 10. This gives a simple and strong framing for the ventilator.

The intermediate frames (Fig. 4) are composed of uprights 62 secured to brackets 64 carried by the eduction pipe. Cross members 66 are secured to the uprights support storm band supports 68 which are connected at their lower ends to brackets 64 and at their upper ends to each other by member 70.

The eduction pipe may be closed by the dampers 18 (Figs. 5 and 6) which are pivoted at 38 on cross pieces 40 connected to the uprights 28 and are strengthened by angle irons 41. The dampers are operated by links 42 connected to angle irons 41 and through a pivoted link 44 to a lever 46 rigid on a shaft 48. Shaft 48 is mounted through brackets on the cross members 30.

The shaft 48 carries a segmental gear 52 meshing with a worm 54 mounted on a shaft 56. This shaft may be turned through a chain 58 engaging a sprocket 60 secured on the shaft. By pulling the chain in opposite directions it is evident that the damper may be opened or permitted to close.

At times snow or rain may in some way enter beneath the cap 8. To prevent water from entering the eduction pipe, the dampers are arranged substantially to seal the same. For this purpose, the inner edges of dampers 18 have upwardly turned flanges 72 which engage into opposite sides of an inverted channel member 74 carried by block 76 on cross members 40. The outer edges of dampers 18 form downwardly turned flanges 78 which engage over the upper edges of eduction pipe 6.

Cap member 8 is provided opposite cross frame members 30 and 66 with upwardly turned edge portions 80 which prevent water from falling on the cross members and trickling therefrom into the eduction pipe.

While I have described herein one embodiment of my invention, I wish it to be understood that I do not intend to limit myself thereby except within the scope of the appended claims.

I claim:

1. In a ventilator having an eduction pipe, a storm band arranged laterally of the eduction pipe, and a cap above the eduction pipe, such storm band extending above the lower edge of the cap and below the upper edge of the eduction pipe, baffle means arranged at an angle to said storm band between the storm band and the cap and extending upwardly at least to the upper edge of the storm band and sufficiently high to provide a series of low pressure areas along the length of the ventilator when the wind flows longitudinally thereof.

2. In a ventilator having an eduction pipe, a storm band arranged laterally of the eduction pipe, and a cap above the eduction pipe, such storm band extending above the lower edge of the cap and below the upper edge of the eduction pipe, vertical baffle means arranged at an angle to said storm band between the storm band and the cap and extending above the upper edge of the storm band.

3. A ridge ventilator comprising an eduction pipe of elongated cross section, a cap above said eduction pipe, a storm band on one side of said eduction pipe extending above the lower edge of said cap member and below the upper edge of said eduction pipe, and upwardly directed baffle means in said ventilator extending transverse to the longitudinal axis of said eduction pipe and extending upwardly at least to the upper edge of the storm band and sufficiently high to provide a series of low pressure areas along the length of the ventilator when the wind flows longitudinally thereof.

4. A ridge ventilator comprising an eduction pipe of elongated cross section, a cap above said eduction pipe, storm bands on opposite sides of said eduction pipe extending above the lower edge of said cap and below the upper edge of said eduction pipe, and vertical baffle means extending across the space between the upper edges of said storm bands transverse to the longitudinal axis of said eduction pipe, said baffle means extending above the upper edges of the storm bands.

5. A ridge ventilator comprising an eduction pipe of elongated substantially rectangular cross

5 section, a cap above said eduction pipe, outwardly convex storm bands on opposite sides of said eduction pipe extending above the lower edge of said cap and below the upper edge of said eduction pipe, and vertical baffle means extending across the space between the upper edges of said storm bands transverse to the longitudinal axis of said eduction pipe, said baffle means comprising plates extending above the upper edges of the storm bands.

10 6. A ridge ventilator comprising an eduction pipe of elongated cross section, a cap above said eduction pipe, outwardly convex storm bands on opposite sides of said eduction pipe extending above the lower edge of said cap and below the upper edge of said eduction pipe, a divider extending upward from the central portion of said cap parallel to said storm bands, and vertical plates extending across the space between the upper edges of said storm bands transverse to the longitudinal axis of said eduction pipe, said plates extending above the upper edges of the storm bands and downwardly to said divider and cap.

25 7. A ridge ventilator comprising an eduction pipe of elongated cross section, a cap above said eduction pipe, outwardly convex storm bands on opposite sides of said eduction pipe extending above the lower edge of said cap and below the upper edge of said eduction pipe, baffle means extending across the space between the upper edges of said storm bands transverse to the longitudinal axis of said eduction pipe, said baffle means comprising plates extending above the upper edges of the storm bands, the lower edges of said storm bands being spaced from said eduction pipe, and lips on said eduction pipe above said spaces, whereby air entering said spaces is deflected outwardly along the inner surfaces of the convex storm bands.

8. A ridge ventilator comprising an eduction pipe, frame members extending upwardly above said eduction pipe, means for connecting the frame members to the eduction pipe, a cap supported on said frame members, cross frame members supported by said upwardly extending frame members, and storm bands supported partially on said cross frame members, said storm bands extending above the lower edge of said cap and below the upper edge of said eduction pipe, means for connecting the lower ends of said storm bands to said eduction pipe, and means for connecting the upper ends of said storm bands to each other.

9. A ridge ventilator comprising an eduction pipe, frame members secured to and extending upwardly above said eduction pipe, a cap supported on said frame members, cross frame members supported by said upwardly extending frame members, said cap having upwardly extending portions at its edges above said cross frame members and storm bands supported partially on said cross frame members.

10. In a ridge ventilator, a pivoted longitudinally extending damper member having along its inner edge an upwardly directed flange, and a longitudinally extending inverted channel member, said flange fitting within said channel member when the damper is in closed position.

11. In a ridge ventilator, an eduction pipe, pivoted dampers, the inner edges of said dampers having upwardly directed flanges thereon, an inverted channel member, the outer edges of said dampers having downwardly turned flanges, the inner flanges engaging in said channel member and the outer flanges engaging the outside of the eduction pipe when the damper is in closed position.

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