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T. A. HEPPENSTALL

2,068,916

VENTILATOR

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Fig. 1.

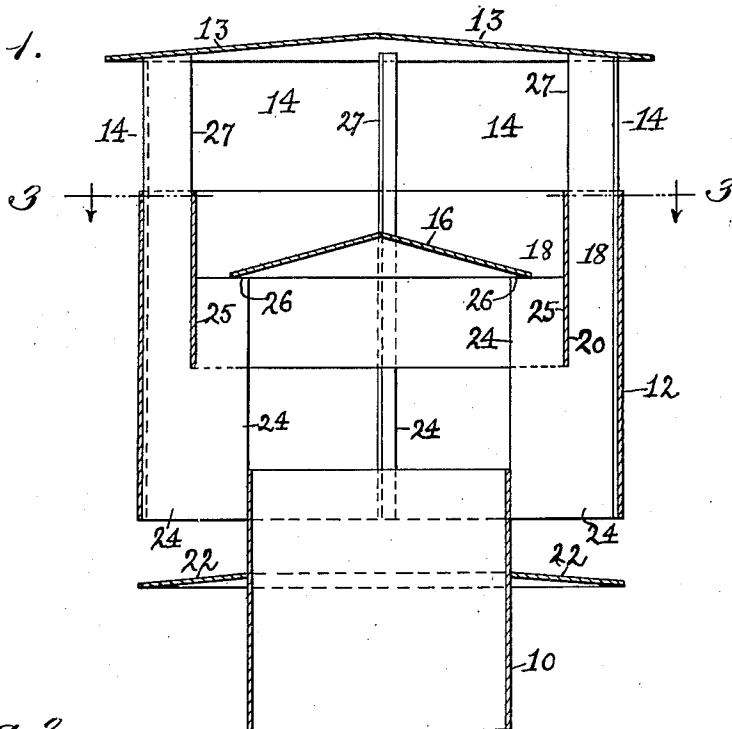


Fig. 2.

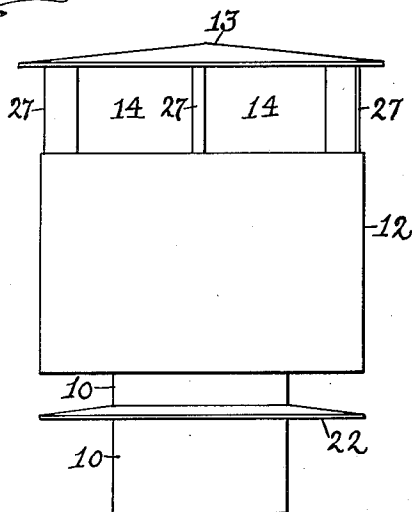
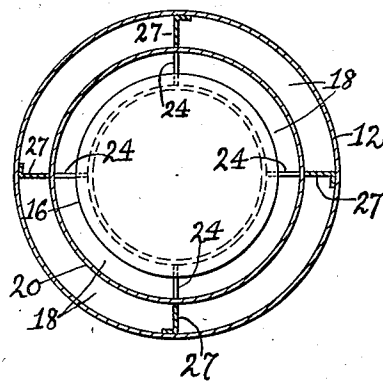


Fig. 3.



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UNITED STATES PATENT OFFICE

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VENTILATOR

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2 Claims. (Cl. 98—84)

This invention relates to ventilators for use on buildings, ships, and other structures, and has for its object to provide a ventilator capable of functioning efficiently with the wind blowing from all directions, which is simple, and relatively in-
expensive to construct and with which back drafts are avoided.

In the accompanying drawing,

Fig. 1 shows a vertical central section of a ventilator embodying the invention;

Fig. 2 is an elevation on a smaller scale of the ventilator shown in Fig. 1, and

Fig. 3, a plan of the ventilator on a smaller scale, in section on the line 3—3, Fig. 1, the collar 22 being omitted.

In the ventilator herein shown, 10 represents the eduction pipe which communicates with the building or other structure on which the ventilator is mounted. The eduction pipe 10 is extended up into a suction band or windshield 12, which surrounds the eduction pipe and may be circular in form as herein shown or may be of other shape in cross section. The suction band 12 is open at its upper and lower ends and extends above the outlet mouth of the eduction pipe and is made of materially greater diameter or size than the eduction pipe, and is provided with an elevated cap or cover 13, which is for the best results of a size or width equal to and preferably greater than the suction band or windshield 12, so as to completely cover the suction band or windshield and prevent air or rain falling vertically downward from entering the suction band and thereby preventing said vertically falling air or rain from passing into the suction band and causing back drafts in the eduction pipe.

The cap or cover member 13 for the suction band 12 is elevated above the latter a substantial distance to form with the suction band a main gas outlet opening 14 of substantial height and area. Preferably the area of the gas outlet passage 14 is materially greater than the area of the eduction pipe 10, so that the ventilator is provided with a gas outlet passage 14 which will take care of the volume of gases delivered by the eduction pipe 10. It will thus be seen that the cap or cover 13 for the windshield or suction band 12 cooperates with the latter to prevent rain falling vertically downward from entering the windshield or suction band 12, while providing between the suction band and the said cover, a gas outlet of sufficient capacity to allow of the free flow of gases out of the ventilator. It will be observed that the gas outlet passage 14 would afford opportunity for the entrance into the

windshield or suction band of air and/or rain moving downward at an angle, and the present invention has for another object to provide within the suction band baffling means for preventing air or rain which may be driven into the suction band from passing into the eduction pipe 10 and thence into the building or other structure, without materially interfering with the passage of the gases from the eduction pipe 10 out of the ventilator through the outlet passage 14.

For this purpose a baffling member 16 is located in the suction band above the open upper end of the eduction pipe a substantial distance to permit a free flow of gases out of the eduction pipe yet so as to oppose the air or rain passing into the suction band at an angle whose limits are the top edge of the suction band and a line touching the outer edge of the cap member for the suction band and intersecting the center line of the eduction pipe 10.

When the suction band or windshield 12 is circular in form as herein shown, it may be preferred to make the baffling member 16 conical in shape with its apex in the center line of the eduction pipe.

The lower end of the conical baffling member 16 is preferably made slightly larger than the eduction pipe so as to permit any water which may strike it to flow off of the projecting edge and fall downward outside of the eduction pipe and consequently not enter the latter. The lower edge of the baffling member 16 is separated from the suction band by a space 18, which forms within the suction band a gas outlet leading to the gas outlet passage 14 between the suction band 12 and its cap or cover 13. The gas outlet 18 is made sufficiently wide to provide for a free passage for the gases, and when made of the desired width, the gas outlet 18 in the preferred construction is wide enough to allow air and/or rain to pass into the eduction pipe at an inclination approaching the vertical, which inclination forms with the horizontal upper edge of the suction band 12 a greater angle than those which are intercepted by the baffle member 16.

Another object of the present invention is to provide a baffle for the rain which would otherwise pass through the outlet passage 18 into the eduction pipe 10, with the least possible interference with the free flow of gases from the eduction pipe 10 to the outlet passage 14.

This object is accomplished by interposing between the baffle member 16 and the suction band within the latter, a vertically arranged baffle member 20, which extends above and below the lower

edge of the baffle member 16. The vertically arranged baffle member 20 is made as a cylinder when the suction band 12 is circular in form, as herein shown, and for the best results the cylinder 20 is made of sufficient height to extend from a line touching the upper edges of the suction band 12 and eduction pipe 10 and intercepting the center line of the eduction pipe, to a second line which touches the lower edge of the baffle member 16 and the lower edge of the cover or cap member 13 for the suction band 12 and intersecting the center line of the eduction pipe 10.

In this way any rain which falls downward at such angle as to clear the lower edge of the cap member 13 for the suction band, and also so as to clear the upper edge of the suction band and enter the latter, will be intercepted by the vertical baffle 20 and, striking the outer surface of the latter, will pass down through the suction band and out thereof at its open bottom, and thereby be prevented from entering the eduction pipe 10 and the building on which the ventilator is mounted.

Mounted on the eduction pipe below the suction band is a collar 22, preferably frustum-shaped and for the best results of a diameter greater than that of the suction band and substantially that of the cap member 13 so as to intercept upwardly flowing air currents and deflect them outwardly so as to pass upwardly outside of the suction band and cause air or gases to be aspirated out of the suction band at the bottom thereof.

The collar 22 will preferably be located on the eduction pipe so as to be separated from the lower edge of the suction band by a space less than the width or height of the main outlet passage 14 and preferably about one-half of the same so that gases within the suction band may also be drawn out of the suction band at the bottom thereof.

The vertically arranged baffle member 20 may be made relatively thin, and by reference to Fig. 1, it will be seen that the width of the gas outlet passage 18 between the baffle member 16 and the suction band 12 is reduced very little, and as a result the gases from the eduction pipe can flow freely through the wide and practically unobstructed main gas outlet 18 within the suction band to the main gas outlet 14 between the suction band and its cap, while at the same time rain is prevented from entering the eduction pipe.

The baffle members 16, 20 may be supported within the suction band as herein shown by means

of vertically extended vanes 24 provided with a slit 25 into which the vertical baffle member 20 is extended and also provided with a shoulder 26 upon which the lower edge portion of the baffle member 16 rests, but said baffle members 16, 20 as well as the other parts of the ventilator may be otherwise supported in any suitable manner to meet conditions of use.

In the present instance, the cap member 13 is supported by extensions 27 of the vanes 24.

It will be observed that a ventilator constructed as above described is efficient with the wind blowing in all directions, inasmuch as no matter in which way the wind is blowing, it is prevented from entering the suction band so as to materially affect the flow of gases from the eduction pipe through and out of the ventilator, while at the same time rain is prevented from entering the eduction pipe, and back drafts in the eduction pipe are avoided.

Having thus described the invention, what is claimed is:

1. In a ventilator of the character described, in combination, a suction band open at its top and bottom, an eduction pipe extended up into the suction band, a cover member for said suction band located above and separated from the top of said suction band, a deflecting member below the open bottom of said suction band and spaced therefrom, a conical rain baffle above the eduction pipe forming with the suction band a gas outlet within the latter, and a cylindrical second rain baffle located in the gas outlet within the suction band and extended above and below the lower edge of the said conical rain baffle.

2. In a ventilator of the character described, in combination, a suction band open at its top and bottom, an eduction pipe extended up into the suction band, a cover member for said suction band located above and separated from the top of said suction band a substantial distance to form the main gas outlet for the ventilator, a rain baffle above the eduction pipe and separated therefrom a substantial distance and forming with the suction band a gas outlet within the latter, and a second rain baffle located within the suction band to prevent rain flowing into the top of the suction band at different angles from entering the eduction pipe, and a deflecting member below the open bottom of said suction band and spaced therefrom to intercept rain and wind flowing upwardly at an angle while affording an outlet for gases at the bottom of the suction band.

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