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G. A. MITCHELL

1,962,783

VENTILATOR

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Fig. 1.

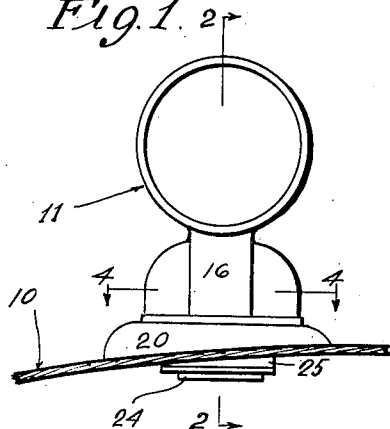


Fig. 2.

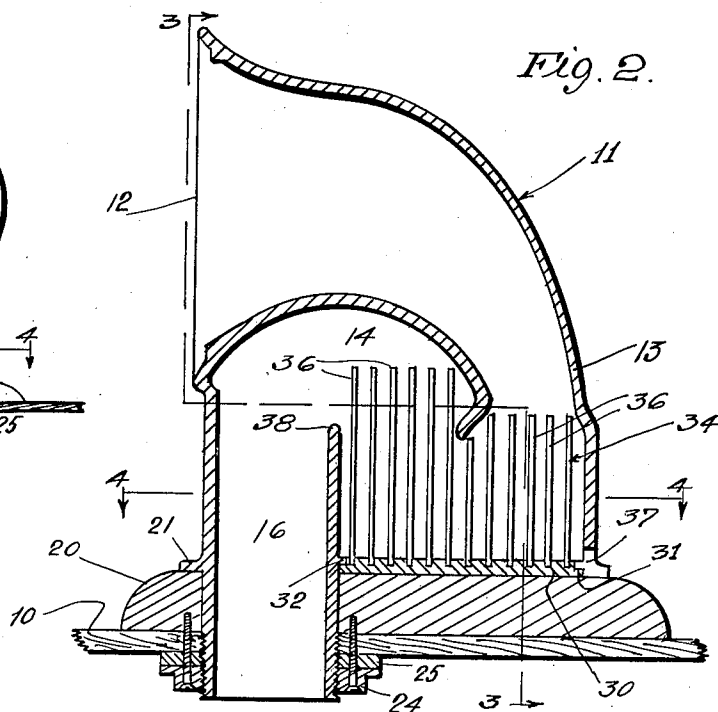


Fig. 3.

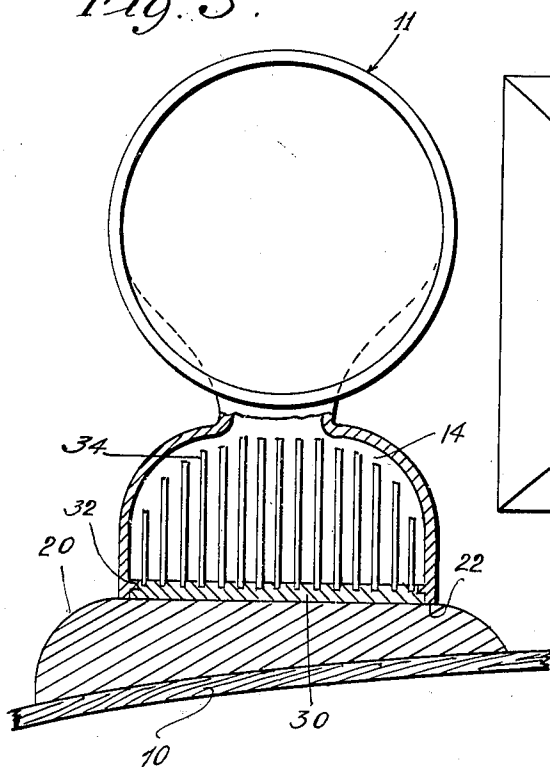
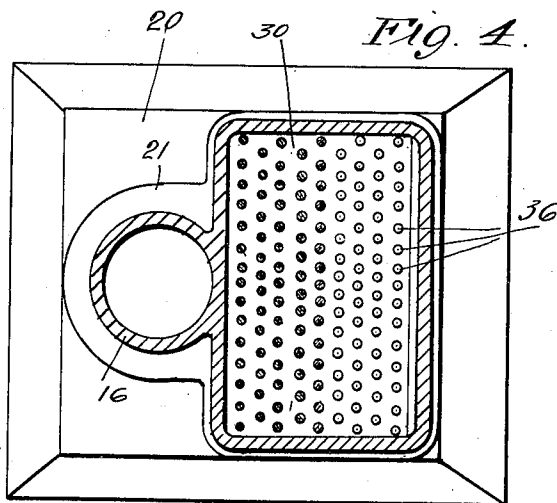


Fig. 4.



Inventor
George A. Mitchell

George A. Mitchell

Attorney

UNITED STATES PATENT OFFICE

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VENTILATOR

George A. Mitchell, Los Angeles, Calif.

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5 Claims. (Cl. 98—64)

This invention relates generally to ventilator horns such as are used in the decks of boats for ventilation of interior compartments, and has for its object the provision of means for preventing water spray washing within the mouth of the horn from passing through the ventilator.

It has been usual heretofore to provide ventilator covers for use over the ventilators during rough weather. The use of such ventilators is objectionable, however, first because it puts the ventilator out of use during such time as the covers are in place, and second, because of the bother involved in mounting and dismounting them to meet conditions as they are encountered.

In accordance with the present invention, briefly stated, there is provided in the horn a means for filtering or separating out any water entering therein. This means takes the form of a series of obstructions or baffles in the ventilator passage, which catch the entering water and conduct it outside the horn by way of a suitable drain, while permitting the air stream to pass on through. Further the ventilator is configured in the form of a trap, which collects and holds the water until it can drain out.

The invention will be better understood from the following detailed description of a present preferred embodiment, reference for this purpose being had to the accompanying drawing in which:

Figure 1 is a front elevation of the ventilator horn mounted in place in the boat deck;

Fig. 2 is a vertical longitudinal section, taken on line 2—2 of Fig. 1;

Fig. 3 is a view partly in elevation and partly in section, being taken on the broken line 3—3 of Fig. 2; and

Fig. 4 is a horizontal section taken on line 4—4 of Fig. 2.

In the drawing numeral 10 designates the slanting deck or ceiling of a boat, and numeral 11 my ventilator horn mounted therein. Horn 11 may be described as being in the form of a trap, the bell 12 of the horn converging rearwardly from its mouth and turning downwardly to a comparatively slender neck 13, which merges into an enlarged chamber 14 turned forwardly under bell part 12, the lower wall portion of the bell forming the upper central wall of chamber 14, as clearly shown in Fig. 2.

At the forward upper end of chamber 14, directly below the mouth of the horn, the air passage turns downwardly through a cylindrical conduit 16, which is formed integrally with the bell and the chamber walls, and extends downwardly

below chamber 14 to be taken in an opening in the ceiling. Since the ceiling is usually on a slant, a wedge shape leveling block 20 is used on the ceiling to give a horizontal surface for the mounting of the horn. Cylinder 16 is formed with a flange 21 which provides a shoulder at the level of the lower edges 22 of the walls of chamber 14, and said shoulder and wall edges 22 rest down on block 20, as shown. The lower end of cylindrical conduit 16 is screw-threaded to take a screw threaded holding ring 24, and another wedge shape leveling member 25 may be used between said ring and the under surface of the ceiling.

The horn as thus described is preferably cast in one piece, leaving, however, the lower side of chamber 14 open. This opening is closed by a plate 30 which rests on block 20. Plate 30 is shown with an upwardly facing marginal shoulder 31, which provides a seat for a flange 32 extending inwardly from the walls of chamber 14. Plate 30 need not be fastened to the main ventilator casting, for as so confined by flange 32 it cannot be displaced. This two part construction for the ventilator is preferred for simplicity of construction, as well as of assembly; although any other found suitable may be used.

Plate 30 carries the obstruction or baffle means 34 which extends upwardly throughout chamber 14, and is designed to interrupt the passage of water and divert it from the air stream. This obstruction means is preferably in the form of a plurality of pins 36 set vertically in plate 30, and offset or staggered, as shown in Fig. 4, so as to force the air stream and water into tortuous paths, and thereby enforce repeated contact of the water particles with the pins.

The ventilator horn has been described as formed with a restriction just ahead of chamber 14, so that the velocity of flow is increased at that point; but just beyond, within enlarged chamber where the cross section of the air passage is increased, 14, the velocity of flow is reduced. The pins do not bar the passage of the air, which passes through them to the upper open end of conduit 16, and so down through the ceiling. Any water spray entering the horn, however, comes into contact with the pins and adheres thereto. The flow of air around and past the pins creates a depression in pressure at the rear of each pin, and drops of water collected from the air stream and clinging to the pins are blown around to this depression region at the rear of the pins, where the velocity of air flow is insufficient to break them away. The drops of

water thus clinging to the rear surfaces of the pins then flow down the pins to plate 30, and the water thus collected in the bottom of chamber 14 is drained out through an outlet 37 at the rear.

5 Sufficient of the pins are of course provided to collect all of the water from the air stream by the time the air passes through chamber 14. In practice, these provisions are found very effective in removing comparatively finely divided water
10 particles from the air stream.

In case a large amount of water enters the ventilator at any one time, this water is trapped in chamber 14 until it can drain out through the outlet, the upper edge 38 of conduit 16 being
15 above the highest water level that will occur in the chamber.

Thus in addition to the action of the pins in obstructing the ventilator passage so as to separate out water particles carried by the air stream,
20 the horn acts as a trap for the water; and this configuration of the horn alone is responsible for removing a large amount of water from the ventilator.

It is not to be thought that the pin form of obstruction is the only one that can be used, as the invention contemplates any suitable form of water collecting obstructions that will serve the purpose described. It will therefore be understood that the drawing and description are to
30 be considered merely as illustrative and not restrictive on the broader claims appended hereto, for various changes in design, structure and arrangement may be made without departing from the spirit and scope of said claims.

35 I claim:

1. A ventilator embodying a horn, a water collecting chamber in said horn, and a plurality of water collecting pins vertically mounted in said chamber and around and between which the water carrying air stream passes in moving through
40 said chamber, said pins creating regions of pressure depression at their rear sides whereby water particles caught thereby move around to said depression regions and are thereby enabled to cling to and travel down the pins, and a water
45 drain in the bottom of said chamber.

2. A ventilator embodying a horn, a water col-

lecting chamber in said horn, and a plurality of staggered water collecting pins vertically mounted in said chamber and around and between which the water carrying air stream passes in moving through said chamber, said pins creating
80 regions of pressure depression at their rear sides whereby water particles caught thereby move around to said depression regions and are thereby enabled to cling to and travel down the pins, and a water drain in the bottom of said chamber. 85

3. A ventilator embodying an air collecting horn converging to a relatively slender neck, a chamber of relatively enlarged cross section leading from said slender neck and wherein the air velocity is reduced, a plurality of vertically disposed baffle members distributed along and entirely across said enlarged chamber around and between which the water carrying air stream passes in moving through said chamber, said baffle members creating regions of pressure depression at their rear sides whereby water particles caught thereby move around to said depression regions and are thereby enabled to cling to and travel down said members, and a water drain
90 in the bottom of said chamber. 95 100

4. A ventilator of the character described, embodying a horn converging rearwardly from its mouth to a restricted downwardly turned neck portion, a chamber of relatively enlarged cross section leading from said restricted neck and
105 wherein the air velocity is reduced, said chamber turned forwardly under the horn, a conduit communicating with the forward upper end of said chamber, and vertically disposed water collecting baffle members distributed along and entirely across said chamber. 110

5. A ventilator of the character described, embodying a horn converging rearwardly from its mouth to a restricted downwardly turned neck portion, an enlarged chamber leading from said
115 restricted neck and wherein the air velocity is reduced, said chamber turned forwardly under the horn, a conduit communicating with the forward upper end of said chamber, and a plurality of vertical pins mounted in said chamber. 120

GEORGE A. MITCHELL.

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