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VENTILATOR FOR NON-POROUS FABRIC STRUCTURES

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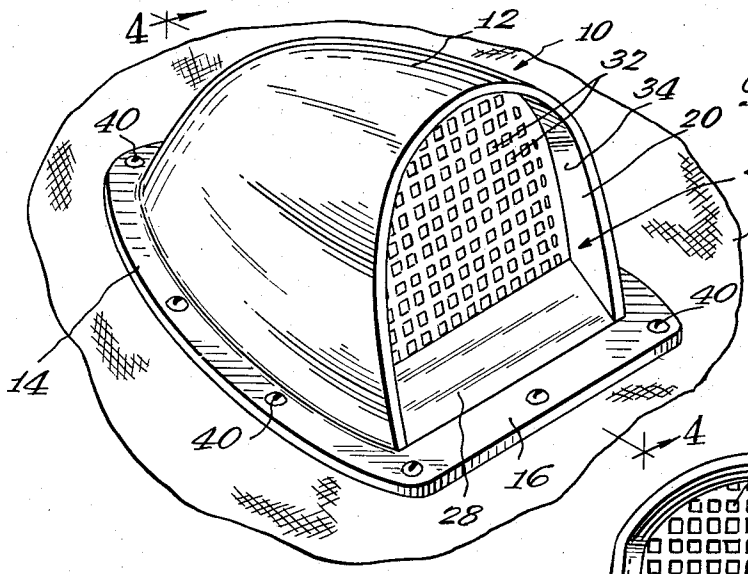


Fig. 1.

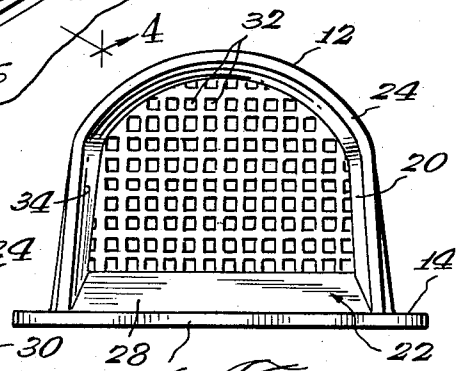


Fig. 2.

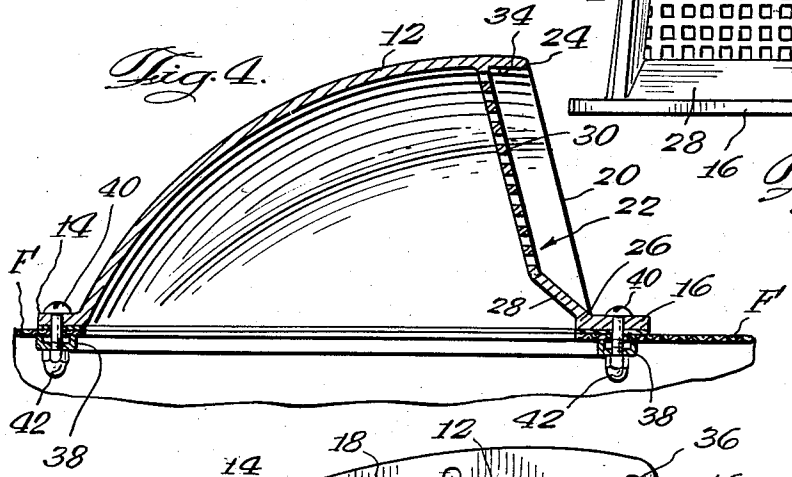


Fig. 4.

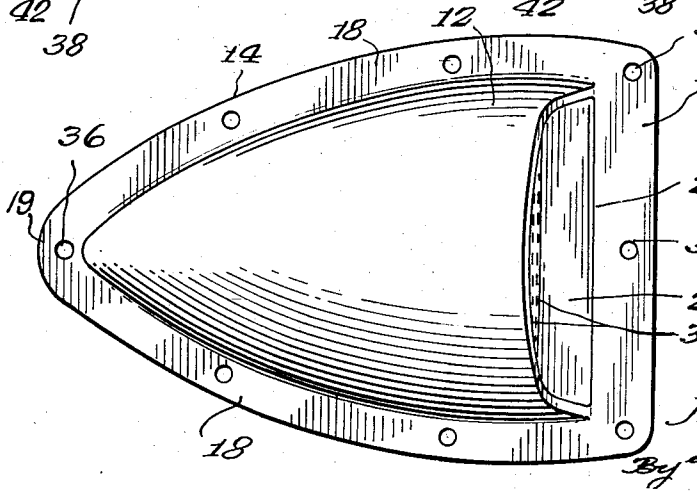


Fig. 3.

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VENTILATOR FOR NON-POROUS FABRIC STRUCTURES

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6 Claims. (Cl. 98—37)

This invention relates to ventilators and more particularly to ventilators for use in connection with fabric structures such as automobile convertible tops, foldable boat cabin tops and covers, tents and the like. More particularly, the invention relates to improvements in ventilators making the same especially useful in connection with enclosures made of non-porous textile or fabric structures, such as, for example, nylon or plastic coated covers for boats.

The use of the ventilating apparatus for automobile bodies or cabs and the like is well known. Such ventilators provided means for scooping up or transmitting air into the interior of the automobile body during the movement of the automobile. Such ventilators heretofore have primarily been adapted for use in connection with permanent automobile cabs or bodies usually made of steel or wood. Automobile convertible tops and convertible boat tops were heretofore usually made of canvas or other textile fabrics which were sufficiently porous to enable "breathing" through the fabric itself. Thus there was no necessity for using ventilators in connection with such porous material enclosures. The same, of course, applied to stationary enclosures such as tents.

In recent years, however, more durable and light weight materials such as man-made textiles including "nylon" and "dacron" and the like have been substituted for canvas in the construction of such enclosures. However, since such materials are non-porous so that ventilation or "breathing" through the material itself is impossible, need has arisen for providing ventilating apparatus for such enclosures.

It is, therefore, an important object of this invention to provide a ventilating apparatus to fulfill this need.

Ventilators of the type described hereinabove must obviously be so designed as to admit air but without admitting moisture or water as when used during snow or rain. Likewise, they must be capable of screening out insects and other extraneous objects. The latter requirements are especially important when the ventilators are installed on moving structures such as automobiles or boat tops. It is, therefore, another important object of this invention to provide a ventilator which will effectively screen out insects and similar extraneous objects, further preventing the admission of excess moisture or water without, however, interfering with its ventilating function.

Yet another object is to afford ventilating means especially and readily adaptable for use and mounting on fabric structures, including those made of non-porous materials, such as nylon.

Yet a further object is to provide a ventilating unit which may be used in connection with moving enclosures either to admit air into the enclosures or to exhaust foul air from the enclosure into the atmosphere.

Still another object is to afford means for readily and removeably mounting the ventilator unit on a fabric structure wall or surface.

Still a further object is to provide ventilating apparatus of the character described made of light-weight material and of simple inexpensive construction yet sturdy, attractive and functional.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a view in perspective of a ventilator embodying the principles of my invention and illustrated as mounted on a piece of textile or fabric;

Fig. 2 is a front elevational view of the same;

Fig. 3 is a top plan view of the same; and

Fig. 4 is a sectional view taken on the plane of line 4—4 in Fig. 1 of the drawings and viewed in the direction indicated.

Directing attention first to Fig. 1 of the drawings, reference numeral 10 indicates generally a ventilator shown mounted on a piece of fabric F such as may comprise the wall or roof of a convertible boat or automobile top. The ventilator 10 comprises a dome-shaped housing 12 having an integrally formed flange 14 encircling the base thereof. The flange 14 may be of substantially flat-iron shape comprising a straight front segment 16 and arcuately formed, rearwardly-converging sidemembers such as 18. Thus the rear end of the flange is substantially pointed as at 19. Obviously the flange likewise defines the shape of the housing 12 which is more or less shaped as a scoop with a wide front end 20 which gradually diminishes in width or converges to the rear.

It should be obvious that the ventilator is designed so that the air is admitted through the open front end 20 and then deflected by the dome shaped wall 12 of the ventilator into the interior of the structure or enclosure upon which it is mounted.

In order to prevent the admission of excess moisture or water as well as extraneous objects such as insects and the like, a novel structure is provided which will now be described in some detail. This structure comprises a baffle or front wall indicated generally by reference numeral 22. This baffle may be integrally formed with the housing and extends from the front base flange 16 to the top of the housing 12 and further completely fills the opening 20. It should further be noted that the housing 12 is so designed that the plane of its front edges 24 is inclined and sloped upwardly and rearwardly so that the front end 24 of the top portion is recessed or spaced rearwardly from the rear edge 26 of the bottom flange 16. The function of this structure will be disclosed as the description proceeds.

The baffle 22 is formed with a bottom inclined segment 28 which in turn is integrally formed at the bottom of an insect-screening wall segment 30. This wall segment is formed with a plurality of perforations such as 32, the size and number of which are such as to effec-

tively screen out or prevent the admission of extraneous materials, including insects, while simultaneously admitting sufficient air through the perforations or apertures to effectively ventilate the interior of the structure upon which the apparatus is mounted. However, the bottom segment 28 is non-perforated or solid. It will further be noted that the bottom segment 28 is formed in a plane, the inclination of which is considerably greater than that of the perforated segment 30. The function and reasons for this structure will appear as the description proceeds.

It should further be noted that the baffle 22 is recessed from the front edges 24 of the housing 12 so that a front portion 34 of the housing 12 overhangs or shields the baffle. This overhang 34 completely surrounds the perforated segment 30 and affords an effective means for shielding or preventing the admission of excess water through the perforated portion. Any moisture which might drip from the top portion of the overhang 34 will fall or collect on the bottom segment 28 which is positioned in a plane most conducive to collect such moisture. However, since this segment is imperforate the water cannot pass therethrough into the enclosure but instead runs down the incline and is dispersed. Thus it will be apparent that the baffle 22 is a combined screen and baffle which effectively prevents the admission of insects and the like as well as excessive moisture but nevertheless does not interfere with the passage of air therethrough.

To mount the ventilator 10 on the fabric wall F, a simple but most effective means is provided. It will be noted that the flange 14 is formed with a plurality of openings such as 36 formed in spaced relationship along said flange. These openings are adapted to cooperate with openings formed in a mounting gasket such as 38, the configuration of which is likewise flat-iron shaped and complementary to the shape of the flange 14. This gasket 38 is adapted to fit under the ventilator 10 beneath the fabric wall F with its openings aligned with the openings 36 of the flange. Through these aligned openings fastening means such as, for example, bolts 40 and nuts 42 may be assembled to effectively secure and mount the ventilator in position on the fabric.

It should be obvious that since the ventilator is intended primarily for use on fabric or textile structures, it is important that the same be light in weight in order that it be properly supported by the flexible fabric. For this reason, it is preferred that the ventilator apparatus be made of a light-weight material such as for example light-weight metals including aluminum or of molded plastic as for example "polyethylene." To insure more effective mounting, the gasket 38 may be of channel-shaped cross-section as shown in Fig. 4 of the drawings. This structure likewise minimizes deterioration of that portion of the fabric gripped between the flange 14 and the gasket 38.

From the foregoing description and drawings, it should be apparent that I have provided a unique, simple, sturdy, most effective ventilating apparatus which may be used in connection with any enclosure requiring ventilation. Thus, for example, the device may be used on permanent hard surface structures such as automobile bodies and cabs but is especially designed for use in connection with replaceable and foldable enclosures such as tents and fabric boat cabins or automobile convertible tops. It should further be noted that the device may be used with its front end facing in the direction of travel for the purpose of admitting air from the atmosphere into the enclosure, or it may be reversed so that its open end faces rearwardly for the purpose of expelling air from the interior of the enclosure through the baffle 22 into the atmosphere. Thus when used on vehicles such as boats or automobiles, they may be used in pairs with one unit serving as a ventilator and the other unit serving as an exhaust means.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a ventilator for an enclosure of the character described; a dome-shaped housing having a front open face, said dome-shaped housing tapering in width and height from front to rear, an integrally formed mounting flange encircling the base of said housing, a baffle secured to the housing and closing the front end of the same, said baffle spaced inwardly from the front edge of said housing, the upper portion of said baffle formed with a plurality of perforations adapted to admit air while screening out extraneous objects, and the lower portion of said baffle positioned substantially in vertical alignment with the front edge of the top portion of said housing whereby the same affords means adapted to drain off excess moisture dripping from said front edge.

2. The ventilator of claim 1 in which a mounting gasket is provided to cooperate with said mounting flange for mounting the ventilator on a surface of said enclosure, said gasket adapted to be mounted under the surface of the enclosure with clamping means adapted to connect together said gasket and flange.

3. The ventilator of claim 1 in which said latter-mentioned means comprises an imperforate baffle portion associated with said first-mentioned perforated baffle portion.

4. The ventilator of claim 1 in which said baffle is positioned in an inclined plane sloping forwardly from top to bottom, said imperforate portion positioned in a plane of greater inclination than said perforated baffle portion, said imperforate portion adapted to drain off moisture.

5. A ventilator for foldable fabric boat-cabin-tops comprising a lightweight plastic dome-shaped housing having a front open face, an integrally formed flat-iron shape mounting flange encircling the bottom of said housing, the open end of said housing closed by an integrally formed baffle, said baffle formed with an upper perforated segment and a lower imperforate segment, said baffle positioned in an inclined plane sloping forward from top to bottom with said lower imperforate segment more inclined than said upper segment, said baffle recessed from the front edges of said housing so that portions of said housing protrude in overhanging relationship encircling at least the upper segment of said baffle and said flange formed with a plurality of spaced openings therethrough.

6. The ventilator of claim 5 in which a mounting gasket having a flat-iron configuration identical to that of said flange is positioned in aligned relationship therewith beneath a wall of said fabric boat-cabin-top, said gasket having openings formed therein aligned with the openings of said flange, and securing means adapted to join together said gasket and flange whereby to secure said ventilator on said fabric enclosure.

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