Oct. 10, 1967 F. W. SAUER 3,345,932

VENTILATING DEVICE FOR FABRIC BODIES

Filed Nov. 1, 1965

Fig. 1.

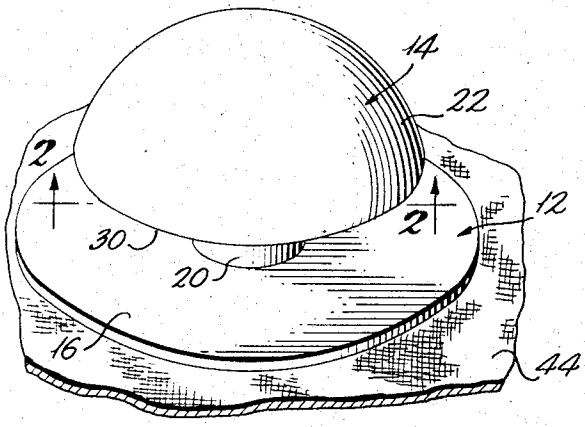


Fig. 2.

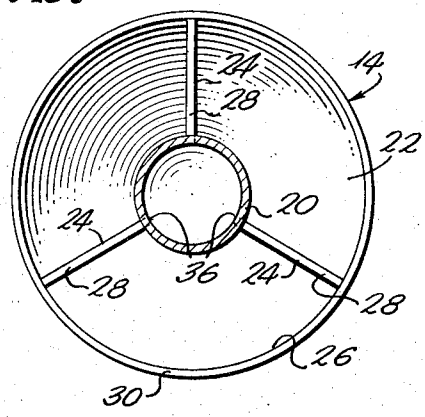


Fig. 3.

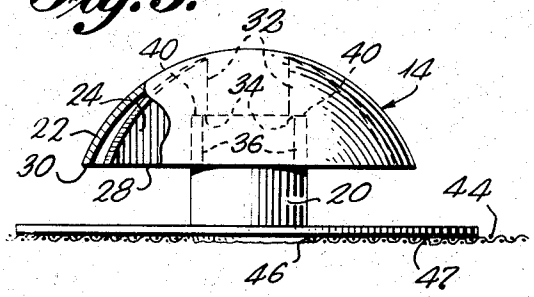


Fig. 4.

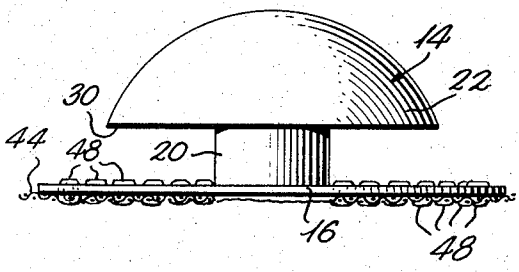
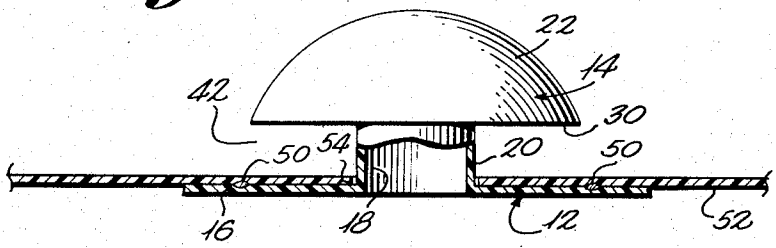


Fig. 5.



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VENTILATING DEVICE FOR FABRIC BODIES

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ABSTRACT OF THE DISCLOSURE

The ventilating device for waterproof coverings comprises a flat attaching plate having a central opening and an upstanding integral tube surrounding the opening. The tube extends into and stops short of the concave side of a dome shaped cordal section of a sphere. Radial webs within the dome and integral therewith, contact the free end of the pipe and support the dome in spaced relation thereto. The inner edges of the webs are offset or notched to provide shoulders which have supporting contact with the end of the pipe. The inner edges of the webs, below the notch, have line contact with the outer surface of the pipe and support the dome in operative position.

This invention relates generally to the class of ventilators.

An object of the present invention is to provide a novel ventilating device designed for use in association with or upon a flexible sheet material such as a fabric material which may be a woven material or a material formed in any other manner.

More particularly, it is an object of the present invention to provide a novel ventilating device which may be readily attached to or secured in operative position upon a fabric surface, by any one of a number of different methods such as by welding, hot knife, cementing, or sewing.

Many types of fabric are at present employed as coverings, out of doors and in doors, for structures to be protected from the weather or from dust. Such fabrics, usually of a waterproof character, are commercially available in large sheets suitable for covering automobiles, boats, machinery and the like and it is important that a means be provided for preventing condensation of atmospheric moisture upon the covered structure, beneath the covering or shielding fabric.

A further particular object of the present invention, in view of the foregoing, is to provide a novel ventilating device which can be readily attached or secured to a protective fabric sheet which may be a woven natural fiber fabric or a synthetic fiber fabric or a molded sheet of synthetic material, designed to be used as a covering in the manner stated and which will permit air circulation therethrough to avoid the undesirable effects of condensation upon a covered structure.

It is also an important object of the present invention to provide a ventilating device designed to be readily applied to or secured upon a sheet of fabric material for use of such material as above set forth, which will permit unobstructed or free transfer of air from one side of the material to the other and which at the same time will prevent the entrance of rain or other precipitation falling upon the top or outer surface of the material when the latter is in covering relationship with the structure to be protected.

Still another object of the invention is to provide a novel ventilator device which is particularly well suited

for use in effectively ventilating tents or similar structures which are ordinarily made of canvas or like woven material, for effectively ventilating the enclosed areas of such structure and at the same time preventing the entrance of rain or the like.

Other objects and advantages of the present invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of the specification, wherein:

FIG. 1 is a view in perspective of the ventilating device of the present invention showing the same applied to a fabric sheet.

FIG. 2 is a sectional view taken in a horizontal plane substantially on the line 2—2 of FIG. 1 and looking upwardly as indicated by the arrows.

FIG. 3 is a view in side elevation of the ventilating device showing the same mounted upon the top surface of a sheet of fabric and secured thereto by an adhesive, a portion of the top of the ventilating unit being broken away to show in full lines a part of a supporting web.

FIG. 4 is a view in side elevation of the ventilating device showing the same mounted upon the top surface of a sheet of fabric and secured thereto by fastening stitching.

FIG. 5 is a view in side elevation of the ventilating device with parts of the base portion in section and showing the device applied to a plastic sheet with the base portion bonded to the underside of the sheet.

Referring now more particularly to the drawings, it will be seen that the ventilating device, which is generally designated **10**, consists of two parts, namely, the lower part or base, generally designated **12**, and the top part or cap which is generally designated **14**.

The fabric ventilating device, generally designated **10**, is designed to be mold formed from a suitable plastic whereby it will have relatively light weight so as not to add materially to the weight of the fabric to which it may be attached. While the device is preferably made of molded plastic and therefore would be light in weight, it is also readily adaptable to production by mold forms, not only because of the ease with which plastic may be molded but also by reason of the novel design or construction of the parts of the device. While the use of a plastic is preferred and has many advantages, it is to be understood that the novel structure may be fabricated from a suitable light weight metal if desired.

It is also to be understood that in the use of the term "fabric" to designate the material to which the device is secured, this term is used generically to mean materials of any suitable character such as woven cloth fabric, woven plastic fabric, molded sheet fabric of a suitable plastic as, for example, a sheet of polyethylene, or of any other plastic material suitable for use as a covering material.

The base portion of the device, generally designated by the numeral **12**, comprises a flat sheet **16** of the selected material which is here shown as being of circular form. While the circular form of the sheet **16** may be preferable, obviously the sheet **16** may be of any other desired contour.

The center of the sheet portion **16** has the opening **18** therein, which is defined by the integral upstanding tube **20**. Accordingly as is obvious, the base portion **12** of the device consists of these two parts **16** and **20**.

The molded cap **14** consists of the rounded dome member **22** in the form of a chordal section of a hollow sphere and having, or being formed with the interior radially disposed webs **24** joined to the arcuate, rounded inside surface **26** of the member. These webs are spaced approximately 120 degrees apart and have their bottom edges **28** coplanar with the bottom edge **30** of the dome member or cap.

Each of the webs **24** has the vertical edge **32** thereof horizontally cut back between the top and bottom ends to thereby form a horizontal shoulder **34** which joins the set back or out-set vertical portion **36**. These vertical portions **36** of the webs form offsets of the edges **32** and they define or lie on a circle struck from the axial center of the cap and having an overall diameter substantially corresponding to the outside diameter of the tube **20**. Thus, as will be readily apparent, the top end of the tube **20** may be inserted into the area defined by the radially spaced edge portions **36** of the webs to place the supporting shoulders **34** upon the top edge **40** of the tube **20**.

The overall width or diameter of the cap member **22** is materially less than the overall diameter of the base plate **16**. Also, the radius of the arc of the cap member is struck from the center of the plate **16** and extends in the vertical plane through materially less than 180 degrees.

When the cap is placed in operative position upon the top end of the tube **20** the topmost part thereof will be disposed above the plate **16** at an elevation approximating the radius of the cap whereby the bottom edge **30** of the cap will lie in a plane a substantial distance above or spaced from the top of the plate **16**. Thus, there is provided the air flow space **42** giving a full uninterrupted 360 degree free flow circular area for passage of air into and out of the space between the upperside of the plate **16** or the fabric body to which it is attached, and the structure covered by such fabric body.

The ventilating device of the present invention being formed, preferably of plastic, may be secured to the desired fabric in several different ways.

In FIG. 1 the numeral **44** designates a fabric material, a portion only of such material being illustrated and upon which the ventilating device is positioned. In this view, and also in FIG. 3, it will be seen that the device is disposed upon the top of the fabric material which may have formed therein an opening **46** for registry with the opening **18** of the ventilating device when the latter is placed in position on the fabric.

The ventilating device may be secured, as previously stated, in a number of different ways. In the FIG. 3 illustration the numeral **47** designates a cementing material between the plate **16** and the surface of the fabric. However, in place of a cement, the plate **16** may be secured by stitching as indicated at **48**, in FIG. 4.

Where the fabric material may be a plastic, either a woven plastic material or a solid or single sheet of such material, adherence of the plate **16** to the material may be accomplished either by welding as indicated at **50** in FIG. 5. Here the plastic sheet is designated **52** and in this illustration of the application of the device to the plastic sheet, the plastic sheet **52** has been shown as having an opening **54**, through which the tube **20** may be extended so as to bring the top surface of the plate **16** against the underside of the fabric sheet where it may be welded as shown or it may be cemented to the fabric sheet or stitched thereto or securing staples may be employed both here and in connection with the attaching of the device to a woven fabric material.

The cap or rounded dome member constitutes as is shown in the illustration, a chordal section of a hollow sphere. Such a section with the integral webs **24** may be readily formed or molded of plastic material as will be readily seen and the wall of the dome is relatively thin, as are the webs also and the plate and tube may be of similar dimensions as regards thickness so that the entire ventilating unit can be formed to have a very light weight. Thus, when attached to a fabric such as a covering tarpaulin or to the top or roof of a tent of canvas or like weight material or other material of non-woven character, it will be seen that the additional weight of the ventilating unit will be infinitesimal and will not in any way affect or interfere with the handling of the material in placing it in operative position.

While the ventilating unit has been illustrated and described as consisting of the two parts **12** and **14** which can be readily joined together or separated by inserting the top end of the tube **20** between the set back edges **36** of the webs, the device may be formed in one piece if desired. When formed in the two pieces illustrated, obviously the dimensions of the parts will be such as to establish a tight frictional coupling between the wall of the tube **20** and the edges **36** of the webs whereby to hold the parts firmly in coupled or operative relation.

From the foregoing, it will be readily apparent that there is provided by the present invention a new and novel ventilating device which will add materially to the value of covering tarpaulins or like materials or to tent structures.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents, are therefore intended to be embraced by those claims.

I claim:

1. A ventilating device comprising a base portion consisting of a substantially flat plate having an opening therein and carrying an upstanding tube, the lower end of which tube defines said opening and the tube having an open top end, and a top portion consisting of a chordal section of a sphere, with means within the concave side thereof for engaging the open top end of said tube and supporting the said section open-side down over and vertically spaced from the top of said plate, the said means engaging the tube at spaced locations therearound whereby a free circulation of air between the plate and through the tube is permitted, said means comprising web members disposed radially of said sphere section and secured thereto, and each having upper and lower inner edge portions, the upper inner edge portion being offset inwardly from the lower inner edge portion to provide a supporting shoulder contacting the top end of said tube, and the lower inner edge portion making substantial line contact with the side of said tube and holding said section in position on said tube.

2. The invention according to claim **1**, wherein the overall diameter of said sphere section is materially greater than the outside diameter and length of the tube and is of materially less diameter than the maximum width of said plate.

3. A ventilating device according to claim **1**, in combination with a sheet of fabric having an aperture therein, with said plate secured to the fabric sheet and said sheet aperture and plate opening communicating with one another.

4. A ventilating device according to claim **1**, in combination with a sheet of fabric having an aperture therein, with said plate lying substantially flat against a surface of the sheet of fabric with the fabric sheet aperture and said plate opening communicating with one another.

5. A ventilating device according to claim **1**, wherein said plate is formed of plastic and said sheet of fabric is plastic and has an aperture therein, said plate lying substantially flatly against the surface of the fabric and

being sealed thereto and said sheet aperture and plate opening being in communication with one another.

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