Aug. 1, 1944. K. S. CASTLE 2,354,795

VENTILATOR

Filed July 27, 1942

FIG_1_

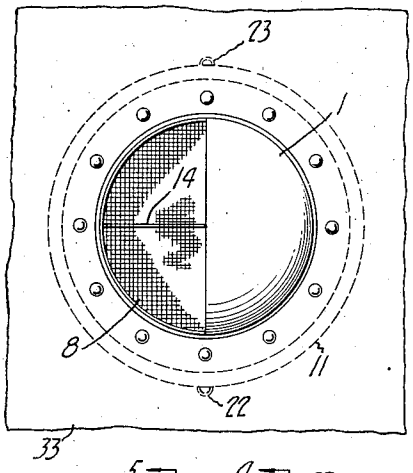


FIG_2_

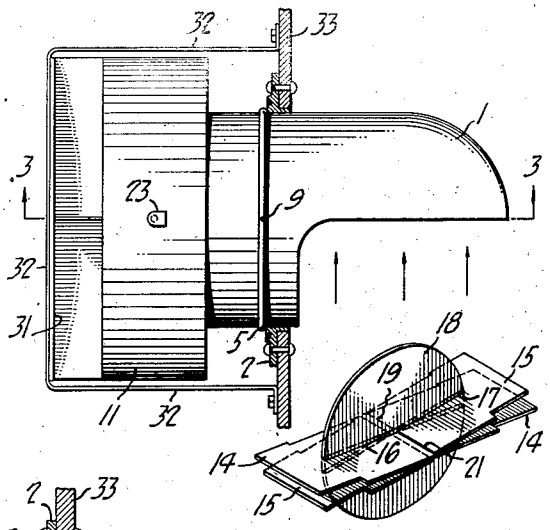


FIG_6_

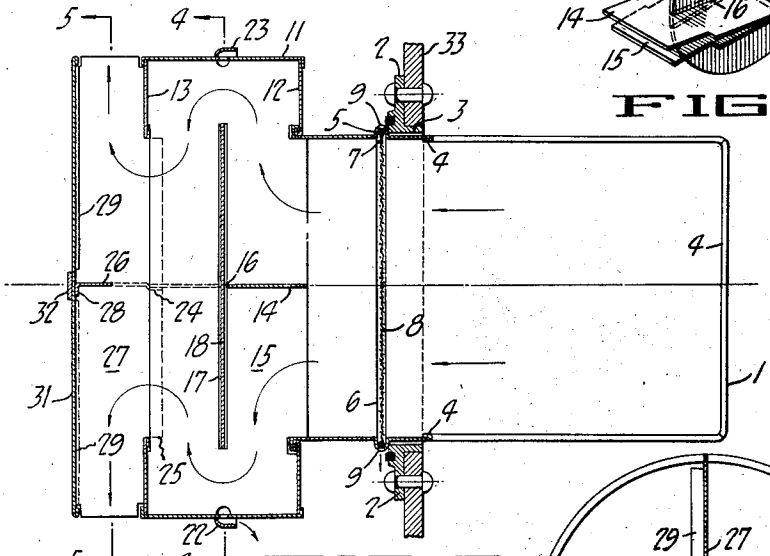


FIG_3_

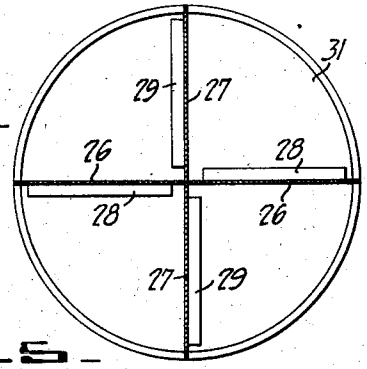


FIG_5_

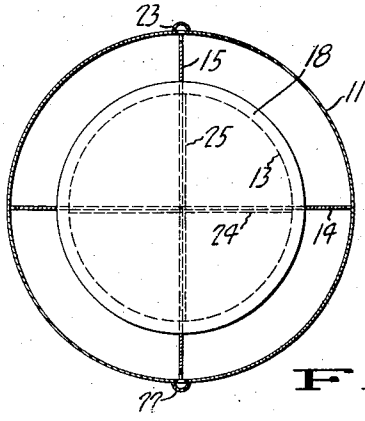


FIG_4_

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VENTILATOR

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4 Claims. (Cl. 98—37)

This invention relates in general to ventilators and more particularly to a ventilator adapted to be inserted in the porthole of a vessel during a black out.

It is of course always essential that plenty of fresh air be delivered to the interior of a vessel, and at night time during a state of war this must be done without permitting the emission of any light from the vessel. Although most vessels are provided on their decks with ventilators, portholes are also normally used for this purpose.

In general, the object of this invention is the provision of a simple but rugged light-proof ventilator adapted to be inserted and secured within any standard porthole.

Another object of the invention is the provision of a porthole ventilator formed with an insect screen and with means for draining off any water which may be entrapped therein.

The invention possesses other advantageous features, some of which with the foregoing will be set forth at length in the following description where that form of the invention which has been selected for illustration in the drawing accompanying and forming a part of the present specification is outlined in full. In said drawing, one form of the invention is shown, but it is to be understood that it is not limited to such form, since the invention as set forth in the claims may be embodied in a plurality of forms.

Referring to the drawing:

Figure 1 is an outer end elevation of a ventilator embodying the objects of my invention, as viewed externally of a vessel to which it is attached.

Figure 2 is a side elevation of the ventilator shown in Figure 1.

Figure 3 is an enlarged detailed cross-section taken on the line 3—3 of Figure 2.

Figure 4 is a vertical cross-section taken on the line 4—4 of Figure 3.

Figure 5 is a vertical cross-section taken on the line 5—5 of Figure 3.

Figure 6 is a perspective view of the central transverse baffle shown in Figure 3, and illustrates the manner in which this baffle is assembled with its supporting X-fins.

In general, my ventilator comprises a generally semicylindrical air scoop adapted to extend through a porthole and to the inner end of which is secured an inwardly flanged collar provided with an internal central transverse baffle. Secured to the outer end of the collar in spaced relation thereto is a second baffle which with the collar flanges and the internal baffle forms a tortuous path for the incoming air and an effective barrier to the outward passage of light.

As embodied in the various figures above described, my ventilator comprises a generally semicylindrical air scoop 1 arranged to slide through the flanged ring 2 of a porthole 3. If desired, the marginal edges of the scoop 1 may be bent back upon themselves as at 4 for the dual purpose of stiffening this member and producing a smooth edge.

Immediately inside the ring 2, the scoop 1 is formed with an outwardly extending bead 5 which serves as a shoulder for engaging the ring 2 and which forms an internal channel 6 for the reception of a resilient snap ring 7. Disposed across the scoop 1 and secured thereto by means of the snap ring 7 is an insect screen 8. Extending through the bead 5 at both its top and bottom are drainage holes 9 through which any water intercepted by the screen can be drained.

Secured to the inner end of the scoop 1 is a collar 11 provided with inwardly extending flanges 12 and 13 which form a circular channel. Welded within the collar 11 is a pair of interlocked, right-angularly disposed, radially extending fins 14 and 15, respectively formed with aligned, transversely disposed slots 16 and 17 for the reception of a central circular baffle 18. The diameter of the baffle 18 should of course be somewhat greater than the inner diameter of the scoop 1. As best shown in Figure 6, the fins 14 and 15 and the baffle 18 are assembled by providing the fin 14 with a slot 19 for the accommodation of half the width of the fin 15, and the fin 15 with a slot 21 for the accommodation of half the width of the fin 14, in the manner of an egg carton filler. By means of this construction the two fins, even though interlocked, can be rotated about the slots 19 and 21 so as to lie substantially in a common plane as shown in Figure 6. With the fins in this position, the circular baffle 18 can be inserted into the transverse coplanar slots 16 and 17. The fins are then rotated relative to each other about their common axis so as to lie at right angles with respect to each other, and in this position the fin and baffle assembly is welded to the collar 11 as shown in Figures 3 and 5. From this construction it will be noted that the fins serve both as a convenient means for locking and supporting the baffle 18 centrally with respect to the collar 11 in alignment with the scoop 1, and for stiffening the collar.

Formed on the periphery of the collar 11 in line with the bottom and top of the fin 15 are

drainage outlets 22 and 23 through which any water accumulated in the collar may be drained. In this connection it is to be observed that my ventilator may be used on either the port or starboard sides of a vessel by simply rotating it on its own axis through 180° and that it is for this reason that diametrically opposed drainage outlets 22 and 23 and drainage holes 9 are provided.

Welded to the fins 14 and 15 by means of laps 24 and 25 is a pair of outwardly extending fins 26 and 27 interlocked at right angles with respect to each other in the same manner as described in connection with fins 14 and 15. The outer edges of the fins 26 and 27 are turned over at right angles to form feet or flanges 28 and 29, and welded to these flanges is a baffle 31 having a diameter substantially equal to the outer diameter of the collar 11.

As best shown in Figure 3, the inner edge of the flanges 13 and outer edge of the baffle 31 may be turned over on themselves for the purpose of forming a finished edge and for stiffening these members.

To hold the ventilator as above described in its operative position with its bead 5 in engagement with the portable ring 2, a strap 32 is positioned over the baffle 31 and bolted to the plate 33 or other member forming the side of the vessel.

Although the effective operation of a ventilator of this type is not dependent upon specific dimensions, it should be noted that no cross-sectional area through which the incoming air travels in going from the scoop intake to the outlet formed by the rear collar flange 13 and rear baffle 31, should be less than the cross-sectional area of the cylindrical part of the scoop. For example, the annular passageway defined by the cylindrical wall of the collar 11 and the peripheral edge of the inner baffle 18 should not be less than the cross-sectional area of the scoop. Furthermore, it has been found that the inner baffle 18 should preferably be located midway between the collar flanges 12 and 13, and that the distance between the outer baffle 31 and the collar flange 13 should be substantially equal to the distance between the collar flange 13 and the inner baffle 18.

Although my ventilator has been illustrated as of circular-cylindrical form, it may be of square or any other cross-sectional form, and consequently the term "cylindrical" as herein used is to be construed as referring to any closed surface generated by a line moving parallel to itself.

I claim:

1. A porthole ventilator comprising: a collar formed with longitudinally spaced, inwardly extending front and rear flanges; an internal transverse baffle plate supported within said collar intermediate and partially overlying said flanges by a pair of crossed, interlocked fins secured to said collar; an external transverse baffle plate supported in longitudinally spaced relation with respect to and at least partially overlying said rear flange; and an outwardly and longitudinally extending, generally cylindrical air scoop sealed to said front flange; said flanges and baffle plates forming a tortuous path over which air must pass in traveling through the ventilator.

2. A porthole ventilator comprising: a collar formed with longitudinally spaced, inwardly extending front and rear flanges; an internal baffle plate supported within said collar intermediate and partially overlying said flanges by means of a first pair of crossed, interlocked fins secured to said collar; an external transverse baffle plate supported in longitudinally spaced relation with respect to and at least partially overlying said rear flange by means of a second pair of crossed, interlocked fins secured to and forming a continuation of said first pair of fins.

3. A porthole ventilator comprising: a collar formed with longitudinally spaced, inwardly extending front and rear flanges; and an internal transverse baffle plate supported within said collar intermediate and partially overlying said flanges by a pair of crossed, interlocked fins secured to said collar.

4. A porthole ventilator comprising: a collar formed with longitudinally spaced, inwardly extending front and rear flanges; an internal transverse baffle plate supported intermediate and partially overlying said flanges; an external transverse baffle plate supported in longitudinally spaced relation with respect to and at least partially overlying said rear flange; an outwardly and longitudinally extending, generally cylindrical air scoop sealed to said front flange; an outwardly extending peripheral bead formed on said air scoop and formed with an internal channel, said bead serving as a shoulder for engaging the frame of a porthole; and a screen disposed within said air scoop with its edges secured within said channel.

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