No. 761,680. PATENTED JUNE 7, 1904.

S. H. JACOBSON.

VENTILATOR.

APPLICATION FILED JAN. 6, 1903.

NO MODEL.

Fig. 1.

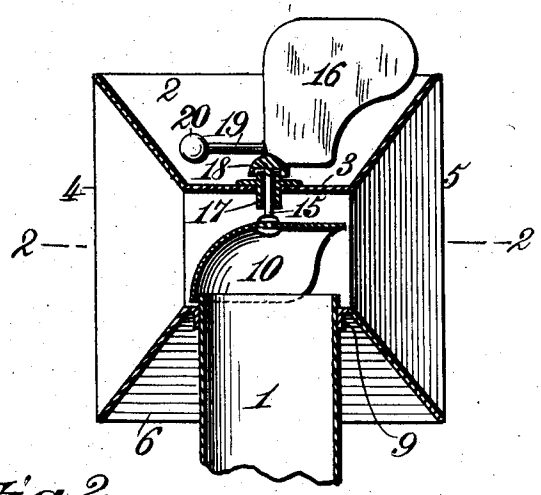


Fig. 2.

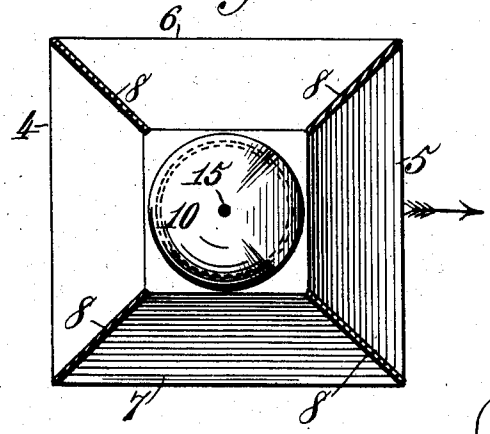


Fig. 3.

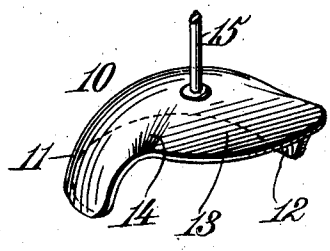
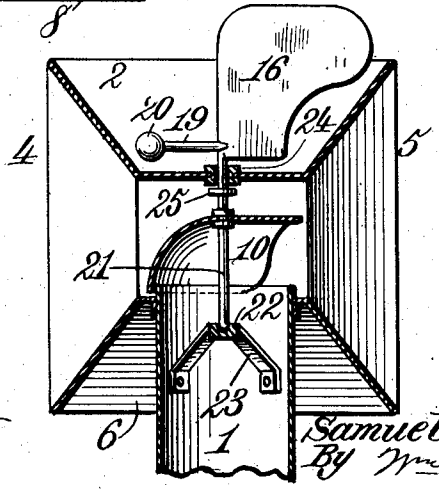


Fig. 4.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 761,680. Patented June 7, 1904.

UNITED STATES PATENT OFFICE.

SAMUEL HOUSTON JACOBSON, OF NEW YORK, N. Y., ASSIGNOR TO NATIONAL VENTILATING COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 761,680, dated June 7, 1904.

Application filed January 6, 1903. Serial No. 138,008. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL HOUSTON JACOBSON, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Ventilators, of which the following is a specification.

In an application for patent filed by me of even date herewith I have shown and described certain improvements in ventilators designed for ventilating the hold, cabin, rooms, or other apartments of a ship, car, or stationary building structure from a point above the deck or roof thereof, the same consisting of a rotary cowl mounted upon the upper end of the pipe or conduit leading to the space to be ventilated, means for automatically maintaining said cowl in line with the direction of movement of the wind, and a two-winged valve in said cowl which forms with the body thereof a contracted passage therethrough, one of the wings of said valve serving to cut off the direct current of air from said ventilating pipe or conduit.

My present invention is designed for the same purpose as that disclosed in the other application referred to; but instead of providing a rotary cowl on the upper end of the ventilating pipe or conduit with a two-winged valve therein I make use of a stationary cowl secured to said ventilating-pipe, having a plurality of admission and discharge funnels thereon and a peculiar form of rotary valve in the body of said cowl coöperating with the ventilating pipe or conduit and automatically turned by the wind, so as to cut off said pipe or conduit from the direct current of air and forming with the body of said cowl a contracted passage therethrough.

The details of my invention will hereinafter appear, and the novel features thereof will be set forth in the claims.

In the drawings, forming part of this specification, Figure 1 is a sectional elevation of one form of my ventilator. Fig. 2 is a horizontal section of the same, taken on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of the rotary valve employed; and Fig. 4 is a view similar to Fig. 1, showing a modification.

Like reference-numerals indicate like parts in the different views.

The ventilating pipe or conduit 1 communicates with the apartment or apartments to be ventilated and, as shown, is vertically disposed at its upper end. The same is designed to project above the deck of a ship or the roof of a car or building, as is common, and has secured to it the cowl 2. The said cowl is formed with a central body 3 and expanded ends or funnels 4, 5, 6, and 7. In the form of my invention herein shown the body 3 of the cowl is rectangular in form, although this particular form is not essential. The number of sides with which it is provided may be increased or decreased without departing from my invention. The funnels or expanded ends 4, 5, 6, and 7 have also been shown as pyramidal in form—that is, rectangular in cross-section. This particular shape of said funnels is also not an essential feature of my invention, as the same may be otherwise shaped, if desired. I prefer the pyramidal form, however, as it enables me to construct the several funnels with common division-walls 8, as shown in Fig. 2 of the drawings. The bottom wall of the body 3 of the cowl is formed with a circular opening through which the ventilating pipe or conduit 1 extends, the latter being secured in place to the body of the cowl by means of bolts, rivets, or other analogous securing devices extending through the annular flange 9, which surrounds the opening in said body. The upper end of the pipe or conduit 1 has been shown as projecting slightly above the upper surface of the bottom wall of the body 3. Mounted for rotation within the body of the cowl is a valve 10, the same being preferably constructed of sheet metal and designed for the purpose of cutting off the direct current of air entering the cowl from the ventilating pipe or conduit 1, while permitting of an upward-induced draft being created in said ventilating pipe or conduit for the purpose of removing the foul

or vitiated air from the apartment with which said pipe or conduit communicates. The valve 10 is of generally concavo-convex form. The side 11 thereof is preferably in the shape of a portion of a sphere, the lower edge 12 of said side lying in a plane substantially parallel with the bottom wall of the body 3 of the cowl. Said lower edge 12 has been shown as semicircular, the same embracing, lying in close relation to, and coöperating with the upper projecting end of the pipe or conduit 1. The other part, 13, of said valve is flat, or substantially so, the same being curved along its lines of junction with the part 11, as shown at 14—that is to say, the part 13 of said valve lies substantially parallel to the upper wall of the body 3 of the cowl throughout the greater portion of its extent, but is curved transversely at one end, so as to merge into the curved wall of the part 11.

The valve 10 is secured to an axis or shaft 15, which extends up through the top wall of the body 3 of the cowl and is provided with a vane 16. The upper wall of the cowl-body is provided with a flanged bearing-sleeve 17, through which the shaft or axis 15 projects, and said shaft or axis is formed with a hood 18, which surrounds the upper end of said bearing-sleeve and serves to prevent the ingress of water and the like around the bearings. The said hood 18 may, if desired, move in contact with the flange on the bearing-sleeve 17, and thus provide for the support of the valve 10 and the vane 16 from the upper wall of the cowl-body. To counterbalance the vane 16, the same may be provided on the side thereof opposite its wing with a laterally-projecting arm 19, having a ball or weight 20 on its free end. Any other suitable form of counterbalancing device, however, may be substituted for that shown. The vane 16 is located directly above the part 13 of the valve 10. The action of the wind on said vane therefore serves to constantly maintain the part 11 of said valve in a position facing the direction from which the wind is blowing. The said part 11, therefore, always receives the direct impact of the air entering the cowl 2. As this part of the valve surrounds the upper end of the ventilating pipe or conduit 1, the direct current of air is cut off from said pipe or conduit, and consequently dust, cinders, water, and other extraneous matter carried by the wind are prevented from entering the apartments to be ventilated with which said pipe or conduit communicates. The air after impinging against the convex part 11 of the valve passes through the contracted space between the part 13 of said valve and the upper wall of the cowl-body. The same is therefore materially compressed, and as it is discharged through one or more of the funnels at the sides of said cowl it acts with increased force to create an induced upward current through the pipe or conduit 1 from the space or apartment to be ventilated. The foul gases and vitiated air are thus automatically removed.

As above stated, the lower edge 12 of the valve 10 has been shown as semicircular in form. The same therefore covers or cuts off one-half of the upper end of the pipe or conduit 1. If the wind be blowing in the direction of the arrow shown in Fig. 2 of the drawings, the valve 10 will be automatically moved by means of the vane 16, so as to assume the position shown in said figure—that is, the lower edge 12 of said valve will extend from the center of the inner end of the funnel 6 to the center of the inner end of the funnel 7. All of the air will then enter through the funnel 4 and be discharged through the funnel 5. If, on the other hand, the wind be blowing in the direction of the dividing-wall 8 between the funnels 4 and 6, the valve 10 will be automatically turned through the medium of the vane 16, so that the lower edge 12 thereof will extend from a point in line with the dividing-wall between the funnels 5 and 6 to a point in line with the dividing-wall between the funnels 4 and 7. The wind will then enter the cowl through the funnels 4 and 6 and be discharged therefrom through the funnels 5 and 7. The part 11 of the valve 10, however, will, as in the first case, receive the impact of the air and will effectually cut off the pipe or conduit 1 from the direct current. It will thus be seen that the valve acts in the same manner in whichever way the wind may be blowing, serving to prevent the entrance of the direct current of air to the ventilating pipe or conduit 1 and the ingress of any extraneous matter carried thereby to said pipe or conduit. At the same time it provides for an induced upward current through the pipe or conduit 1.

In Fig. 4 of the drawings I have shown a modification of the method of mounting the rotary valve 10. In this form of my invention the valve 10 is secured to a vertically-disposed shaft 21, which extends above and below said valve. The lower end of said shaft fits and moves within a socket in the upper surface of a bearing-plate 22, which is located within the pipe or conduit 1 and is supported in a central position therein by means of the angularly-arranged arms 23. The said plate serves, therefore, as a support and as a bearing for the shaft 21 and the parts carried thereby. Above the valve 10 the shaft 21 extends through an opening in the upper wall of the body 3 of the cowl, the said opening being preferably provided with a bearing-sleeve 24. A collar 25 is provided on said shaft for preventing the upward movement thereof and of the valve to which the same is secured. The operation of this form of my invention is the same as that first described, but is deemed by me to be the better form, in that the bearing-plate 22 is completely protected from the access of water and the like

thereto by the valve 10, which is located above it. Furthermore, the weight of said valve and the parts carried thereby is sustained by the ventilating pipe or conduit 1 instead of by the sheet-metal cowl thereon.

Both forms of the device are entirely automatic in their operation, and the parts thereof are so constructed and arranged that it is difficult, if not impossible, for them to become broken or to get out of order. All of said parts are preferably made of metal, are simply constructed and cheaply made, and do not require careful fitting.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a ventilator, a cowl, designed to be mounted upon a ventilating pipe or conduit, having a passage therethrough and having an opening therein for connection with said pipe, and a rotary valve in said cowl having two parts, one of which is in the shape of a portion of a sphere and serves to cut off the direct current of air from said opening, and the other of which is flat, as and for the purpose set forth.

2. In a ventilator, a cowl, designed to be mounted upon a ventilating pipe or conduit, having a passage therethrough and having an opening therein for connection with said pipe, a rotary valve in said cowl having two parts, one of which is in the shape of a portion of a sphere and serves to cut off the direct current of air from said opening, and the other of which is flat, and means on said valve whereby the same is automatically turned by the wind to maintain the same in proper position with respect thereto, as and for the purpose set forth.

3. In a ventilator, a cowl, designed to be mounted upon a ventilating pipe or conduit, having a passage therethrough and having an opening therein for connection with said pipe, a valve mounted for rotation in said cowl about said opening, the said valve having two parts, one of which is in the shape of a portion of a sphere and has its lower edge surrounding said opening and lying in a plane substantially parallel to the portion of said cowl in which said opening is formed, and the other of which is flat and lies substantially parallel to the upper wall of the cowl-body, and means whereby said valve is automatically turned by the wind to maintain the same in proper position with respect thereto, as and for the purpose set forth.

4. In a ventilator, a cowl, designed to be mounted on a ventilating pipe or conduit, having a passage therethrough and having an opening therein for connection with said pipe, a valve mounted for rotation in said cowl about said opening, the said valve having two parts, one of which has a convex outer surface and is in the form of a portion of a sphere with the lower edge thereof surrounding said opening and lying in a plane substantially parallel with that portion of the cowl adjacent to said opening, and the other of which is flattened, and means on said valve whereby the same is automatically turned by the wind to maintain the convex part thereof in a position facing the direction from which the wind is blowing, as and for the purpose set forth.

5. In a ventilator, a cowl, designed to be mounted upon a ventilating pipe or conduit, having a passage therethrough and having an opening therein for connection with said pipe, a valve mounted for rotation in said cowl about said opening, the said valve having two parts, one of which has a convex outer surface and is in the form of a portion of a sphere with the lower edge thereof surrounding said opening and lying in a plane substantially parallel with that portion of the cowl adjacent to said opening, and the other of which is flattened, with a rounded portion adjacent to the convex part of said valve, a shaft or axis secured to said valve extending through the upper wall of said cowl and mounted in suitable bearings therein, and a vane secured to said shaft or axis whereby said valve is automatically turned by the wind to maintain the convex part thereof in a position facing the direction from which the wind is blowing, as and for the purpose set forth.

6. In a ventilator, the combination with a ventilating pipe or conduit, of a stationary cowl thereon comprising a central hollow body communicating with said pipe or conduit, and a series of expanded ends or funnels communicating with the sides of said body at different points, and a rotary valve in said body having two parts, one of which is in the shape of a portion of a sphere and serves to cut off the direct current of air from said pipe, and the other of which is flat, as and for the purpose set forth.

7. In a ventilator, the combination with a ventilating pipe or conduit, of a stationary cowl thereon comprising a central hollow body having an opening in the bottom wall thereof, through and above which said pipe projects, and a series of expanded ends or funnels communicating with the sides of said body at different points, and a rotary valve in said body having two parts, one of which is in the shape of a portion of a sphere and coöperates with the projecting upper end of said pipe or conduit for cutting off the direct current of air from said pipe, and the other of which is flat, as and for the purpose set forth.

8. In a ventilator, the combination with a ventilating pipe or conduit, of a stationary cowl thereon comprising a central hollow body communicating with said pipe or conduit, and a series of expanded ends or funnels communicating with the sides of said body at different points, a valve mounted for rotation in said body above said pipe, the said valve having a

convex portion in the shape of a portion of a sphere whose lower edge surrounds said pipe and moves in close relation thereto, and also having a flat portion, and means on said valve whereby the same is automatically turned by the wind to maintain said convex portion in a position facing the direction from which the wind is blowing, as and for the purpose set forth.

9. In a ventilator, the combination with a ventilating pipe or conduit leading from the space to be ventilated, of a stationary cowl thereon comprising a central hollow body having an opening in the bottom wall thereof, through and above which said pipe projects, and a series of expanded ends or funnels communicating with the sides of said body at different points, a valve mounted for rotation in said body above said pipe, the said valve having two parts, one of which has a convex outer surface and is in the form of a portion of a sphere with the lower edge thereof surrounding and moving in close relation to the projecting upper end of said pipe, and the other of which is flattened, with a rounded portion adjacent to the convex part of said valve, and means on said valve whereby the same is automatically turned by the wind to maintain the convex part thereof in a position facing the direction from which the wind is blowing, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL HOUSTON JACOBSON.

Witnesses:

WM. M. STOCKBRIDGE,

J. J. REILLY.