

Jan. 12 , 1926.

1,569,845

E. J. MURPHY
VENTILATING APPARATUS
Filed May 29, 1924

Fig. 1.

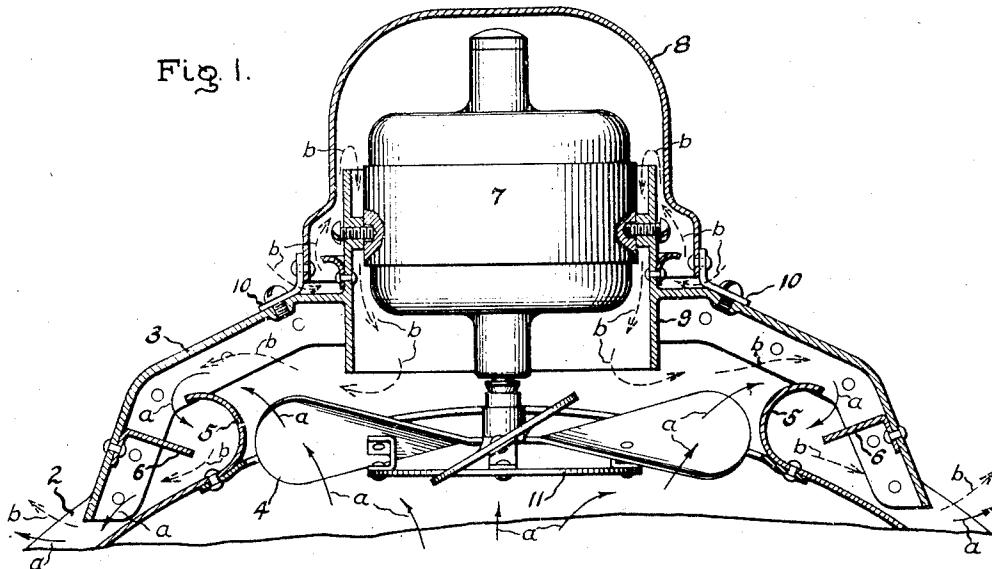
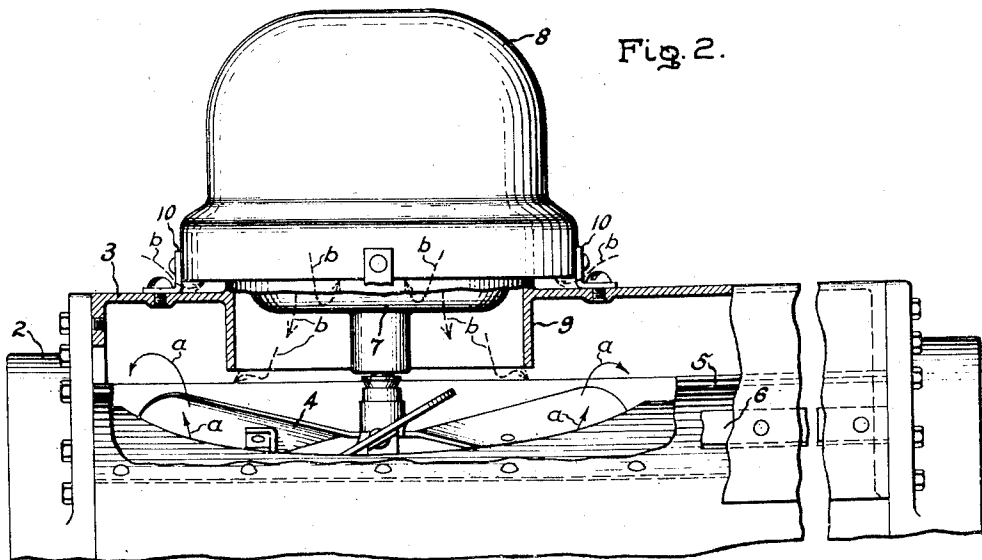


Fig. 2.



Inventor
Edwin J. Murphy
by *Myron S. Hunt*
His Attorney

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UNITED STATES PATENT OFFICE.

EDWIN J. MURPHY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

VENTILATING APPARATUS.

Application filed May 29, 1924. Serial No. 716,788.

To all whom it may concern:

Be it known that I, EDWIN J. MURPHY, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Ventilating Apparatus, of which the following is a specification.

My invention relates to ventilating means in general. More in particular it relates to means of this character especially adapted for use in connection with searchlights. Heretofore, a fan has sometimes been used on the drum of the searchlight to promote circulation and for forcing out the hot gases, fumes and dust caused by the arc. It has been found, however, that the motor becomes overheated and affected to such an extent by the gases produced by the arc as to sometimes interfere with the operation. It is an object of my invention to provide means for so promoting circulation about the motor itself as to overcome this condition.

The devices for accomplishing this result will be more clearly understood by reference to the accompanying drawing, specification and claims. In the drawing Fig. 1 shows in end view partly in section the drum of a searchlight the fan and motor on top; Fig. 2 is a side view of the drum and fan.

Referring more in detail to the drawing, it will be seen that the drum 2 is provided on its top side with an outlet vent between the cap 3 and the sides of the drum, through which outlet the hot gases are expelled by the fan 4. The path of the hot gases is indicated by the arrows *a*. After passing the fan the gases pass between the baffle plates 5 and 6 and out through the vent into the air.

Above the fan there is located the motor 7 which projects into a dome casing 8. The cap 3 is formed with an extension in the form of an annular hood 9 which surrounds and supports the motor. Between the inner wall of the hood and the motor there is a space through which air may pass. The dome 8 is secured to the cap 3 by means of straps 10 which are secured to the cap by screws as shown. By this arrangement the dome 8 is raised above the cap 3 with the result that a passage is formed connecting the outer air with the inside of the dome.

Therefore, air may pass, as indicated by the arrows *b*, into the dome and around the upper flange of the hood. From this point the air may pass between the motor and the hood, and through the motor if an open type of motor is used, to the space behind the fan. It will be seen that I provide on the under side of the fan a baffle disc 11 which, in this case, is secured to the blades of the fan itself, but which may be otherwise held in place. With this construction, when the motor drives the fan, a draft is created by forcing the air from inside the drum along a path indicated by the arrows *a*. In this way the hot gases are expelled through the outlet.

The baffle disc 11 prevents the gases passing directly upward into contact with the motor and this construction results in creating reduced pressure or so called vacuum pressure behind the fan 4 causing air to be drawn in through the hood as along the path indicated by the arrow *b*.

Obviously by rotating the fan in the proper direction a vacuum pressure is created on the front side of the fan which causes the air or gases in front of the fan to be drawn toward the fan. Furthermore, the plate 11 creates a vacuum behind the fan thereby causing the air to be drawn toward the fan from the back or as shown in the drawings by the dotted arrows in the upper side. The result is not only that the hot gases and dust are prevented from striking the motor but the cool air is drawn in to bathe the motor and then expelled from the same outlet with the hot gases that come from inside the drum. With this arrangement, therefore, I am able to preserve the motor in a comparatively cool and good working condition thus avoiding the difficulties heretofore encountered.

It will be seen that the opening in the drum of the searchlight is comparatively large, larger, in fact, than the fan and larger than the opening in the casing 8 of the motor. The result of this is that while a strong draft is created about the motor, the draft created in the arc chamber is sufficiently gentle to prevent the arc from becoming unsteady or in any wise seriously affected. In this connection I wish to point out that the blades of the fan are made of the propeller type to insure comparatively quiet running.

It will be understood that I do not wish to be limited to the exact construction shown and described inasmuch as the same results may be obtained by other modifications which will be readily suggested by the disclosure without departing from the spirit of the invention or from the scope of the claims herein.

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

1. In combination in a searchlight, an arc chamber, a motor chamber and a motor therein, and a connecting chamber, a fan in the connecting chamber adapted to be driven by said motor, an outlet in the connecting chamber in proximity of the peripheral region of the fan, a baffle in proximity of the central region of the fan whereby when the fan is rotated the surrounding medium is drawn toward the fan and into the connecting chamber from the other two chambers and expelled through the outlet whereby circulation is established through both the arc and motor chambers, and openings in the motor and arc chambers so proportioned that a comparatively strong draft is created about the motor and a comparatively gentle draft is created about the arc region in the arc chamber.

2. In a searchlamp, in combination a chamber for enclosing an arc lamp, a draft opening in the chamber serving as a draft exit, a fan in said opening, said fan having propeller blades, a motor behind the fan for driving the latter, a comparatively snug casing about the motor, said casing having an exit opening at the rear and in proximity of the fan, and a baffle plate in proximity and located along the central region of the fan whereby a draft is created toward the fan from the chamber and from the casing, and a draft exit in proximity of the periphery of the fan.

3. In a searchlamp, in combination a chamber for enclosing an arc lamp, a draft opening in the chamber serving as a draft exit, a fan in said opening, said fan having propeller blades, a motor behind the fan for driving the latter, a comparatively snug casing about the motor, said casing having an exit opening at the rear and in prox-

imity of the fan, and a baffle plate in proximity and located along the central region of the fan whereby a draft is created toward the fan from the chamber and from the casing, and a draft exit in proximity of the periphery of the fan, said opening in the chamber being comparatively large and the opening of said casing comparatively small whereby a moderate draft is created from the arc chamber and a strong draft is created about the motor.

4. In a searchlamp, in combination a chamber for enclosing an arc lamp, a draft opening in the chamber serving as a draft exit, a fan in said opening, said fan having propeller blades, a motor behind the fan for driving the latter, a comparatively snug casing about the motor, said casing having an exit opening at the rear and in proximity of the fan, and a baffle plate in proximity and located along the central region of the fan whereby a draft is created toward the fan from the chamber and from the casing, and a draft exit in proximity of the periphery of the fan, said opening in the chamber being comparatively large and the opening of said casing comparatively small whereby a moderate draft is created from the arc region and a strong draft is created about the motor, the blades of the fan so mounted that they are adapted to strike both the front and the back air currents, driving them through said peripheral opening.

5. In combination, a pair of chambers, a connecting passage, a fan, a motor in one of the chambers for driving the fan, an outlet in the passage, said fan located in proximity of the outlet, a baffle in proximity of the central region of the fan whereby when the fan is rotated the surrounding medium is drawn toward the fan from both chambers and expelled through the outlet, said fan provided with propeller type blades so located that the outer surfaces of the blades operate to directly engage the air on both sides of the fan.

In witness whereof, I have hereunto set my hand.

EDWIN J. MURPHY.