Oct. 25, 1927.

F. CHARAVAY

1,646,578

PROPELLER VENTILATING MOTOR

Filed May 11, 1926

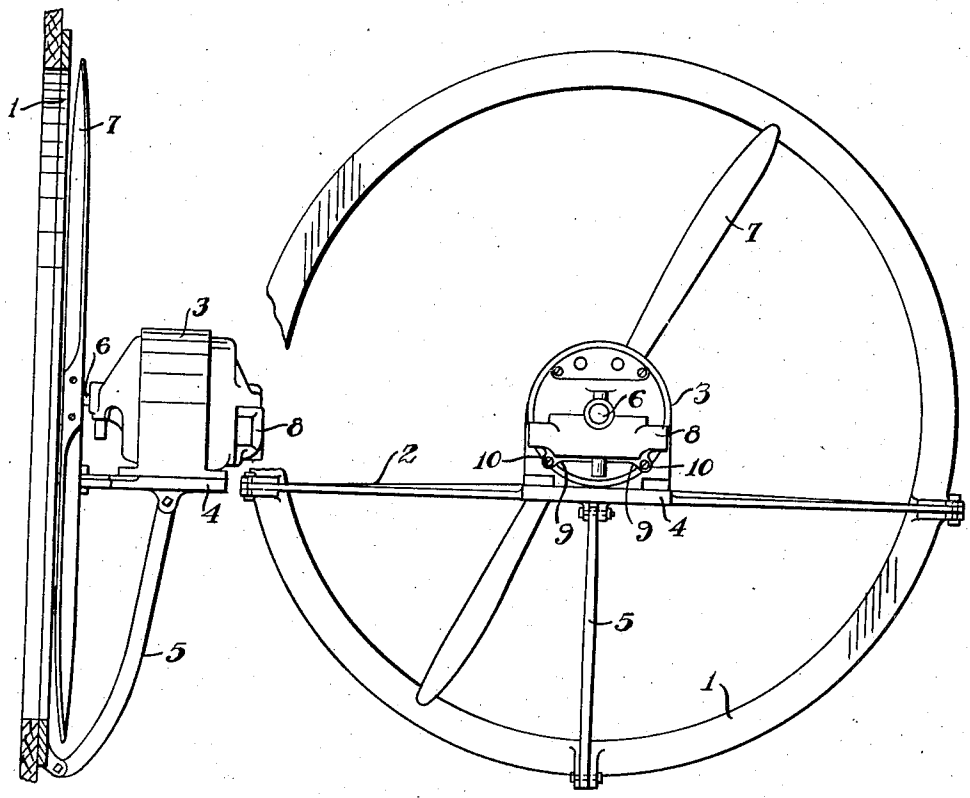


Fig. 2.

Fig. 1.

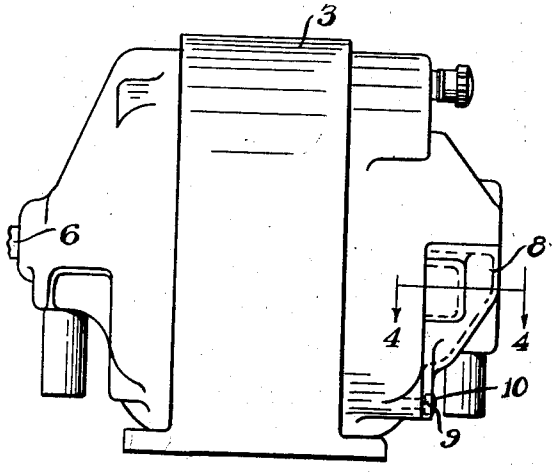


Fig. 3.

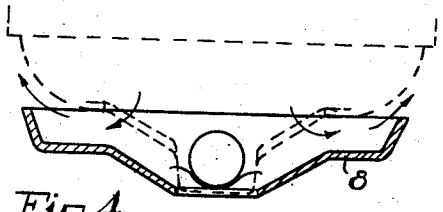


Fig. 4.

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UNITED STATES PATENT OFFICE.

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PROPELLER VENTILATING MOTOR.

Application filed May 11, 1926. Serial No. 108,305.

This invention relates to new and useful improvements in propeller ventilating motors.

It is the principal object of my invention to provide for attachment to an electric motor that operates a ventilating propeller, a shield to prevent the entrance of dirt, lint or other foreign matter to the motor when the propeller is rotated.

If my shield is not applied to such an electric motor and the propeller is rotated by it, the direct blast of air pulled from a room or other enclosure by the propeller will enter the rear end of the motor to oppose the cooling stream of air generated by the fan within it. This opposing blast of air not only slows up the circulation of the cooling air through the motor, but carries into the latter foreign particles such as lint, dust and dirt to gum up and befoul the motor mechanism.

It is, therefore, the principal purpose of my invention to provide a shield not only to prevent the entrance of foreign matter to the motor, but to divert the direct blast of air around it in such a way as to create a vacuum at the ends of the shield to accelerate the flow of cooling air through the motor. This cooling air generated by the fan within the motor is now free to pass from the rear end of it without being opposed by the direct blast of air pulled by the propeller from a room or other enclosure, nor will any of the foreign particles within that air be permitted by the shield to enter the motor, either at the rear or at the front of it, the inertia of those particles in the latter instance carrying them beyond its front end.

In the accompanying drawings illustrating my invention, Figure 1 is a rear view of the propeller unit, showing my foreign particle diverting shield attached to the motor. Figure 2 is a side view of the same. Figure 3 is an enlarged side view of the motor, showing my foreign particle deflector attached thereto. And Figure 4 is a longitudinal sectional view taken through the foreign particle deflector on the line 4—4 of Figure 3.

Referring to the accompanying drawings for a detailed description of the form of embodiment of my invention illustrated therein, the numeral 1 designates a motor holding ring-frame to which there is suitably secured a diametric supporting member 2. The middle portion of the latter is enlarged to provide for an electric motor 3 a wide, flat support 4 from which there projects downwardly to the lower end of the ring 1 a radial bracing piece 5. The motor holding frame just described may be varied in its construction, if desired, and supported in any suitable manner in a duct, room or other enclosure.

The motor 3 has an armature shaft 6 to whose outer end there is securely attached a ventilating propeller 7 that may be of aerofoil or other section. This propeller is preferaly of greater length than the air-discharge opening enclosed by the ring 1 to prevent the return of air through the latter for entrance behind the propeller to destroy the vacuum which enables it to pull or exhaust the foreign particle laden air from a duct, room or other enclosure.

For the purpose of preventing foreign matter being carried into the motor by the air which is pulled from an enclosure being ventilated by the propeller 7, and to assist the passage through the motor of the cooling stream of air generated by the fan (not shown) within it, I have provided for attachment to the motor 3, of a shield such as the metal shield 8, behind its air exhaust opening. The shield 8 preferably comprises a channel member or casting which conforms to the contour of the rear end of the motor 3 and projects at each end a short distance beyond it. Formed on the lower corners of this channel member 8 are apertured ears 9, 9 through which screws 10 are passed into the motor wall to firmly secure said channel member or shield to the motor without altering the latter.

The shield 8 forms with the outer surface of the motor wall a passage through which the cooling stream of air generated by the fan within the motor may freely and uninterruptedly flow to the atmosphere as indicated by the arrows in Figure 4.

As will be observed from Figure 1, the shield 8 is of sufficient width to prevent the entrance of dirt, lint and other foreign particles into the motor. Instead, the direct blast of air laden with these particles, when pulled toward the motor by the propeller 7, will be diverted by the shield 8 around it, carrying them, through the inertia acquired, far past the motor to prevent their turning around to enter it from the front.

The outward rush of this direct blast of foreign particle laden air will also create a sufficient vacuum around the open ends of the shield 8 to accelerate the passage of the motor cooling air through them to the atmosphere, whereas, if no shield were provided, this cooling stream would be opposed within the motor by that blast. It is thus seen that my shield not only prevents the entrance of dust, lint and other foreign particles into the motor to befoul its mechanism, but also assists the passage of the air generated by the fan through the motor to cool it.

My shield may be applied to any type of motor that may be used for ventilating purposes, and may be constructed of sufficient size to be employed with a motor having an open frame.

Having described my invention, I claim:

1. The combination with an electric motor, of a ventilating rotor operated by said motor in front of one end of it, and a channel member applied to the other end of said motor and having on each side an open extension communicating with the motor interior.

2. The combination with an electric motor including an armature shaft, of a ventilating propeller secured to the front end of said shaft, said motor having a rear vent opening, and a channel member applied to the rear end of said motor over its vent opening and open at each end to the atmosphere for the purpose specified.

3. The combination with an electric motor including an armature shaft, of a ventilating propeller secured to the front end of said shaft, said motor having a rear vent opening, and a channel member applied to the rear end of said motor over its vent opening and projecting beyond each side of the motor into the path of the air pulled toward the latter by the propeller, for the purpose specified.

4. The combination with an electric motor including an armature shaft, of a ventilating propeller secured to the front end of said shaft, said motor having a rear vent opening, a channel member adapted to cover said vent opening and formed with apertured ears, and fastening elements projecting through said ears into the motor wall to secure said channel member firmly thereto for the purpose specified.

In testimony whereof I have hereunto set my hand this 10th day of May, 1926.

FREDERICK CHARAVAY.