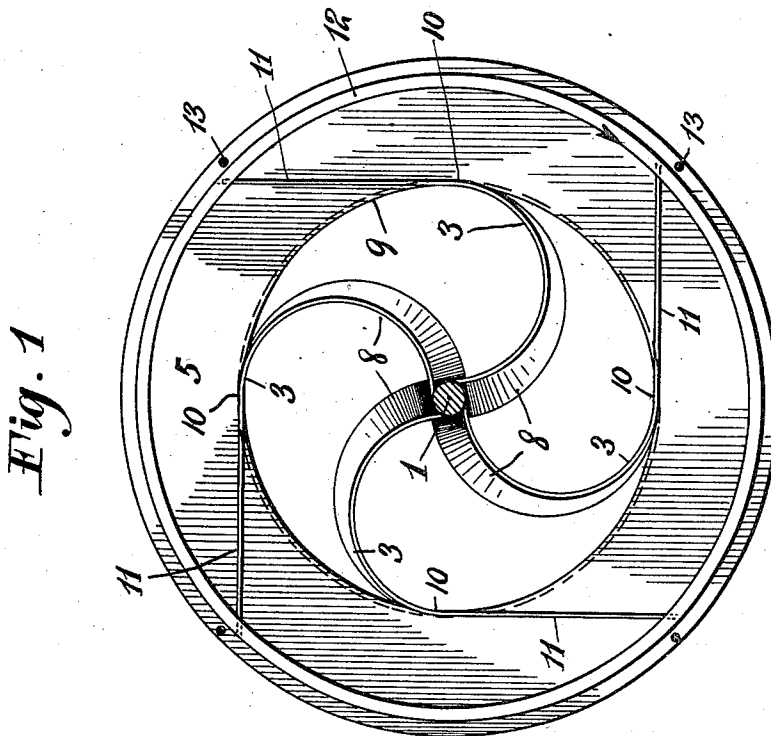
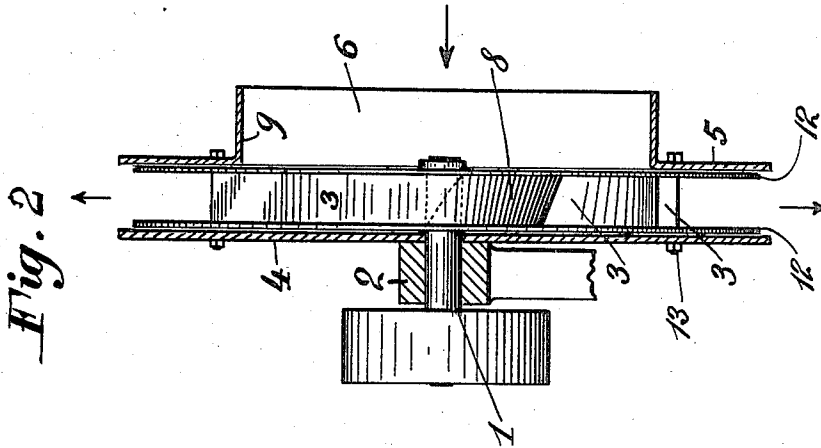


S. A. McINTIRE.
VENTILATING FAN.
APPLICATION FILED MAY 31, 1911.

1,063,275.

Patented June 3, 1913.



WITNESSES:

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UNITED STATES PATENT OFFICE.

STEPHEN A. McINTIRE, OF NEW YORK, N. Y.

VENTILATING-FAN.

1,063,275.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed May 31, 1911. Serial No. 630,413.

To all whom it may concern:

Be it known that I, STEPHEN A. McINTIRE, a citizen of the United States, residing at the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Ventilating-Fans, of which the following is a full, clear, and exact specification.

This invention relates to improvements in blowers for ventilating purposes, and has particularly for its object to conduct air in large volume at only slightly increased pressure from one compartment to another, more efficiently than is at present done.

According to this invention I construct a revolving blower inclosed in a drum, having a central intake and a peripheral discharge, and the invention is particularly concerned with the construction of the blades and their coöperation and correlation with the casing. Generally considered, each blade consists of an induction portion having its leading edge set to draw in air from the intake, which air is partially directed toward the back casing, and at the same time peripherally, in a direction to be acted upon by the succeeding portion of the blade which is in a plane parallel to the axis of rotation, the result being that the air drawn in at the center will be discharged at the periphery without substantial increase of pressure, preferably at all parts of the periphery. Thereby, a large volume of air can be moved from one room into another with a very small power consumption, and with considerably more efficiency than is attained in blowers at present in use.

In the accompanying drawings, Figure 1 is an elevation of a blower constructed according to my invention, the back cover being removed, and Fig. 2 is a transverse section.

1 represents a shaft supported in a bearing 2 and carrying one or more blades 3.

4 represents a back cover, and 5 represents a front cover having the intake 6. These covers may be made flat or conical as may be desired, and the blades 3 will be formed so as to substantially close the open space between the covers, to prevent leakage of air. Each blade 3 comprises an intake or suction portion 8, which is preferably set on the shaft 1 at forty-five degrees to the axis of rotation, and the blade curves outward in the arc of a substantial semi-circle to the

periphery 9 of the intake 6. At the point 10 the blade becomes flat and thence continues flat to its end. The flat portion 11 of the blade being tangent to the semi-circle formed by the suction portion 8 of the blade and also tangent to the periphery 9 of the intake 6 and at right angles to the radii drawn from the axis to the point 10. In other words, the planes of the flat portions 11 of each blade are tangent to the intake opening and at right angles to the plane making a right section of the axis the ends of the blades are connected and supported by rings 12, and bolts 13 outside the rings connect the covers.

It will be seen that in operation, air will be drawn in by the leading edge of the blade through the intake 6, and then forced backwardly and outwardly at the same time by reason of the gradually curved surface of the blade until the air comes into the path of the plane portion 11, by which it is ultimately forced out through the peripheral discharge. Thus, by the coöperation of the particular fan blade described, and the drum, large quantities of air can be moved, without substantial increase of velocity or pressure other than necessarily incident thereto, the intake opening 6 being preferably always made of the same approximate area as the discharge opening, and the flat portions of the blade being tangent to the periphery of the intake opening. By the foregoing construction, air is conducted at substantially atmospheric pressure from one receptacle to another with the least rarification or compression necessary to actually move the air, with a minimum draft or current, so that the entire propelling force is utilized in moving the air without being wasted in compression or rarification.

Various modifications and changes in the parts specifically shown and described may be made without departing from the scope of the appended claims.

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

1. The combination with a plate, of a shaft extending transversely therethrough, a second plate having a central intake opening, a peripheral opening, means for securing said plates together, and a plurality of blades mounted between said plates, each blade being inclined to the axis of rotation and curved in a semi-circle inscribed on a radius of said

inlet opening, said blades having extended flat extremities extending from the inclined portions tangent to the periphery of said inlet opening.

- 5 2. The combination with a revolving blower, adapted to be inclosed in a cylindrical drum, said drum having one end closed, the other end being open at the center, the periphery of the drum being open
10 and of predetermined width proportional to said inlet opening, a plurality of blades rotating in said drum, the portion of each blade outside the inlet having a plane sur-

face tangent to the circular opening in the open base of the drum and parallel to the 15 axle and rings connecting the flat portions of said blades, said blower rotating in the direction opposite to that in which each blade points.

In testimony whereof I affix my signature, 20 in presence of two witnesses.

STEPHEN A. McINTIRE.

Witnesses:

J. S. WOOSTER,
GEO. N. KERR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
