(No Model.)

2 Sheets—Sheet 1.

T. B. HYDE.

EXHAUST FAN.

No. 489,159. Patented Jan. 3, 1893.

Fig. 1.

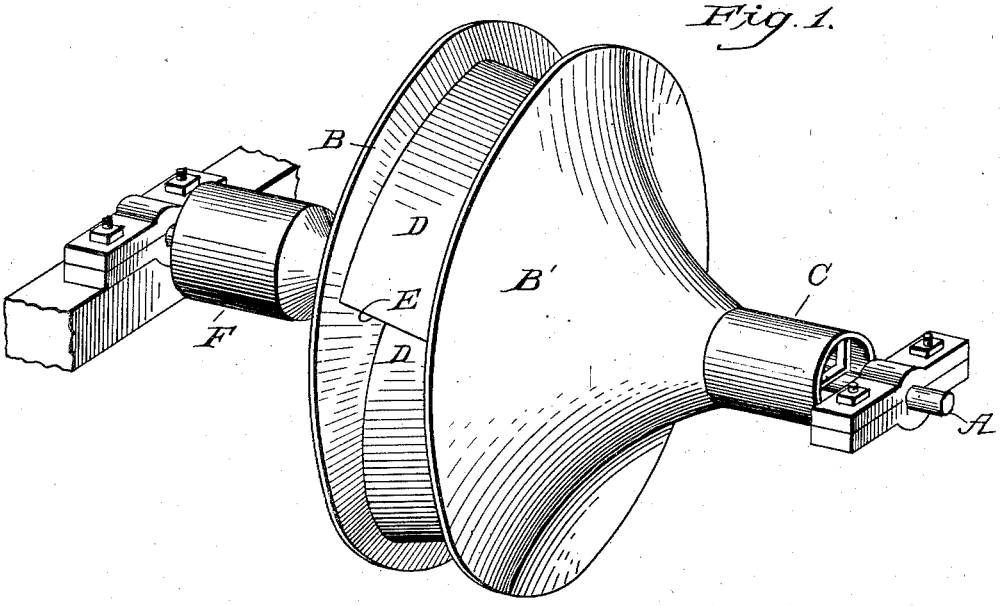
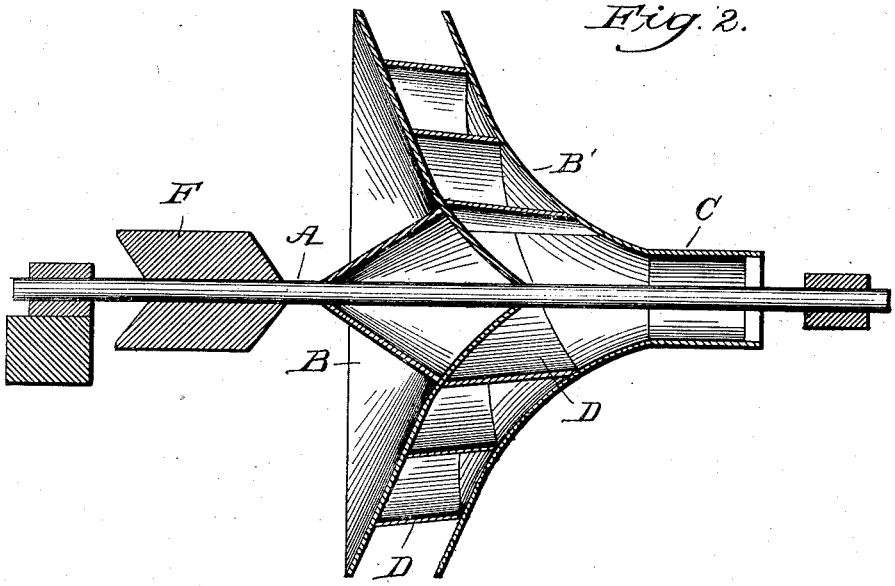


Fig. 2.



Witnesses

Wm. A. Schoonborn.

D. O. Wolhaupter,

Inventor

T. B. Hyde.

By his Attorneys,

C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

T. B. HYDE.

EXHAUST FAN.

No. 489,159. Patented Jan. 3, 1893.

Fig. 3.

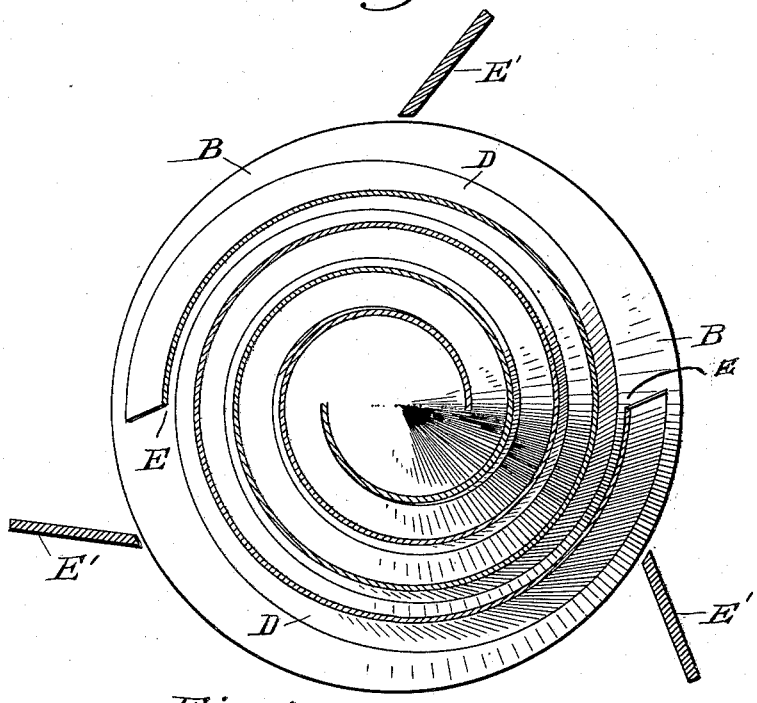
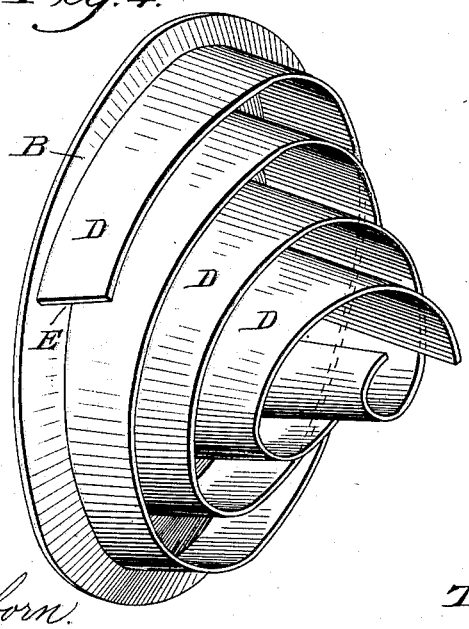


Fig. 4.



Witnesses
Wm. A. Schoenborn.
D. O. Wolhaupter.

Inventor
T. B. Hyde.

By his Attorneys,
C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

THOMAS B. HYDE, OF TAYLOR, TEXAS.

EXHAUST-FAN.

SPECIFICATION forming part of Letters Patent No. 489,159, dated January 3, 1893.

Application filed June 6, 1892. Serial No. 435,665. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. HYDE, a citizen of the United States, residing at Taylor, in the county of Williamson and State of Texas, have invented a new and useful Exhaust-Fan, of which the following is a specification.

This invention relates to exhaust fans; and it has for its object to provide an improved fan of this character which can be adapted for exhausting in any capacity whatever, such as in mills as a dust collector, and for creating a suction and discharging the air from any devices in connection with which the same may be employed.

To this end the main and primary object of the present invention is to generally improve upon the construction of exhaust fans and to provide one which while requiring but a small expenditure of power to operate, is at the same time much more efficient in operation than fans revolving within a case.

With these and many other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings;—Figure 1 is a perspective view of a fan constructed in accordance with this invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a vertical transverse sectional view of the fan. Fig. 4 is a detail in perspective of the fan with one of the sides removed to expose the interior construction.

Referring to the accompanying drawings;—A represents the fan shaft mounted in suitable bearings and supported in any suitable location according to the use to which the fan is adapted. Securely mounted upon the shaft A and adapted to revolve therewith are the opposite conical inclosing sides B and B′, respectively, between which are inclosed the suction devices comprising the body of the fan. The conical side B, which may be designated as the outer side of the fan has its apex project within the opposite and inner conical side B′, which latter side may be further described as of a flared trumpet shape having the apex thereof much farther from its base than the apex of the opposite outer side, and which gradually tapers into a rounded open inlet neck C, surrounding the axis of the fan and providing an axial inlet into the flared inclosing side of the fan and which inlet neck is of a size to accommodate the quantity of air which the fan is capable of discharging. Secured between and inclosed by the cone sides of the fan are the spirally winding exhaust blades D. The said exhaust blades D may be arranged between the top face of the outer cone side, and the inner face of the enlarged trumpet cone side, in a series ranging from two to more, as the particular nature of the case requires. The said spirally winding exhaust blades D have their inner ends terminate directly at the inlet neck of the fan, and from such point wind spirally between the two cones parallel with each other, or always retaining the same relative distance from each other the entire length from the inlet to the outlet. Said blades being of the same length, of course have their outer ends terminate short of each other at the edges of the rim of the fan between the two bases of the opposite cones, to form the peripheral discharge openings E, through which the air drawn through the inlet neck and the channels between the blades is discharged in great volume. It will also be observed by close inspection, that the blades D are set at an outward angle with respect to the inlet of the fan, the same therefore regularly inclining at an angle from the inlet of the fan toward the edge or base of the outer cone side, so that when the entire fan is revolved a suction for the air is created, which causes the air or impels the same to travel rapidly in its whirling motion to the peripheral discharge of the fan. At suitable points adjacent to the rim of the fan, just described, may be arranged a series of inclined stationary shields E′ suitably supported adjacent to the fan at a tangent to its circle of movement so as to ward off the discharge air and break the revolving air current as it is exhausted from the fan. A pulley F is connected with the fan shaft and provides means for revolving the same to carry the fan therewith by any suitable machinery.

Now it will be readily seen, that as the fan herein described is revolved rapidly in one direction, a powerful whirling suction is cre-

ated within the spiral channels of the fan, which draws or sucks the air through the axial inlet neck at one side in great volumes. The entering air under the impulse of suction rapidly whirls through the spirally arranged channels to the peripheral discharges of the fan where the same is directed off. With this function the fan is not only adapted for exhausting impure air from various places and in connection with machinery, but may be also used for creating a suction to drive other auxiliary fans or machinery.

Many advantages will readily suggest themselves to those skilled in the art.

Having thus described my invention, what I claim and desire to secure by Letters Patent is;—

1. In an exhaust fan, opposite inclosing cone sides one of which has an axial inlet at its apex, and spirally arranged exhaust blades between said cones and spirally disposed from the axial inlet to the bases of the cone forming the rim of the fan, substantially as set forth.

2. In an exhaust fan, opposite inclosing cone sides one of which has an axial inlet at its apex, and spirally arranged exhaust blades set at an outward angle with respect to said inlet and between the cones, from said inlet to the bases of the cones, substantially as set forth.

3. In an exhaust fan, opposite inclosing cone sides, one of which sides is of a greater pitch or flare than the other and tapers at its apex into a rounded open inlet neck, and spirally arranged exhaust blades secured between the cones and set at an angle inclining regularly from the inlet of the larger cone toward the base of the other cone, said blades winding spirally from the inlet neck to the rim of the fan and forming peripheral discharges, substantially as set forth.

4. In an exhaust fan, the opposite inclosing cone sides one of which has an axial inlet at its apex, spirally arranged exhaust blades between said cone sides and forming peripheral discharges at the rim of the fan, and a series of tangentially arranged stationary shields supported adjacent to said rim, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

THOMAS B. HYDE.

Witnesses:
O. J. HANKEY,
P. L. ALLARD.