(No Model.) 2 Sheets—Sheet 1.

D. A. SAILOR.

EXHAUST FAN.

No. 394,400. Patented Dec. 11, 1888.

Fig. 1.

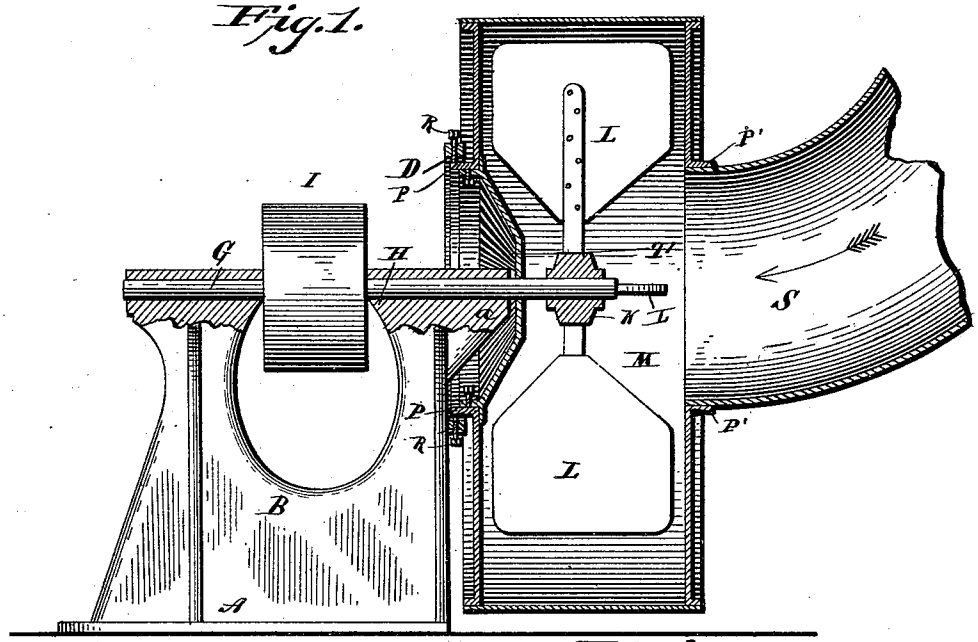


Fig. 3.

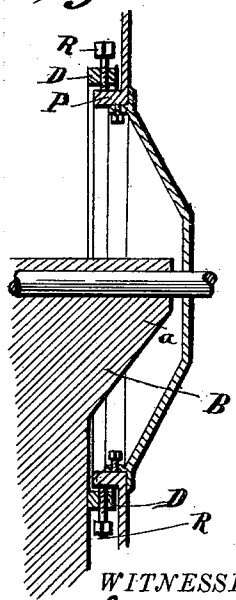
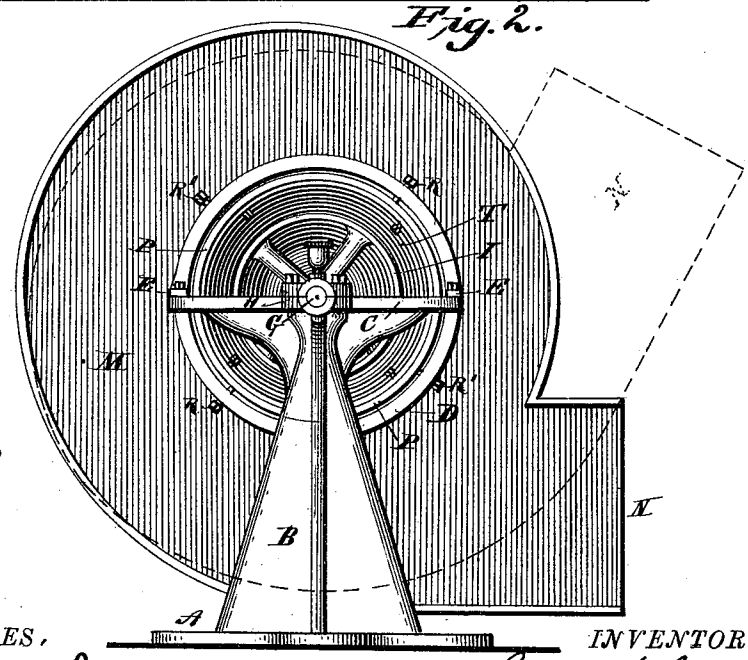


Fig. 2.



WITNESSES,
Jno. S. Finch Jr.
C. A. Davis.

INVENTOR:
David A. Sailor.
By C. M. Alexander.
Attorney.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

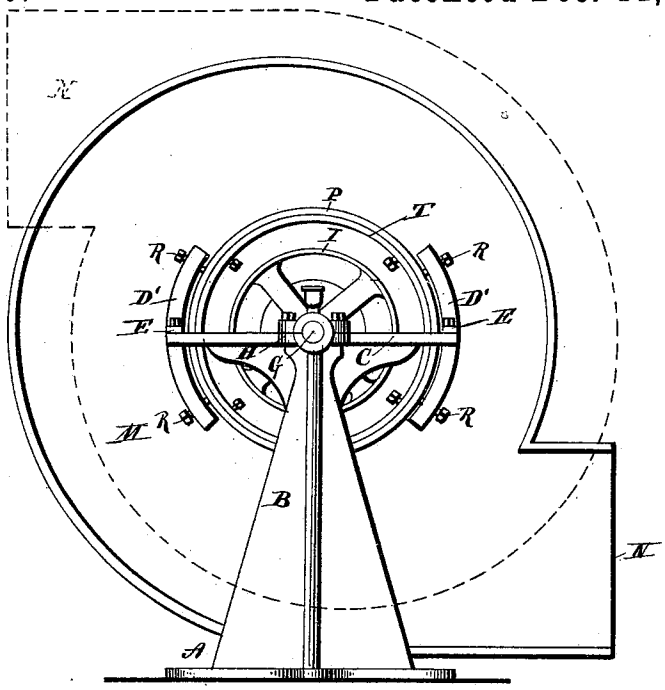
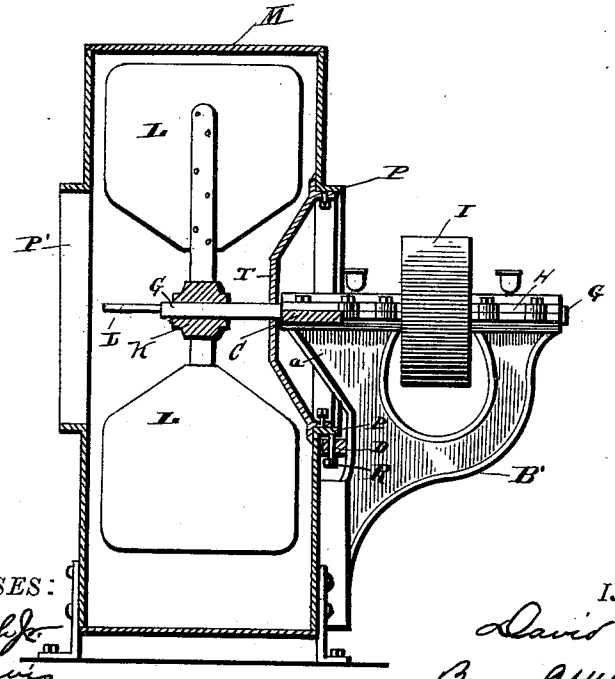


Fig. 5.



WITNESSES:

Jno. S. Fenich Jr.

C. O. Davis.

INVENTOR:

David A. Sailor.

By C. M. Alexander.

Attorney.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

DAVID A. SAILOR, OF LITTLE ROCK, ARKANSAS, ASSIGNOR TO DUDLEY E. JONES, OF SAME PLACE.

EXHAUST-FAN.

SPECIFICATION forming part of Letters Patent No. 394,400, dated December 11, 1888.

Application filed March 21, 1888. Serial No. 267,924. (No model.)

To all whom it may concern:

Be it known that I, DAVID A. SAILOR, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Exhaust-Fans, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements in exhaust-fans; and it has for its objects to provide an adjustable fan-casing by means of which the discharge or eduction passage may be turned in any direction at right angles to the fan-shaft and adjusted when brought to proper position, so as to dispense to a great extent with the bent pipes and connections ordinarily used, which are expensive and often seriously in the way of other machinery.

My invention further has for its objects to render the fan-casing reversible by constructing both sides of the casing alike, and constructing the pedestal and casing supports so that either side of the fan-casing can be secured thereto, thus providing for a right or left hand fan at will and rendering the crossing of the driving-belt unnecessary. These objects I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a fan, showing my invention; Fig. 2, a side elevation of the same; Fig. 3, a detail sectional view of a portion of the fan casing and pedestal; Fig. 4, a side elevation of the improved fan, showing a slight modification of the means for adjusting the casing rotatively; and Fig. 5, a vertical sectional view of the fan, showing a slight modification of the means employed for rendering the fan-casing reversible.

Referring to the drawings, the letter A indicates the base which supports the working parts of the improved fan, and B a pedestal rising vertically therefrom to a point in line with the horizontal fan-shaft. The said pedestal on the side adjacent to the fan-casing is provided with a cross-head, C, to which is secured an annulus, D, of a diameter approximating that of the central opening of the fan-casing. The annulus is provided with lugs E, which set upon the ends of the cross-head of the standard, and are secured to said cross-head by means of bolts or otherwise, so as to hold the annulus firmly in position.

The letter G indicates the horizontal fan-shaft, which is journaled in bearings H on the upper part of the pedestal; and I, the driving-pulley of the said shaft. The shaft projects at one side of the said pedestal, and to the projecting end is attached the hub K, carrying the arms of the fan-blades L.

The letter M indicates the fan casing or shell, within which the fan-blades rotate. The said shell is constructed of metal or any other suitable material, with central induction-openings and a peripheral discharge-spout, N. The said fan shell or casing has a central opening through each side, and around each opening is provided with an annular flange, P, of such diameter as to fit within the annulus on the pedestal freely enough to turn readily therein. The annulus upon the pedestal is provided at suitable points with set-screws R R′, the inner ends of which bear against the annular flange of the fan-casing, so as to hold it securely in any position that it may be set.

It will be observed by reference to Fig. 2 that the set-screws are tapped radially into the annulus and bear against the outer surface of the flange P on the fan-casing. The set-screws R R and R′ R′ are respectively placed at approximately diametrically-opposite points on the said annulus, whereby when they are forced against the flange P on the casing they will oppose or press toward each other, and thus serve to hold the fan-casing firmly and steadily.

In order to close the central opening in the side of the fan next to the pedestal, so as to cause the air to be drawn in wholly at the opposite side of the fan-casing, I insert in the said opening a removable plate or disk, T, and confine it therein by means of set-screws, the said plate being provided centrally with an aperture for the fan-shaft. To permit the end of the fan-shaft bearing next to the fan-casing to be extended somewhat into the same, as shown at *a*, and thus provide a longer bearing for the fan-shaft, so as to steady the same, the disk T is dished or formed concavo-

convex, and the convex side is turned inward.

The letter S designates the exhaust-pipe, which leads to the opening in the unsupported side of the fan-casing, and has its end inserted in the annular flange P′ around the same.

When it is desired to reverse the fan and convert it from what is technically known as a "right-hand" to a "left-hand" fan, or vice versa, all that is necessary to do is to loosen or remove the set-screws in the annulus on the pedestal and carry the pedestal around to the other side of the fan-casing and secure the annular flange thereon within the annulus on the pedestal, as before, the concavo-convex disk T being also changed from one opening to the other, as is evident. The principal advantages derived by thus providing for the reversal of the fan-casing, it is obvious, are that the driving-belt will never have to be crossed, and also that in ordering fans from the manufacturers customers will never be at a loss to know whether to order a right or left hand fan, as is frequently the case.

Another advantage in making the fan-casing reversible is that the manufacturers need have on hand but one set of patterns for each size, and will therefore be able to carry a much smaller stock than is possible with the ordinary fans now in use. As constructed, it will also be seen that the fan-shaft has no bearings in any wise connected with the fan-casing, so as to permit the fan-casing to be fully rotated and set or adjusted in any desired position without removing the said casing or any of the parts of the fan.

Another advantage of paramount importance derived by constructing a fan as herein set forth is that the pedestal being fastened to the floor affords a much stronger bearing for the fan-shaft to which the power is applied than the usual bearing-arms which project from the side of the fan-casing.

In the modification shown in Fig. 4, I have shown segments or arms D′ in lieu of the annulus shown in the other figures for supporting the set-screws, it being evident that either of these means may be employed without departing from the scope of my invention. In place of the pedestal shown in Figs. 1, 2, and 4, I may employ the ordinary "arm" or support B′ to afford a support and bearing for the fan-shaft, it being evident that this will not impair the reversibility of the fan-casing in the least, although it will prevent its being adjusted rotatively.

Having shown the best means for carrying out my invention that I am aware of at this time, I desire it understood that I do not confine myself to the construction described, but reserve the right to vary the same consistent with the spirit of this invention.

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

1. The combination, with a shaft-support, a fan-shaft, and fan, of a fan-casing provided with central induction-openings at each side and detachably secured to the said shaft-support, and a plate detachably secured over one of the induction-openings in the said fan-casing, whereby the intake or suction of the fan may be changed, substantially as herein set forth.

2. The combination, with a pedestal, a fan-shaft and fan, an annulus or its equivalent secured to this pedestal, and radially-disposed set-screws supported on and tapped into this annulus, of a fan-casing provided with central flanged induction-openings in each side, the flanges of these openings being adapted to fit within the said annulus and be held therein by the radially-disposed set-screws, and a plate detachably secured over one of the induction-openings of the fan-casing, whereby the intake of the fan may be changed, substantially as described.

3. The combination, with a shaft-support, a shaft, and fan, the bearing of the said shaft-support being provided with an extension, *a*, of a fan-casing provided with central induction-openings in each side and detachably secured to the said shaft-support, and a dished or convexed plate detachably secured over one of the said induction-openings, substantially as and for the purpose herein set forth.

4. The combination, with a pedestal provided with a cross-head, H, an annulus, D, or its equivalent, provided with lateral lugs E, the said lugs being bolted to the pedestal, radially-disposed set-screws tapped into the said annulus, a fan-shaft, and fan, of a fan-casing provided with a flanged induction-opening, the said flange being adapted to be inserted in the said annulus and held adjustably therein by means of the radially-disposed set-screws, whereby the fan-casing may be adjusted rotatively and the eduction-spout thereof held at any point at right angles to the fan-shaft without disturbing the pedestal, substantially as herein set forth.

5. The combination of a pedestal, a fan-shaft provided with a fan, an annulus or its equivalent secured to the pedestal and provided with radially-disposed set-screws, these set-screws being tapped into the said annulus, and a fan-casing provided with a central flanged induction-opening, the flange around this opening being inserted in the said annulus or its equivalent and held adjustably therein by the radially-disposed set-screws, whereby the fan-casing may be adjusted rotatively and the eduction-spout thereof held at any point at right angles to the fan-shaft, substantially as herein set forth.

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

DAVID A. SAILOR.

Witnesses:

C. A. HEMMING,

C. D. DAVIS.