

# F. Ortlieb, Fan Blower,

Sheet 1-2, Sheets

No. 53,174.

Patented Mar. 13, 1866.

Fig. 1.

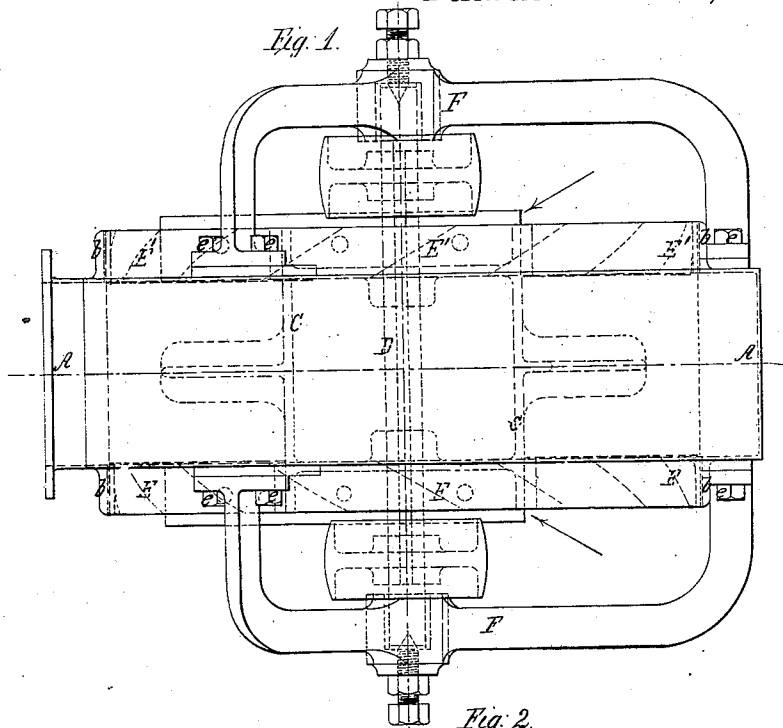
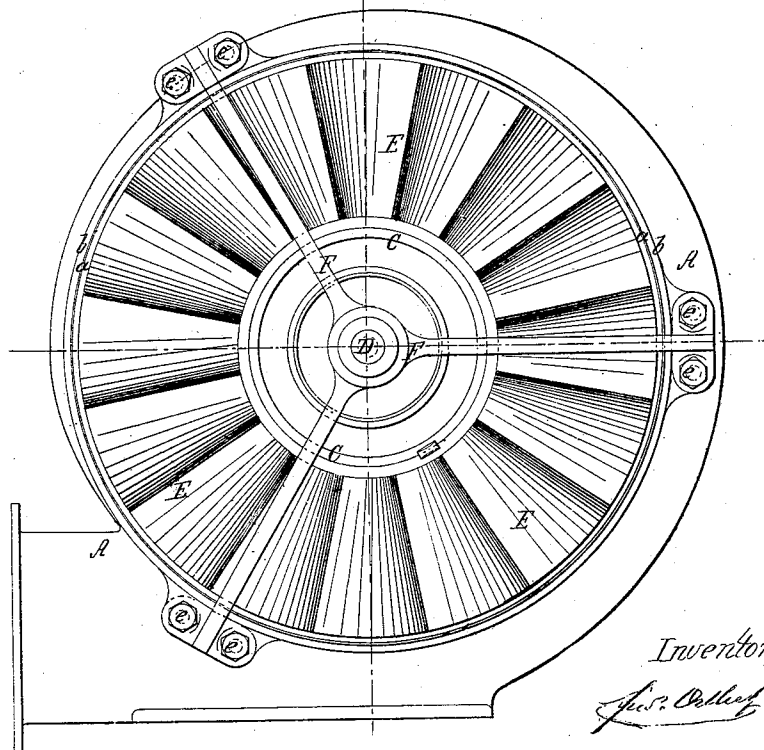


Fig. 2.



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N<sup>o</sup> 53,174.

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Fig. 3.

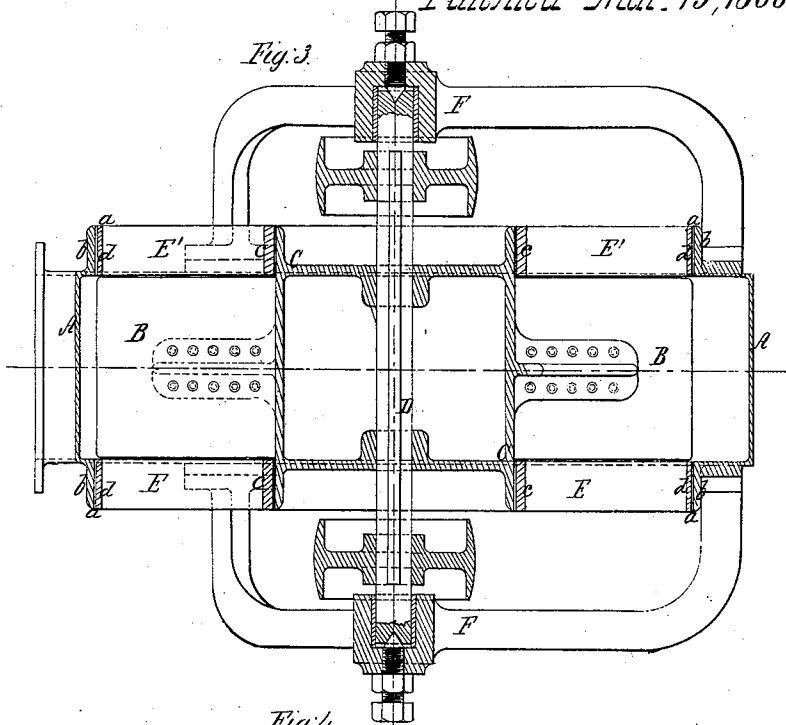
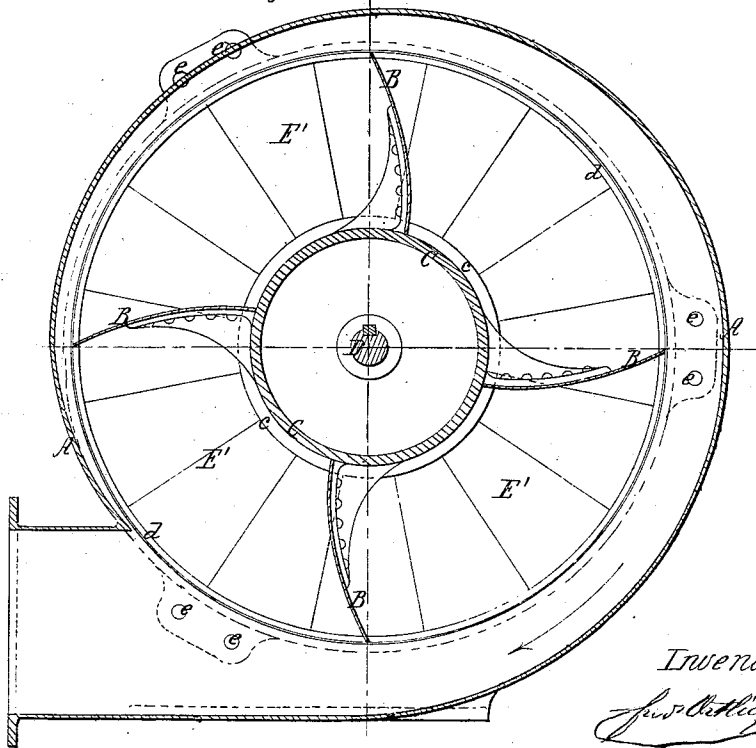


Fig. 4.



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# UNITED STATES PATENT OFFICE.

FREDERICK ORTLIEB, OF WILLIAMSBURG, NEW YORK.

## IMPROVEMENT IN FAN-BLOWERS.

Specification forming part of Letters Patent No. 53,174, dated March 13, 1866.

*To all whom it may concern:*

Be it known that I, FREDERICK ORTLIEB, of Williamsburg, in the county of Kings and State of New York, have invented certain new and useful Improvements in Rotary Fan-Blowers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a blower with my improvements. Fig. 2 is a side view of the same. Fig. 3 is a horizontal central section of the same. Fig. 4 is a vertical section of the same parallel with the planes of rotation.

Similar letters of reference indicate corresponding parts in the several figures.

One object of my invention is to prevent that action in fan-blowers known as "blowing back" by providing a freer ingress for the air. This object I accomplish by attaching to the rotating portion of the blower and in range with the fan-wings, in contradistinction from those blowers wherein the air is admitted or forced in through a central orifice around the axis of the fan-wings, two series of spiral or oblique blades, substantially like those of a screw-propeller, one series arranged at one side of the blower, having a right hand, and the other series arranged at the other side, having a left-hand obliquity, so that as the said blades rotate with the fans they will catch the air and force it into the blower to be forced out by the fan-wings. I arrange the said spiral or oblique blades opposite to the fan-wings, and have no central openings to the blower, as by that means I obtain a larger area of ingress for air in proportion to the size of the fan.

Another object of my invention is to simplify the construction of the casing or shell of the blower; and to this end I form it of a single casting, or otherwise, with open sides, and provide for the bearings of the fan-spindle simple open yokes so bolted or otherwise secured to the casing that by the removal of one of them the whole rotating portion of the blower can be drawn out sidewise without taking the casing or shell apart.

To enable others skilled in the art to construct blowers according to my invention, I will proceed to describe it with reference to the drawings.

A is the casing or shell, of substantially the same form as the casing of other blowers, except that its sides have circular openings *a a*, of a circumference slightly larger than that of a circle circumscribing the outer edges of the fan-wings B B, and around these openings there are outwardly-projecting cylindrical flanges *b b*. This casing I prefer to make of a single casting to save joints.

The fan-wings B B are secured to a hollow cylindrical hub, C, which is keyed or otherwise firmly secured to the spindle D. This hub closes up the central portions of the sides of the casing to exclude the air therefrom, and has firmly secured upon its exterior, outside of the fan-wings, the two circular series of spiral or oblique blades E E and E' E', one upon one side and the other upon the other side of the fan-wings, the said blades resembling substantially those of a screw-propeller, and the series upon one side having an obliquity the reverse of those on the other side. The blades of each series are connected together and supported by two concentric rings, *c* and *d*, the inner ring, *c*, being fitted on and secured tightly to the hub, and the outer ring, *d*, fitting loosely to the cylindrical flange *b* on the corresponding side of the casing. Each series of spiral or oblique blades and its two rings *c* and *d* may be made of a single casting. The spaces between the said blades form the only means of ingress for air to the blower, and give an aggregate area much larger than could be obtained by central openings.

F F are two yokes, consisting of central hubs with radiating arms, the hubs containing or supporting the bearings for the spindle D, and the arms being bolted at *e e* to the casing or shell A. By removing one of these yokes the whole of the rotating portion of the blower, consisting of the spindle D, hub C, fan-wings B B, and spiral or oblique blades E E and E' E', can be drawn out through the opening *a* on that side of the casing A, leaving the said casing entire.

In turning the spindle D in such direction that the outer edges of the blades E E and E' E' meet the air a very copious supply of air is forced through the spaces between said blades and into the part of the casing surrounding the hub C, and within range of the fan-wings B B, where it is subject to the direct action of

the said wings, by which it is compressed and forced out of the casing in the usual manner.

An important difference between the operation of this blower and that of an ordinary fan-blower is that in this blower the air is forced into the casing on each side in range with the radial length of the fan-blades, while in others it is either drawn or forced in through an orifice immediately around the axis of the fan-blades.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Arranging a series of spiral or oblique blades on each side, extending equidistant radially with the blades of the fan-blower and rotating therewith, in the manner and for the purposes substantially as herein specified.

2. The construction of the hub C and arrangement of the spiral or oblique blades E E and E' E' relatively thereto, whereby the center of the casing of the blower is closed to the

air, and the air is forced in directly in range of the fan-wings, substantially as herein described.

3. The casing constructed with its sides open to the full circumference of a circle circumscribing the fan-wings and with yokes F F, by the removal of one of which the whole rotating portion of the fan is allowed to be drawn out without taking apart the casing, substantially as herein set forth.

4. The combination and arrangement of the open-sided casing A, the hub C, closing the center of the said casing, the two series of spiral or oblique blades E E and E' E', the fan-wings B B, and the open yokes F F, all substantially as herein specified.

FRED. ORTLIEB.

Witnesses:

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