

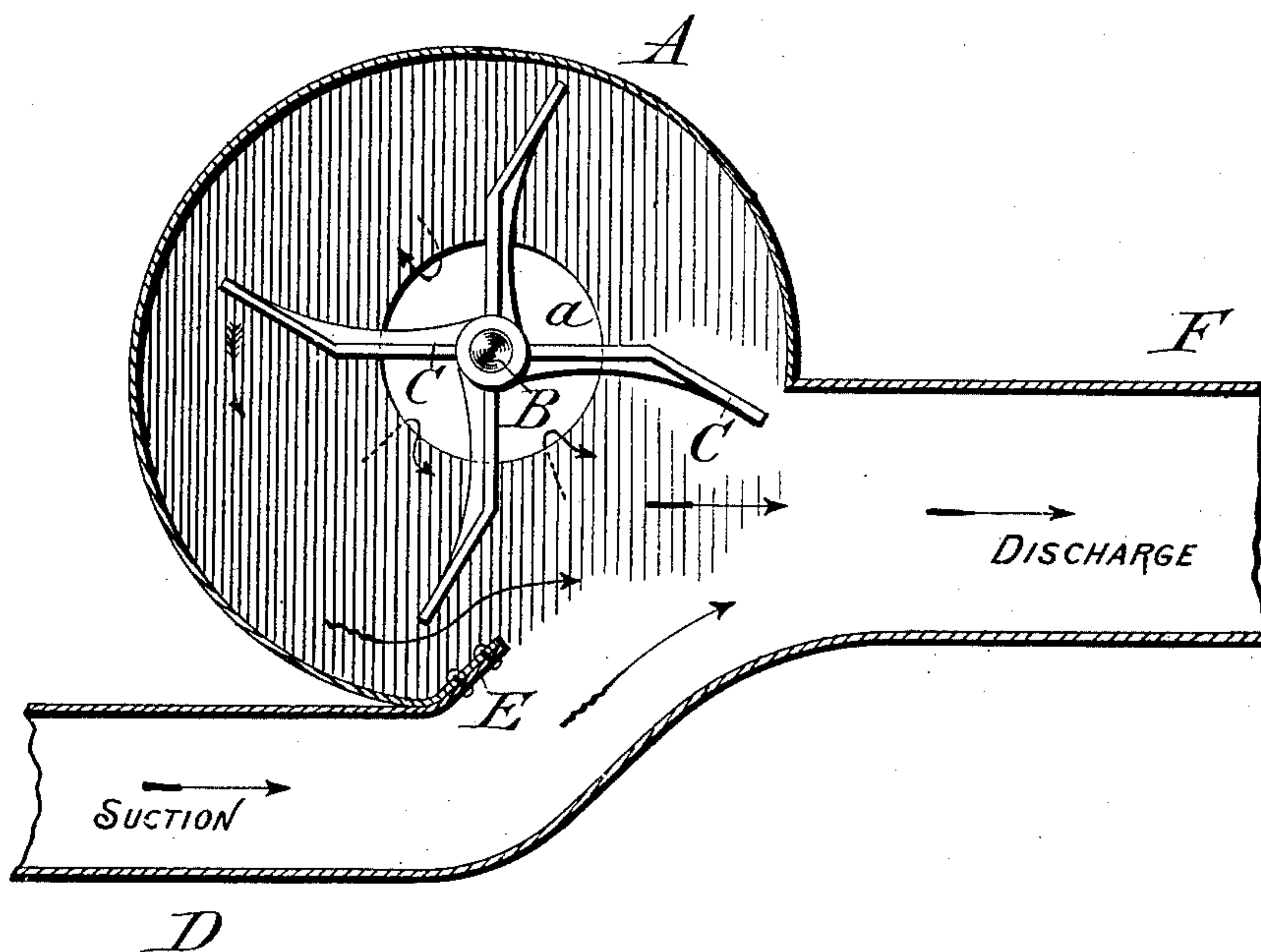
(No Model.)

W. G. SEARS.

EXHAUST FAN.

No. 353,467.

Patented Nov. 30, 1886.



Attest:
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UNITED STATES PATENT OFFICE.

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EXHAUST-FAN.

SPECIFICATION forming part of Letters Patent No. 353,467, dated November 30, 1886.

Application filed December 29, 1885. Serial No. 187,005. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GOFF SEARS, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Exhaust-Fans; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in exhaust fans or blowers, which are used in conjunction with various kinds of machinery for the purpose of collecting into bins or receptacles the light products thereof, or for the purpose of removing the useless debris and refuse which accumulate in certain kinds of mechanism as the result of their working—for instance, the fans or blowers which are used with harvesting machinery, such as cotton-harvesters for gathering the cotton from the bolls, wherein the fans serve the purpose of transferring the cotton from the picker-stems to the baskets, or such fans as are used in wood-working machines for removing the sawdust and shavings, &c.

In the ordinary forms of these exhaust-fans the fan-casing is generally made to conform in shape to the periphery of the circle described by the revolving fan blades or arms—i. e., the fan-shaft is journaled into the middle of the casing, so that the distance between the ends of the arms and the casing will be equal and constant during their rotation.

My invention consists in locating the air-shaft eccentrically within the fan-casing, so that as the fan-blades revolve their extremities will at different times be at different distances from the interior surface of the casing.

The invention further consists in providing the fan-casing with a lip, which serves to deflect the air-current in such a manner as to create a more complete vacuum in the suction-pipe below; and the invention further embraces peculiarities in the construction and combination of parts, as hereinafter set forth.

The annexed drawing represents a cross-section

of my improved exhaust-fan with the suction and discharge pipes connected with the fan-casing.

A represents the fan-casing, within which the fan, constructed in any suitable and convenient manner, revolves. The fan shown in the drawing consists of a shaft, B, upon which are secured the radiating blades C C. One of the heads of the fan casing or inclosure A is pierced with an opening, *a*, for the admission of air; also, through this opening *a* the fan-shaft B passes into the inclosure, it being journaled in suitable bearings. (Not shown.)

It will be noticed that the shaft is not located in the center of the casing, but is situated eccentrically. This causes the lower portion of the casing to have a much larger amount of space between its surface and the revolving arms than is found between the same parts in other portions of the casing; hence the amount of air at this point will be greater than in other parts of the casing. In the drawing the casing is a circle, having an eccentrically-situated fan. It is obvious, however, that the form may be changed so as to be elliptical or any other shape which will allow one portion of its contents to be greater than the rest by reason of the variable distance between the center of the shaft and the casing.

The fan-casing opens into a channel or passage-way, one part of which is designated as the "suction," and lettered D, while the other part is designated the "discharge," and is lettered F. At the part where the fan-casing is joined to the suction-channel a projecting lip, E, is formed, which extends into the interior of the fan inclosure between it and the suction, and preferably far enough to almost touch the extremities of the arms of the fan. As the fan revolves and the air is driven into the enlarged portion of the casing the projecting lip E serves to deflect the current of air obliquely upward, so that it will reach a point in front of the blades in advance of what it would were it carried directly forward by said blades; and further, it will be compacted with the air above the lip, which is being carried directly forward by the portion of the blades nearest the shaft. The amount of air driven against and deflected by the lip will be greater than it would if the fan were in the center of the cas-

ing. Thus it is obvious that more air will in this way be taken from the suction-pipe and a more complete vacuum will be created, therefore, at that point, while at the same time
5 a much stronger blast will be driven through the discharge.

By this improved construction I am enabled to carry light articles—such as cotton, sawdust, shavings, chaff, &c.—which may be at
10 the suction end up through the discharge end of the pipe into receptacles placed before it.

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

15 The combination of the fan-casing A, suction-pipe D, discharge-pipe F, the lip E, integral with or secured upon the inner surface of the casing and situated so as to constitute an

extension of said casing into the channel of suction and discharge, and the fan located eccentrically within the casing in a manner to leave an unoccupied space adjacent to the lip E, so that during the revolutions of the fan the air-current next the casing-surface may be deflected upward and compacted with the current forward of the fan-blades, thereby causing a more powerful blast in the discharge and a more perfect vacuum in the suction, substantially as described.

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

WILLIAM GOFF SEARS.

Witnesses:

PHILIP MAURO,
FRED E. TASKER.