(No Model.) 2 Sheets—Sheet 1.

H. H. BLADES.

ELECTRIC BLAST BLOWER.

No. 399,822. Patented Mar. 19, 1889.

Fig. 1.

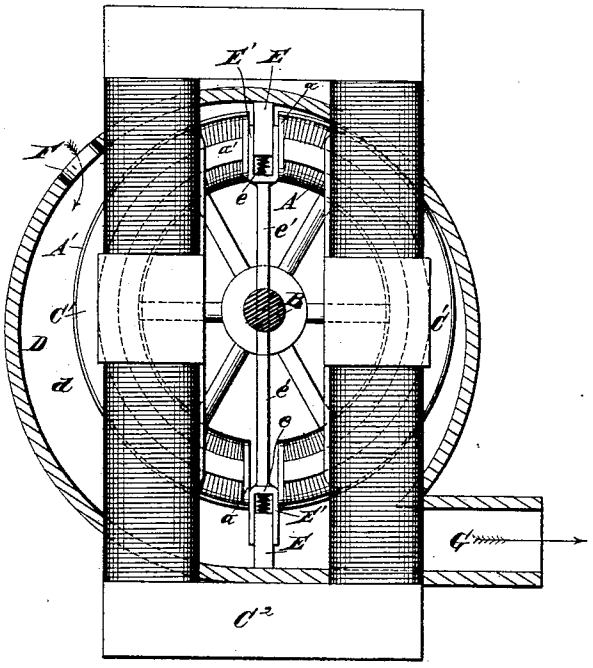
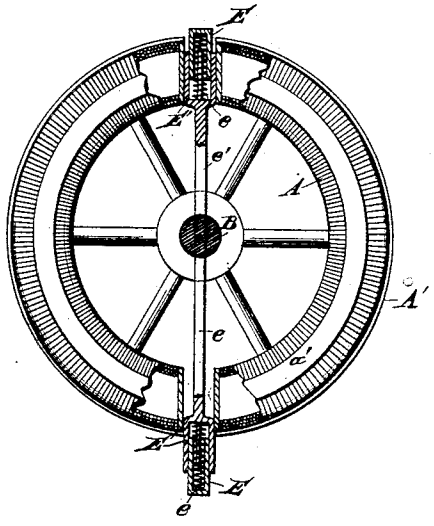


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

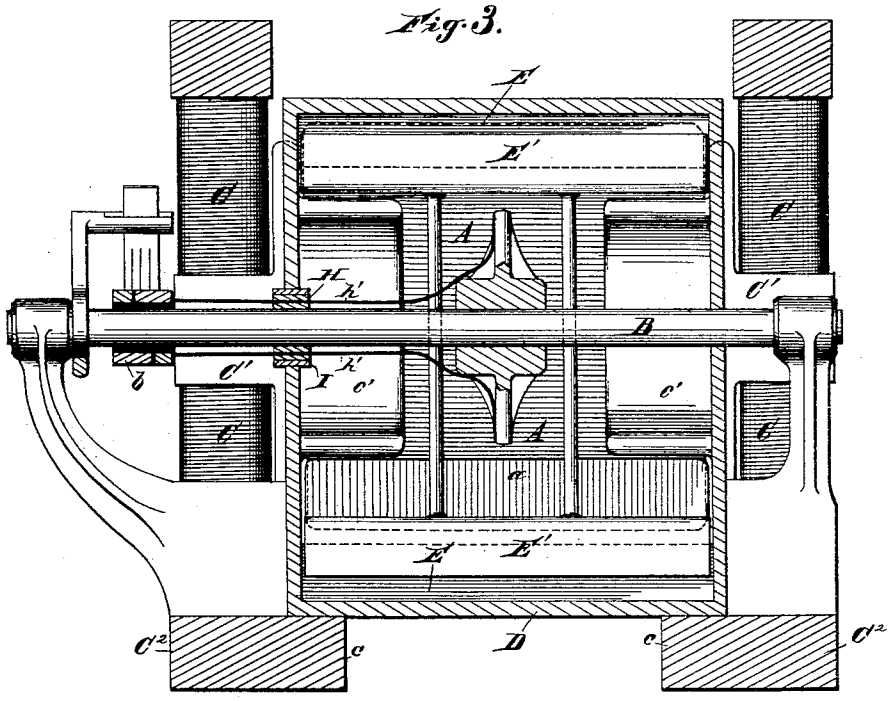
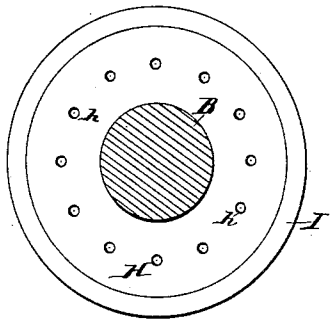


Fig. 4.



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UNITED STATES PATENT OFFICE.

HARRY H. BLADES, OF DETROIT, MICHIGAN.

ELECTRIC BLAST-BLOWER.

SPECIFICATION forming part of Letters Patent No. 399,822, dated March 19, 1889.

Application filed July 23, 1887. Serial No. 245,106. (No model.)

To all whom it may concern:

Be it known that I, HARRY H. BLADES, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Electric Blast-Blowers; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims, and relates to improvements in rotary blowers, and more particularly to that class known as "positive blast-blowers."

It is the object of my invention, first, to combine directly with a blower of this class an electric motor in such a manner that the wings of the blower shall project from the periphery of the armature of the motor, said armature substituted in place of the ordinary rotary head; second, to provide a suitable casing to inclose the armature and its attached blower-wings, whereby air may be drawn in by the action of the blower and delivered under pressure at any desired point.

In carrying out my invention, Figure 1 of the drawings is a side elevation of a device embodying my invention with one side of the blower-case removed. Fig. 2 is a view, partly in section and partly in elevation, of an armature provided with reciprocatory wings or blades. Fig. 3 is a longitudinal vertical section of my improved device; Fig. 4, a view in detail of one of the parts.

A represents the armature; *a*, wearing-plates interposed between the armature and the reciprocating wings; B, the armature-shaft; *b*, the commutator; C, the field-magnets, and C′ their pole-pieces.

D represents a blower-case of any suitable material.

E E represent reciprocating wings; E′, U-shaped supporting-pieces for retaining the wings in place; *e*, springs for holding the wings in contact with the case and extending and allowing the same to yield upon the revolution of the armature; *e′*, reciprocating arms attached to and supporting the U-shaped pieces E.

F represents the inlet-orifice, and G the delivery-pipe of the blower, a small ledge being left at the edge in continuation of the periphery of the blower-case at the junction of the delivery-pipe with the case, along which the wings E may travel as they cross the space occupied by the delivery-pipe.

The yokes C^2 of the field-magnets are constructed with projections *c*, extending under and forming supports for the case D. The pole-pieces C′ are constructed with projecting portions *c′*, extending inside the armature-ring and made to closely conform to the contour of the same.

The armature A is provided with rings *a′* upon the sides of the armature-ring and between the armature and the casing, filling up the intervening space and avoiding any perceptible leakage of air. I also provide a drum or cylinder, A′, adapted to inclose the armature and provided with slots for the passage of the wings E.

The operation of my device is as follows: The armature A is journaled within the case D, so that its line of revolution is eccentric to the periphery of the case, thus leaving upon one side of the armature, between it and the case, a chamber, *d*, for the admission of air, and at the other side coming close to the side of the blower-case. The arms *e′* pass through apertures in the shaft B and play freely back and forth therein, after the manner of various well-known devices. Air enters at the inlet-orifice F, and is forced forward by the revolving wings E. The combined action of the reciprocating arms *e′* and the springs *e* is to allow the wings E to be automatically extended or compressed and maintain a continuous contact with the inner periphery of the blower-case. The drum A revolves with its ends in close proximity to the sides of the case D and prevents any perceptible leakage around the armature. I provide a ring, H, of any suitable non-conducting material, said ring secured upon the shaft at the point where said shaft passes through the case to the commutator and perforated at *h h* for the admission of the wires *h′*, which lead from the armature-segments to the corresponding sections of the commutator.

I is a ring of metal or other suitable material placed outside of the ring H, and coming

close up against the periphery of the orifice in the case D. This makes a very tight joint at this point and prevents leakage of air where the wires pass out through the case to the commutator.

I would have it understood that I do not wish to limit myself to the exact construction shown in the drawings, but that any form of positive blast apparatus may be employed in connection with the armature of an electric motor substituted in the place of the rotary head and still come within the scope of my invention.

What I claim is—

1. A positive blast-blower consisting of the combination, with an electric motor, of a fan-case embracing its armature, said armature located eccentrically within the case and provided with yielding wings or blades and means for maintaining them in contact with the periphery of the case, said case having an air-admission port at its periphery and an air-delivery port, substantially as described.

2. In a positive blast-blower, the combination, with the armature of an electric motor, of wings or pistons supported upon and having a reciprocatory motion through said armature, and a fan-case embracing said armature, said apparatus adapted to draw in air and deliver the same air under pressure through the exit-pipe, substantially as described.

3. In a positive blast-blower, a blower-case, an armature of an electric motor eccentrically journaled within said case and having wings adapted to reciprocate through said armature, and mechanism for maintaining said wings in contact with the inner periphery of the blower-case, substantially as described.

4. In a positive blast-blower, the combination, with an electric-motor armature, of supporting-arms sleeved through the shaft of said armature and having a reciprocatory motion therein, and spring-actuated wings or pistons E and supports E′, all constructed and adapted to operate substantially as described.

5. In a positive blast-blower, the combination, with a blower-case, D, of an electric-motor armature, A, field-magnets C, having pole-pieces C′ and yokes C^2, having extensions *c* to form supports for the case D, wings E, springs *e*, and supports E′, secured to arms *e′*, said arms having a reciprocatory motion through the shaft of said armature, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

HARRY H. BLADES.

Witnesses:
M. B. O'DOGHERTY,
JOHN E. WILES.