

(No Model.)

S. BARROW.
BLOWER.

No. 573,196.

Patented Dec. 15, 1896.

Fig. 1.

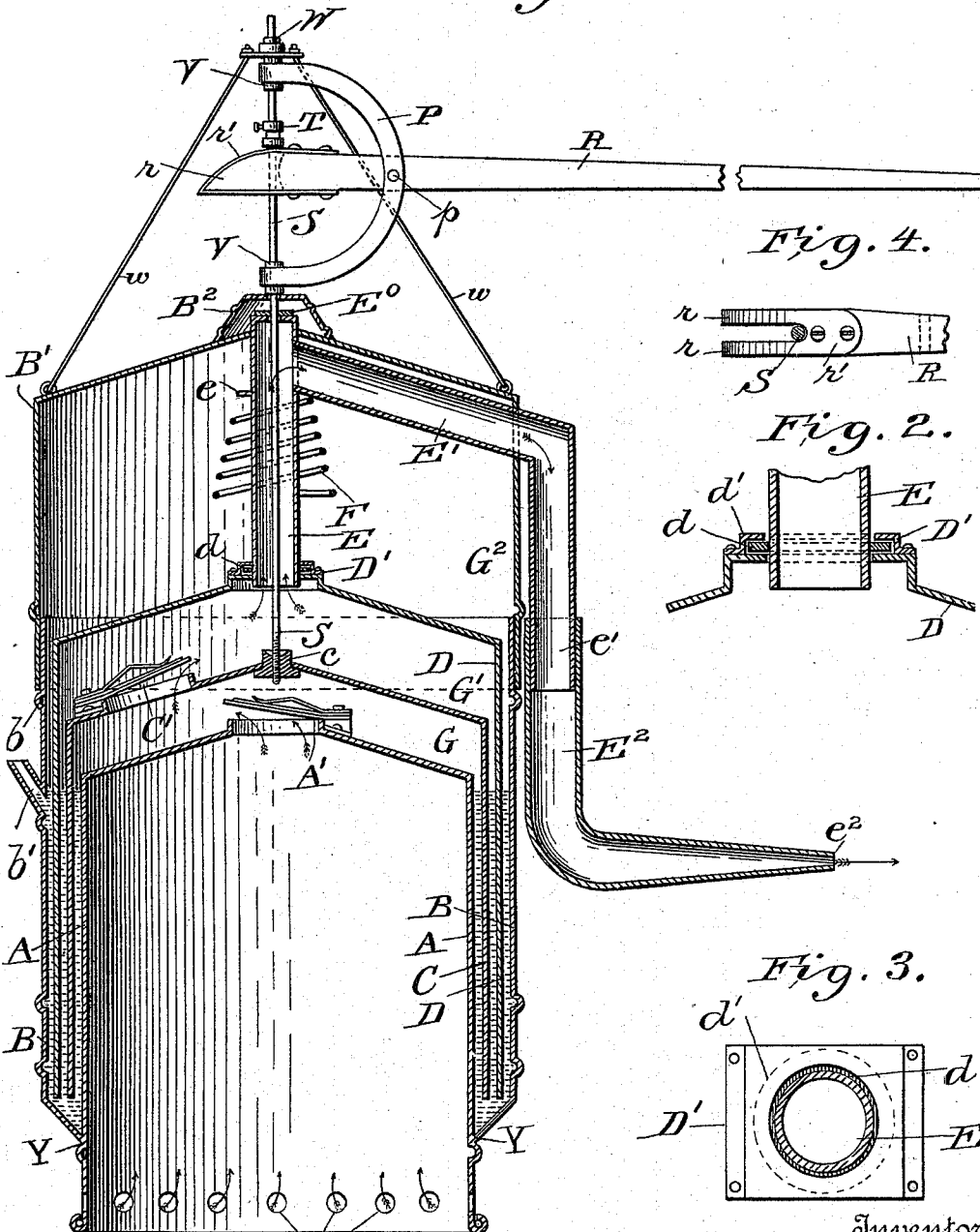


Fig. 4.

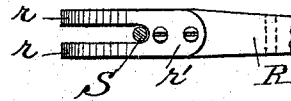


Fig. 2.

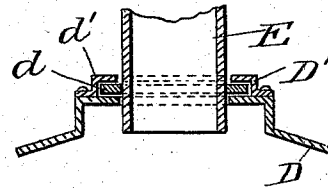
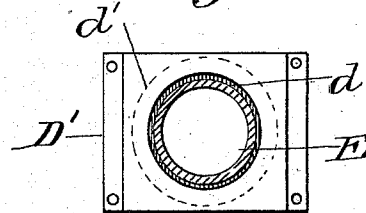


Fig. 3.



Inventor

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UNITED STATES PATENT OFFICE.

SAMUEL BARROW, OF KEMPTON, INDIANA, ASSIGNOR TO FRANK B. HART
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BLOWER.

SPECIFICATION forming part of Letters Patent No. 573,196, dated December 15, 1896.

Application filed March 23, 1896. Serial No. 584,523. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL BARROW, a citizen of the United States, residing at Kempton, in the county of Tipton and State of Indiana, have invented certain new and useful Improvements in Blowers; and I do hereby 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.

My invention relates to improvements in blowers; and it consists of certain improvements on the blower described in my Patent No. 317,436, granted May 5, 1885, and in certain other novel features hereinafter described and claimed.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a sectional elevation of the improved blower. Fig. 2 is a detail view, on an enlarged scale, of one of the packing-joints shown in Fig. 1. Fig. 3 is a plan view of the packing-joint shown in Fig. 2, and Fig. 4 is a detail view showing the bifurcated end of the operating-lever.

A represents a cylindrical chamber provided with a plurality of holes *a* near the bottom thereof to allow the ingress of air and with a flap-valve *A'* in the top thereof. This top is preferably made sloping, as shown. Exterior to this cylindrical chamber A and connected thereto, as at *Y*, is a second cylinder B, provided with a tight-fitting top *B'*, which top rests on the bead or rib *b*. Liquid—such as coal-oil, water, or the like—is poured into the annular space between the cylinders A and B through the hole *b'*.

C represents a vertically-movable cylinder having a conical top and opening downward. This cylinder projects into the space between the cylinders A and B, while the said top is provided with a flap-valve *C'*. The reciprocating rod S is connected to this cylinder in any convenient way, as by screwing into the nut *c*.

Exterior to the cylinder C and projecting downward into the liquid seal in the space between the cylinders B and C is the cylinder D, whose top is also made somewhat conical

and is provided with a packing-joint *D'*, having a packing, of rubber or leather *d*, held in place by the bridge *d'*, as shown in Figs. 2 and 3. Into this packing-joint the twyer-pipe projects, which is made fast to the upper part of the cover *B'*, which is preferably surmounted with a hood *B²*. *E⁰* represents a suitable packing at the upper end of this twyer-pipe, through which the reciprocating rod S passes. This twyer-pipe *E* opens into the bent pipe *E'*, connected, as at *e'*, to the elbow *E²*, terminating in the nozzle *e²*.

A stud or collar *e* on the twyer-pipe *E* serves to support the upper end of the conical spring *F*, whose lower end is adapted to inclose the packing-joint *E'* when the cylinder *D* is forced upward, as will be hereinafter described.

The upper end of the rod S passes through the guide *W*, which rests on the upper gland of the semicircular yoke *P*, and the said guide is braced by means of the ribs *w*, connected to the top *B'* of the outer cylinder B.

T represents an adjustable set-collar, which may be set at the desired position on the rod S, thus limiting the upward stroke of the said rod.

Reciprocating motion is given to the rod S and to the cylinder C by means of the hand-lever *R*, which is pivoted, as at *p*, in the circular yoke *P*. The forward end of this rod is bifurcated, as at *r*, and is protected by the wear-plate *r'*, which takes the wear of the collar *T*. By having the glands *V* revoluble on the rod S and the hand-lever *R* pivoted in the yoke *P* the said hand-lever may be swung around to the desired position, so that it may be operated from any part of one side of the apparatus.

The operation of the device is as follows: As the rod S is raised by means of the hand-lever *R* the cylinder C is also raised, creating a partial vacuum inside the cylinder C and lifting the flap-valve *A'*, causing air to enter into the chamber *G* between the cylinders A and C. As the lever *R* is released the weight of the cylinder C will cause it to descend in the liquid seal, compressing the air in the chamber *G*, closing the flap-valve *A'*, lifting the flap-valve *C'*, and thus forcing the air from the chamber *G* into the chamber *G'*, formed by the upper portions of the cylinders

C and D. The accumulating pressure on the air in this chamber D will lift the same in the liquid seal, and, finally, if the said pressure be sufficient it will force the upper portion of this cylinder D against the lower end of the conical spring F, compressing the said spring and adding its pressure to the weight of the cylinder D. It will be seen that the weight of this cylinder D, supplemented at times by the force of the spring F, will cause a uniform and continuous flow of air through the nozzle e^2 , thus avoiding the fluctuations in pressure common in bellows of ordinary construction.

It will be obvious that various modifications of the herein-described device might be made which could be used without departing from the spirit of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a blower of the character described, the combination with an inner and outer cylinder having an annular chamber between the two, partly filled with sealing fluid, the inner cylinder having a closed top with an aperture therein, and openings near the bottom thereof, of a valve opening upward and normally closing said aperture, a vertically-movable cylinder open at the bottom and projecting into said sealing chamber, and provided with an aperture in the top thereof, with an upwardly-opening valve covering said aperture, means for reciprocating said cylinder, a second vertically-movable cylinder inclosing this vertically-movable cylinder and projecting down into said sealing-chamber, with an outlet from the latter cylinder for the escape of air, and a coil-spring placed above said second vertically-movable cylinder and adapted to be engaged thereby and bear down on the same when the said cylinder reaches a predetermined height, substantially as described.

2. In a blower of the character described, the combination with an inner and outer cylinder having an annular chamber between the two partly filled with sealing fluid, the inner cylinder having a closed top with an aperture therethrough and openings near the bottom thereof, of a valve opening upward and normally closing the aperture in the top of said inner cylinder, a vertically-movable cylinder open at the bottom and projecting into said sealing-chamber, and provided with an aperture in the top thereof, with an upwardly-opening valve covering said aperture, means for reciprocating said cylinder, and a second vertically-movable cylinder inclosing the two inner cylinders and projecting down into said sealing-chamber, and adapted to be

lifted by the pressure of air therein contained, with an outlet from the latter cylinder for the escape of air, substantially as described.

3. In a blower of the character described, the combination with an inner and outer cylinder having an annular chamber between the two, partly filled with sealing fluid, the inner cylinder having a closed top with an aperture therethrough, and openings near the bottom thereof, of a flap-valve opening upward and normally closing the aperture in the top of said inner cylinder, a vertically-movable cylinder open at the bottom and projecting into said sealing-chamber, and provided with an aperture in the top thereof with an upwardly-opening flap-valve covering said aperture, and a second cylinder inclosing this vertically-movable cylinder and projecting down into said sealing-chamber, with an opening in the top thereof, a twyer-pipe projecting down through said opening, and a packing-ring surrounding said pipe, substantially as described.

4. In a blower of the character described, the combination with an inner and outer cylinder having an annular chamber between the two, partly filled with sealing fluid, the inner cylinder having a closed top with an aperture therethrough, and openings near the bottom thereof, of a flap-valve opening upward and normally closing the aperture in the top of said inner cylinder, a vertically-movable cylinder open at the bottom and projecting into said sealing-chamber, and provided with an aperture in the top thereof with an upwardly-opening flap-valve covering said aperture, and a second cylinder inclosing this vertically-movable cylinder and projecting down into said sealing-chamber, with an opening in the top thereof, a twyer-pipe projecting down through said opening, a packing-ring surrounding said pipe, and a coil-spring also surrounding said pipe and adapted to be engaged by said cylinder as it rises due to the pressure of air therebeneath, substantially as described.

5. In a blower of the character described, the combination with a vertically-movable cylinder and a reciprocating rod connected thereto, of a curved yoke revolubly mounted on said rod with upper and lower bearings for said yoke, a set-collar secured to said rod, and a hand-lever pivoted in said yoke and adapted to engage said set-collar, substantially as described.

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

SAMUEL BARROW.

Witnesses:

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JANE P. MOUNT.