T. S. DISSTON.

BLOWING-MACHINE.

No. 188,108. Patented March 6, 1877.

Fig. 2.

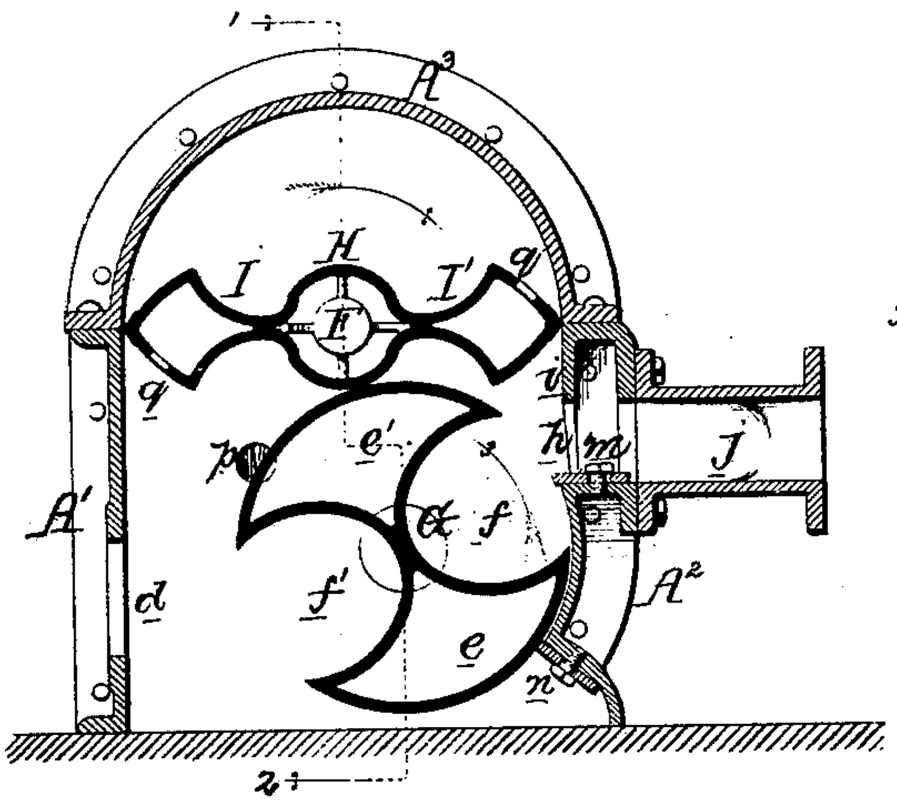


Fig. 3.

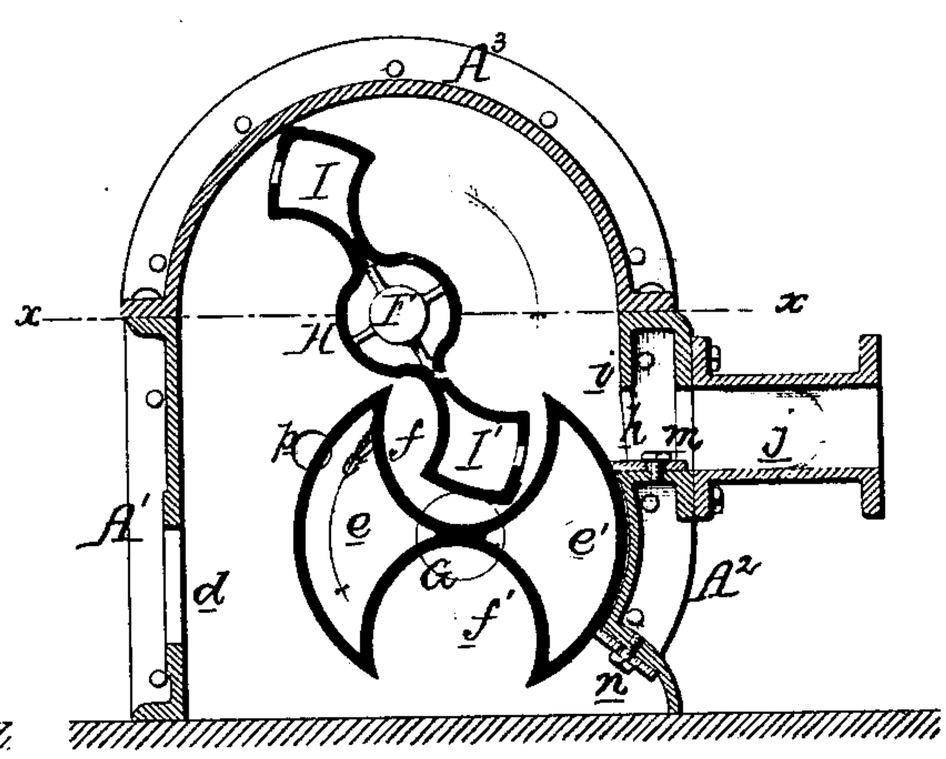


Fig. 1.

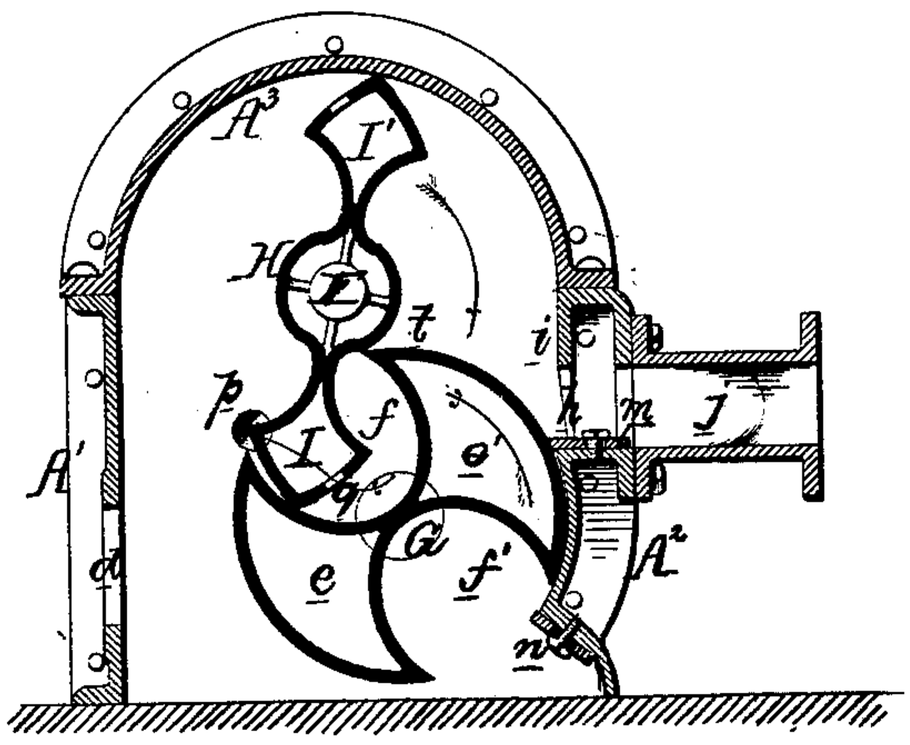
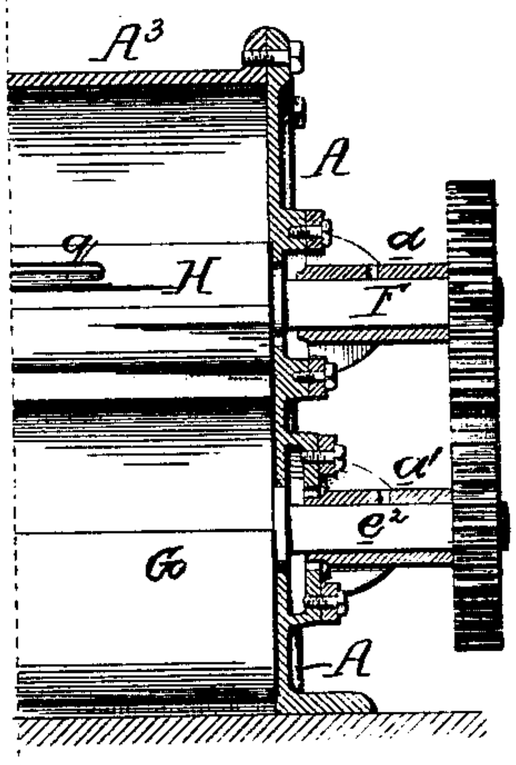


Fig 4.



Witnesses
J. L. Skidmore
Henry Howson Jr

Thomas S. Disston
by his Attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

THOMAS S. DISSTON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BLOWING-MACHINES.

Specification forming part of Letters Patent No. **188,108**, dated March 6, 1877; application filed September 4, 1876.

To all whom it may concern:

Be it known that I, THOMAS S. DISSTON, of Philadelphia, Pennsylvania, have invented certain Improvements in Blowing-Machines, of which the following is a specification:

My invention consists of certain improvements, fully described hereafter, in that class of rotary blowers in which a cylinder with vanes is caused to revolve in a chest in connection with a rotating cylinder having recesses for receiving the vanes, the main object of my invention being to prevent detrimental shocks and the resultant disagreeable noises.

In the accompanying drawing, Figures 1, 2, and 3 are vertical sections of my improved blower, showing the operating parts in different positions, and Fig. 4 a transverse vertical section of part of the blower.

The chest of the blower consists of two end plates, A A, one only of which is shown in Fig. 4 of the drawing, and an intervening casing having opposite sides A^1 and A^2 and arched top A^3, the whole being secured to a suitable foundation. A shaft, F, adapted to bearings *a* on the opposite end plates A A, passes through the chest, and this shaft, which is concentric with the arched top A^3, carries a hollow cylinder, H, from oppoite sides of which project two hollow vanes, I and I′, the outer edges of the latter revolving in proximity to, but not in absolute contact with, the interior of the said arched top A^3 of the chest. A cylinder, G, the continuity of which is interrupted by two opposite longitudinal concave recesses, *f f′*, is arranged to revolve within the chest, the said recesses converting the cylinder into two opposite and precisely similar segments, *e* e^1. The journals e^2 of this recessed cylinder G are adapted to bearings *a′* on the end plates A A of the chest, and are so geared to the shaft F and so driven that the vaned cylinder H and recessed cylinder shall revolve at the same speed in the directions pointed out by the arrows.

It should be understood that the ends of the two cylinders revolve in as close proximity to the end plates A A as possible without being in absolute contact therewith. It will be noticed that the centers of the two cylinders are not in the same vertical line, the center of the recessed cylinder being nearer the side A^2 of the chest than to the side A^1, for a purpose explained hereafter.

Air is admitted to the chest through the inlet *d*, and is forced through the outlet *h* and discharge-pipe *j*, a flange, *i*, extending downward below a horizontal line, *x x*, which passes through the center of the shaft F of the cylinder H, so that the upper edge of the outlet shall be below the said line. There are on the side plate A^2 of the chest two plates, *m* and *n*, which can be so nicely adjusted that the segments *e* e^1 can revolve very near to the edges of the plates without being in frictional contact therewith. When the vaned and recessed cylinders are in the position shown in Fig. 1, and are moving in the direction of the arrows, the air in advance of the vane I′ is being forced through the outlet, as it is effectually cut off from the inlet side of the chest, partly by the end of the said vane I′, which is nearly in contact with the arched top of the casing, partly by the upper edge *t* of the segment e^1, which is in contact, or very nearly so, with the cylinder H, and partly by the adjustable plate *m*, which is nearly in contact with the said segment e^1. When the two cylinders have arrived at the relative positions shown in Fig. 2, there is a new supply of air confined within the upper portion of the chest by the vaned cylinder, while the air in advance of the vane I′ is still being forced through the outlet, and this volume of air decreases as the cylinders move beyond the position shown in Fig. 2. The moment the vane I′, however, passes the center line *x*, an opening is presented between the edge of that vane and the chest, but this opening does not afford a sudden outlet of large area for the escape of the fresh supply of air in advance of the vane I, (otherwise there would be a sudden shock, creating a disagreeable noise,) but the opening, owing to the lip *i*, previously referred to, gradually increases in size, and permits the fresh supply of air in advance of the vane I to join the diminishing supply in advance of the vane I′. In other words, as one supply of air in advance of one vane is being exhausted a fresh supply in advance of the other vane joins the first supply so gradually as to obviate shocks and prevent any serious departure from the steadiness of the blast at the discharge-pipe. When the

cylinders are in the position shown in Fig. 2, the adjustable plate *n* prevents the escape of the compre sed air between the segment e^1 and the chest. The two adjustable plates *m* and *n*, in fact, obviate the necessity of the costly accurate adaptation of the portion of the casing of the chest between these plates to the segments of the recessed cylinder G. When the moving parts of the blower are in the position shown in Fig. 3, the first supply of compressed air in advance of the vane I′ has been disposed of, and that in advance of the vane I is being forced through the discharge-pipe, for it is effectually cut off from the inlet side of the chest, partly by the outer edge of the vane I and the arched top of the chest, partly by the outer edge of the vane I′, which is nearly in contact with the bottom of the concave recess *f′* of the cylinder G, and partly by the plate *m*. No matter what may be the relative positions of the two cylinders, they serve at all times, with the plates *m* and *n*, to cut off the inlet from the outlet space within the chest.

The object of enlarging the vanes at and near their outer ends, and of making them hollow, is twofold: first, it is desirable that each vane, in passing through a concave recess of the cylinder G, should occupy as much space as possible within the recess, for the more space it occupies the less will be the waste of compressed air; second, when the moving parts are in the position shown in Fig. 1, there is a space within the recess *f* cut off from both the inlet and outlet sides of the chest, and on the further movement of the cylinders in the direction of the arrows this isolated space must increase in size; hence a partial vacuum would be formed therein, and the sudden filling of the space with air when the vane I passes from the recess might cause a detrimental shock and disagreeable noise, to prevent which I make an opening, *p*, in one or both ends A of the chest, so that when the cylinders have reached the position shown in Fig. 1 the air entering the said opening *p* passes through the interior of the vane I, and through an opening, *q*, in the said vane into the recess *f′*, and prevents the formation of a partial vacuum therein.

The object of arranging the recessed cylinder nearer one side of the chest is, partly, to make the space between the segments *e* e^1 and the outlet side A^2 of the chest as contracted as possible, and, partly, to make the inlet side of the interior of the chest large enough to contain a plentiful supply of air, and prevent that sudden rush of air into the chest which would take place if the revolving vanes had to derive their supplies of air directly from an inlet-opening, instead of from an enlarged air-space within the chest.

I wish it to be distinctly understood that I do not desire to claim as part of my invention so securing the side plates A^1 and A^2 of the chest that they can be detached from the latter.

I claim as my invention—

1. The chest, with its vaned cylinder H, arranged concentrically in respect to the arched top of said chest, in combination with the recessed cylinder G, turning in bearings nearer to the side A^2, containing the outlet, than to the inlet side A^1 of the chest, as and for the purposes herein set forth.

2. The combination of the chest and its two cylinders with the side A^2 of the chest, parallel with the shafts of the cylinders, and having an outlet, *h*, the upper edge of which is below a horizontal line, *x*, drawn through the center of the vane-cylinder, as and for the purpose set forth.

3. The combination of the recessed cylinder G and its two segments with the segmental portion of the side A^2 of the chest and its adjustable plates *m* and *n*, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOS. S. DISSTON.

Witnesses:

HENRY HOWSON, Jr.,

HUBERT HOWSON.