R. W. PROSSER & W. RAY.

Rotary Blowers.

No. 150,788. Patented May 12, 1874.

Fig. 1

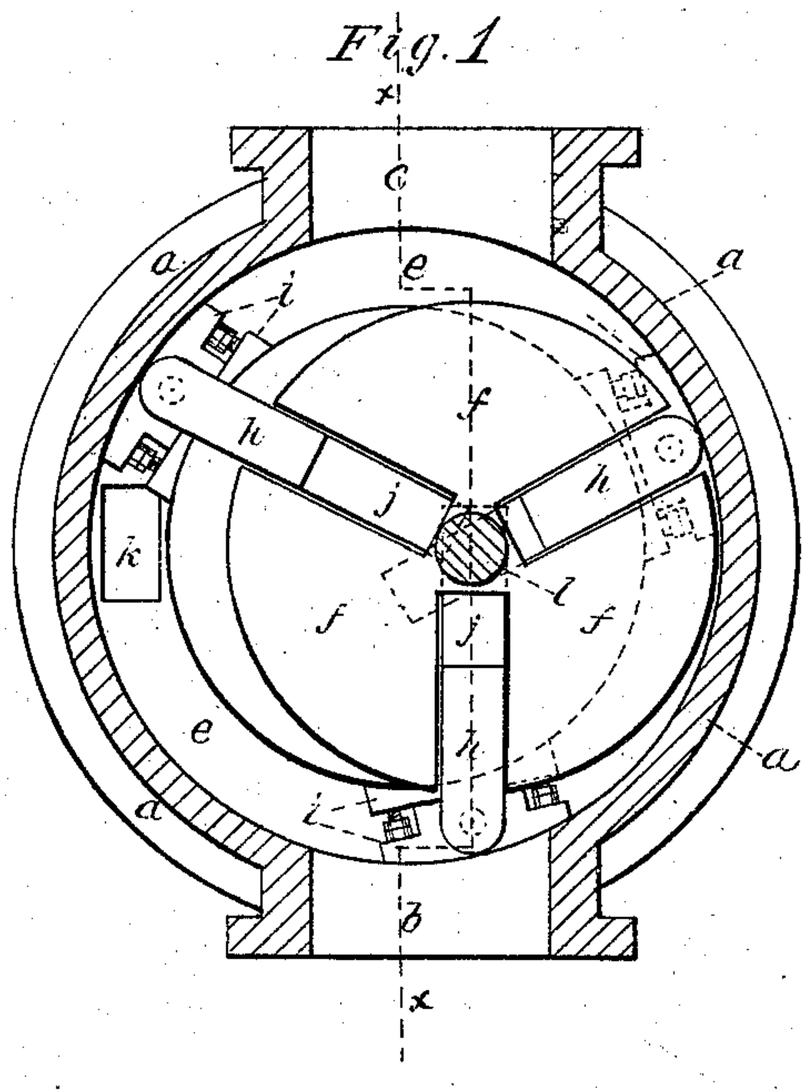


Fig. 2.

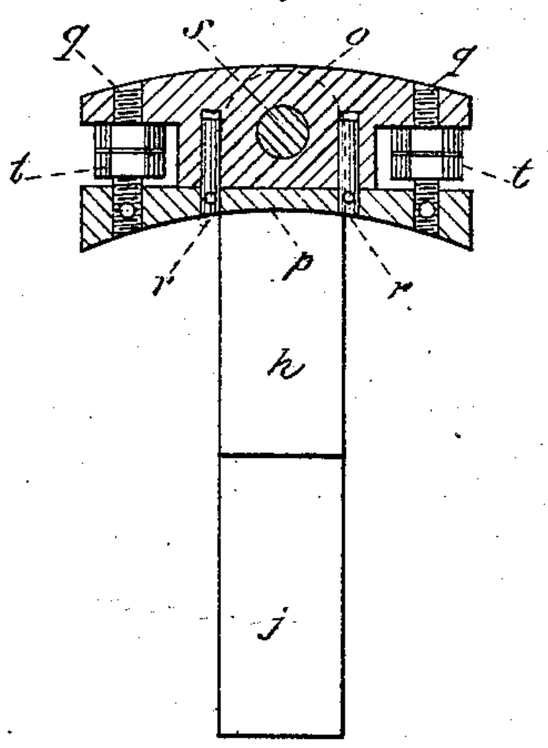
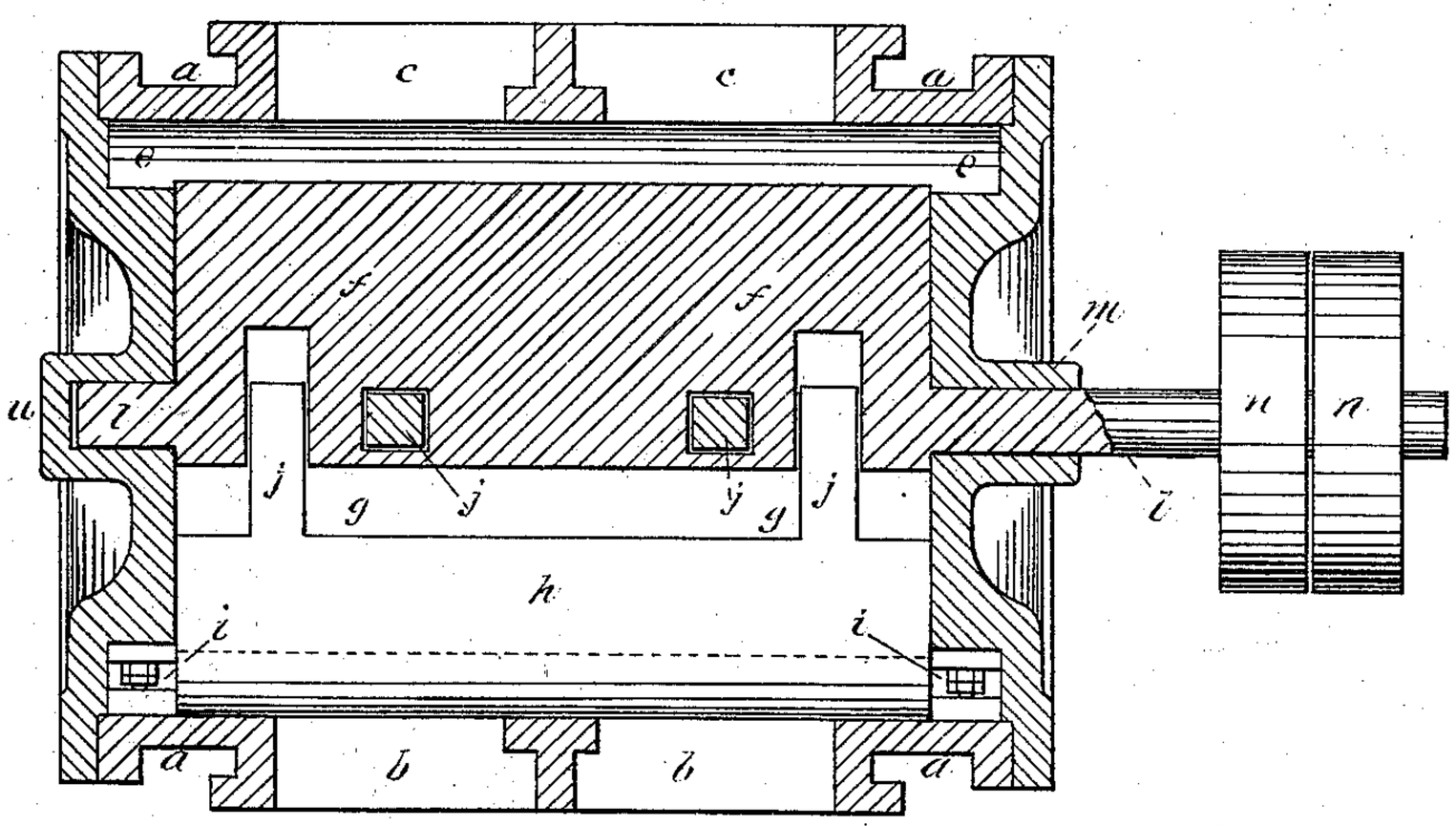


Fig. 3.



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UNITED STATES PATENT OFFICE.

ROBERT W. PROSSER AND WILLIAM RAY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ROTARY BLOWERS.

Specification forming part of Letters Patent No. **150,788**, dated May 12, 1874; application filed March 2, 1874.

To all whom it may concern:

Be it known that we, ROBERT W. PROSSER and WILLIAM RAY, both of Brooklyn, in the county of Kings and State of New York, have invented an Improved Gas and Air Exhauster and Blower, of which the following is a specification:

Our invention relates to that class of rotary blowing and exhausting engines in which a rotary cylinder carrying radially-sliding blades is arranged eccentrically within an exterior stationary cylinder, having blocks pivoted to the ends of the blades, which move in grooves concentric with the external cylinder; and it consists in arms or extensions on the inner edges of the radial blades, which pass through holes in the shaft of the inner cylinder, said arms being arranged at different positions on them, respectively, so as not to interfere in passing the center, their purpose being to guide the blades in their movement; and it further consists in so constructing the blocks, which are pivoted to and guide the outer edges of the blades, that said blocks may be adjusted to compensate for the wear of their edges, and also the wear of the outer edges of the blades.

Figure 1 of the accompanying drawings is a transverse view of the apparatus, the exterior cylinder and the shaft of the internal cylinder being shown in section, while the internal cylinder, with its radial blades, appears in elevation, having the adjustable guide-blocks removed from the ends of the blades nearest the observer. Fig. 2 is a view of one of the adjustable blocks shown in section, with one of the blades attached, which appears in elevation. Fig. 3 is a longitudinal section on line *x x* of Fig. 1.

As shown in the drawings, *a* is the external stationary cylinder, upon the opposite sides of which are formed inlet-ports *b* and outlet-ports *c*. Upon the inner side of the heads or ends of the external cylinder a deep groove, *e*, is formed, and is concentric with the external cylinder, as shown in Figs. 1 and 3. Within the external cylinder *a* is journaled, eccentrically, a smaller cylinder, *f*, which is provided with three longitudinal radial slots, *g*, in which three flat blades, *h h*, are free to slide in and out, and upon the outer ends of these blades the adjustable guide-blocks *i i* are pivoted, and they move in the concentric grooves *e e*, as shown. The inner edges of the blades are provided with two projecting arms, *j j*, which pass through the center of the interior cylinder, and guide the blades in their radial motion; and these arms are formed at different distances apart on the several blades to allow of their passing the same center without striking each other, as shown in Fig. 2, where two are seen in elevation and two in section. These arms are of a length equal to or greater than the radius of the internal cylinder, and, being of such a length, they act at a mechanical advantage to effectually resist the lateral strain brought upon the blades by the pressure of the gas, thus maintaining them always in a true position, and guiding them therein throughout the whole extent of their radial movement; and as three blades are employed, equidistant and pointing in divergent directions, which number is necessary for the proper operation of the apparatus, it is impossible that they should ever collide with each other, and the blade and arms can be made much longer than would be possible were a less number than three blades used. The outer edges of the blades are circular curves struck from the center of the pins *s*, which pivot the guide-blocks *i i*, as shown. The guide-blocks *i i* are so constructed that they may be adjusted, when required, to compensate for their own wear and the wear of the edges of the blades *h h*. The blocks are constructed preferably as shown in Fig. 2—viz., in two halves, *o p*, to the lower half of which are secured two studs, *q q*, and two pins, *r r*, which pass through corresponding recesses in the upper half *p*, the pins *r r* acting as guides. The blades *h* are pivoted to the upper half at *s*, and the studs are provided with nuts *t t*, which bear against a shoulder or recess in the upper half *o*, and, when turned, separate the two halves *o p*, and thus force out the outer edge of the block and outer edge of the blades *h* tight against the sides of the external cylinder, and thereby compensate for any wear that takes place. Hand-holes *k* are formed in the heads of the external cylinder at the groove *e*, through which access may be had to the interior, to turn the nuts and adjust the blocks when required, as seen in Fig. 1. One end of the central shaft *l* of the in-

ternal cylinder rests in a socket, *u*, in one end of the external cylinder, while the opposite end of the shaft passes through a stuffing-box, *m*, on the opposite end of the external cylinder, and upon it is secured a pulley, *n n*, by which motion may be communicated to the machine, as shown in Fig. 3.

The action of the machine is as follows: When motion is communicated to the shaft of the internal cylinder, it carries with it the cylinder and its blades. The blocks on the ends of the blades, being compelled to move in the circular grooves *e* in the cylinder-head, pull out the blades as they rotate, and keep their circular edges in contact with the internal surface of the large cylinder; consequently the quantity of air or gas included between any two blades and the surfaces of the internal and external cylinders is discharged as the internal cylinder rotates.

We have shown the internal cylinder as being solid, with slots and holes for the passage of the blades, while the central shaft projects from each end; but the cylinder may be formed hollow, with radial ribs for strength, and the shaft passing through it, and having the arms on the blades passing through holes made in the shaft to receive them.

We claim as our invention—

1. In combination with the cylinders *a f*, the three blades *h h h*, arranged radially with the axis of the cylinder *f*, and provided each with guiding arms or extensions *j j*, equal in length to the radius of the cylinder, substantially as and for the purpose set forth.

2. In combination with the blades *h h h*, cylinders *f a*, and grooves *e e*, the blocks *i i*, so constructed that they may be adjusted to compensate for the wear of their edges and the edges of the blades *h*, substantially as herein set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

R. W. PROSSER.
WILLIAM RAY.

Witnesses:
CHAS. M. HIGGINS,
ARTHUR C. FRASER.