J. E. PHINNEY & J. B. ROBERTSON.

Rotary Pump and Blower.

No. 214,699. Patented April 22, 1879.

Fig. 1.

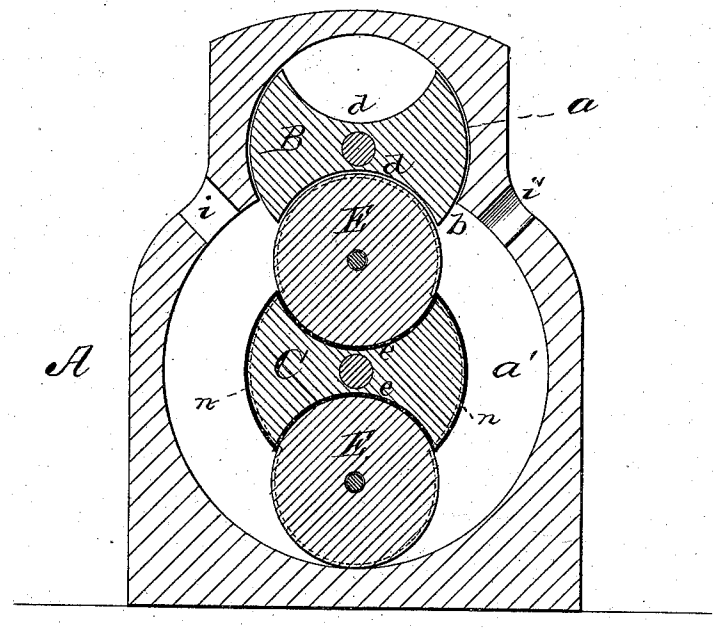
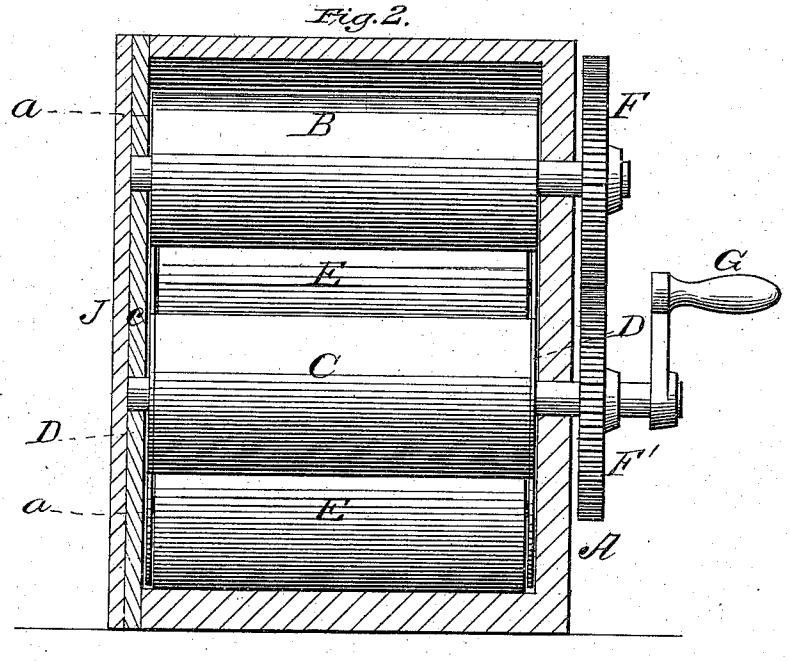


Fig. 2.



WITNESSES

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JAMES E. PHINNEY AND JAMES B. ROBERTSON, OF KINGSTON, NEW YORK.

IMPROVEMENT IN ROTARY PUMP AND BLOWER.

Specification forming part of Letters Patent No. **214,699**, dated April 22, 1879; application filed February 26, 1879.

To all whom it may concern:

Be it known that we, JAMES E. PHINNEY and JAMES B. ROBERTSON, of Kingston, in the county of Ulster and State of New York, have invented a new and valuable Improvement in Rotary Pump and Blower; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a transverse section of our improved pump and blower, and Fig. 2 is a longitudinal section thereof.

This invention has relation to improvements in rotary pumps, and especially that of L. Chapman, patented May 25, 1873; and the nature of the invention consists in certain novel combinations of parts, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates the barrel or body of my improved pump, having at one of its ends a small cylindrical chamber, *a*, and at the other a larger cylindrical chamber, *a'*, communicating with each other by a wide opening, *b*. These cylinders are bored absolutely true, and the opening *b* is formed by the intersection of the chamber-walls. The longitudinal axes of these chambers are parallel to each other and in the same vertical plane. Extending across the open end of the pump-body is a strong metallic plate, *c*, the object of which will hereinafter appear.

B designates a preferably metallic roller, of a diameter equal to the internal diameter of the smaller chamber, *a*, and having upon opposite sides the concavo-cylindrical recesses *d*. The convex surfaces of this roller form a tight joint with the walls of chamber *a*. This roller is journaled in bearings in the closed end of the body or casing A of the pump, and in plate *c*, stuffing-boxes or other equivalent devices being provided for the purposes.

In the chamber *a'*, and centrally arranged therein, is a roller, C, of equal diameter to roller B, and of the same construction therewith. This roller is also journaled in the end of the body and plate *c*, and has rigidly secured to its ends the metallic plates D. These project beyond the roller C to the edge of the wall of chamber *a'*, and are secured to the ends of the said roller in any suitable way. Journaled in these plates are the rollers E, the convexities of which correspond to the concavities or the recesses *e* of rollers C, and are tangential to the walls of the chamber *a'* aforesaid. The convexities of rollers E also correspond to the concavities of the roller B, forming a water-tight joint therewith.

The rollers E turn freely in their bearings in plates D, and are made to form a tight joint with the roller C by means of a leather envelope, *n*, surrounding the said roller, as shown in Fig. 1. Upon the end of the journal of roller B, projecting through the barrel or casing A, is a gear-wheel, F, that meshes with a similar gear-wheel, F', on the end of the corresponding journal of the roller C, which journal projects sufficiently beyond the gear-wheel to receive a crank-arm, G, or other equivalent device, by which a motion in unison is imparted to said rollers.

The body A is closed at its open end by a metallic head, J, forming a tight joint therewith.

The operation is as follows: Motion being imparted to the rollers by means of the crank, the rollers E forming tight joints with the chamber *a'*, and roller B with the chamber *a*, the convex surfaces of the roller B are closely tangential to the corresponding convexities of the roller C, and, the rotation continuing, the convex surfaces of the rollers E enter the corresponding concave surfaces of the roller B the moment this ceases to be the case, the effect of which is to raise water through an induct, *i*, in the wall of the chamber *a'*, and to discharge it in a continuous stream from an educt, *i'*, in its opposite wall.

The rollers E, being journaled in plates D, have a rolling motion in contact with the walls of chamber *a'* and the concavities of the roller, thus reducing the friction to a minimum.

This device may be used to great advantage as a blower for supplying a current of air to a blast-furnace, a Bessemer converter, and for other purposes.

We are aware that a shell or case containing two hollow intersecting cylinders, the upper

one containing a solid rotating cut-off that fits into the upper part, and is set upon and rotates with the shaft, and the lower one a solid rotating piston of the same size as the cut-off, the two rotating simultaneously through suitable gearing, is not new. Hence we make no claim to such invention.

What we claim as new, and desire to secure by Letters Patent, is—

In a rotary pump, the combination, with the body A, having chambers *a a'*, communicating with each other, and the latter provided with induct and educt passages *i i'*, of the roller B, journaled in chamber *a*, and provided with opposite concavo-cylindrical recesses *d*, the roller C, centrally journaled in chamber *a'*, and having suitable recesses *e*, the plates D, secured to roller C, the packing-envelope *n*, surrounding said roller, and the rollers E, journaled in said plates, and tangential to the walls of the chamber *a'* and roller C, substantially as specified.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

JAMES E. PHINNEY. [L. S.]
JAMES B. ROBERTSON. [L. S.]

Witnesses:
WILLIAM PURVIS,
NATHANIEL BOOTH.