CHARLES W. ISBELL.

Improvement in Rotary-Pumps.

No. 115,613. Patented June 6, 1871.

*Fig. 1.*

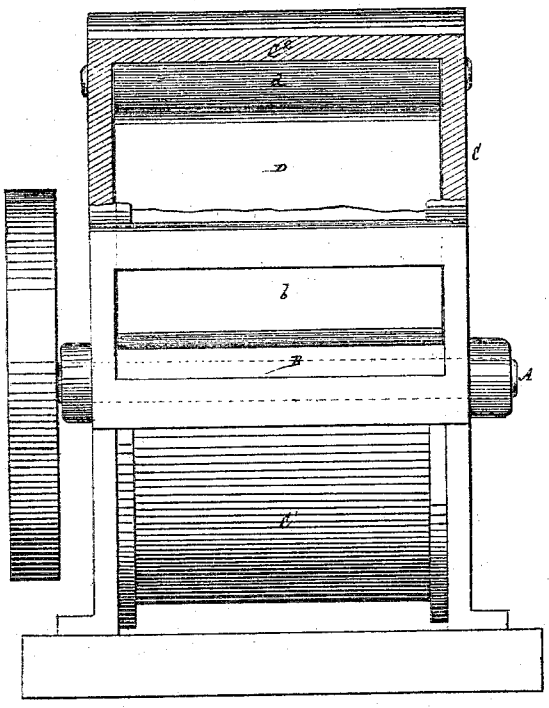
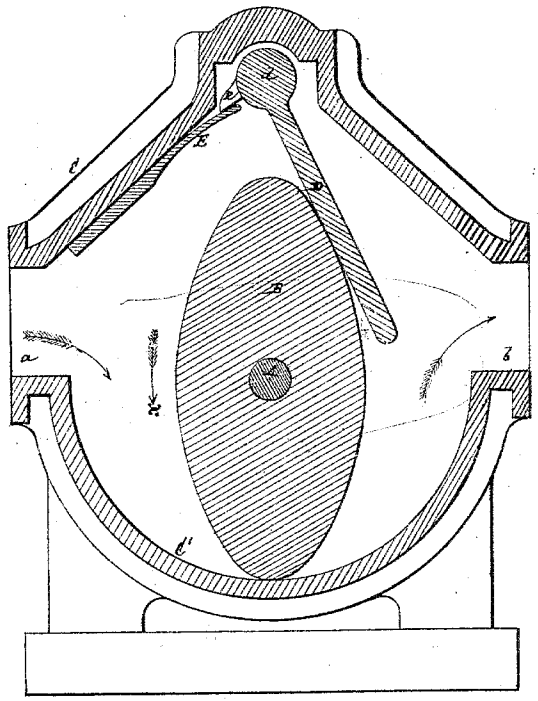



*Fig. 2.*




*Witnesses:*

Fred. Haynes

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# UNITED STATES PATENT OFFICE.

CHARLES W. ISBELL, OF NEW YORK, N. Y.

## IMPROVEMENT IN ROTARY PUMPS.

Specification forming part of Letters Patent No. 115,613, dated June 6, 1871; antedated June 1, 1871.

*To all whom it may concern:*

Be it known that I, CHARLES W. ISBELL, of the city, county, and State of New York, have invented a new and useful Improvement in Rotary Pumps, applicable as blowers and for other purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a partly-broken rear view of a pump or blower constructed in accordance with my improvement; and Fig. 2, a central transverse section of the same.

Similar letters of reference indicate corresponding parts.

My invention, while constituting a rotary pump which is applicable to operating on various liquids or fluids, is mainly designed as a blower for exhausting or expelling air, and will here be described accordingly. It consists in a certain combination and arrangement of a revolving piston of elliptical form with a chamber or cylinder, the one-half or portion of which is of a sweep corresponding to that described by the major axis of the piston, while the remainder of said chamber allows of the piston working in it free from contact at its periphery, together with a suitable inlet and outlet on opposite sides of the periphery of the cylinder, and a hinged flap or abutment operated by the piston. A blower or pump thus constructed is cheap, simple, and efficient, likewise is very durable, not liable to get out of order, and requires but little power to work it.

In the accompanying drawing the machine is represented only in one position, but it may be inverted or be otherwise arranged.

A is a revolving horizontal shaft, having attached to it the elliptical piston B, which need not necessarily be a true ellipse, but is generally of such form in its transverse section, and of a width corresponding with that of the cylinder or chamber C within which it is made to revolve, as indicated by the arrow *x*. Said piston may, if desired, be provided with suitable packing. The cylinder or chamber C is provided, on opposite sides of its periphery, with an inlet, *a*, and an outlet, *b*, and is virtually composed of two parts—namely, a lower half or portion, $C^1$, of the same sweep as that described by the major axis of the piston, and extending from inlet to outlet, or thereabout, and an upper or opposite portion, $C^2$, which is made sufficiently large to allow of the piston working freely or without contact within it, and forming an enlarged air-space or chamber. D is a hinged flap or abutment, pivoted as at *d*, for operation within the enlarged portion $C^2$, across which it is made to extend, and within which it is so arranged that it lies or rests on the piston on the delivery side of the latter. This piston may, if desired, be weighted to effect its closing action on the piston, but it is preferred to provide it with a heel or toe, *e*, for operation, either directly or indirectly, through the intervention of an interposed arm or rod on or against a spring, E, arranged within the cylinder. The piston B revolving, as indicated by the arrow *x*, glides in an easy manner on or over the lever-like abutment D, which is free, by the configuration of the piston, from all jerk or stoppage, said piston expelling through the outlet *b* the air drawn in at the inlet *a*.

### *Claims.*

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination and arrangement of the revolving elliptical piston B, the cylinder or chamber C formed in part of a curvature corresponding to the travel of the major axis of the piston and in part of an enlarged sweep or outline, the inlet *a* and outlet *b*, and the flap or hinged abutment D, substantially as specified.

2. The combination of the spring E, arranged within the enlarged portion $C^2$ of the cylinder, the revolving elliptical piston B, and the cylinder C, constructed as described, and provided with an inlet *a* and outlet *b*, all arranged for operation together, essentially as herein set forth.

CHARLES W. ISBELL.

Witnesses:

FRED. HAYNES,

P. W. MACKENZIE.