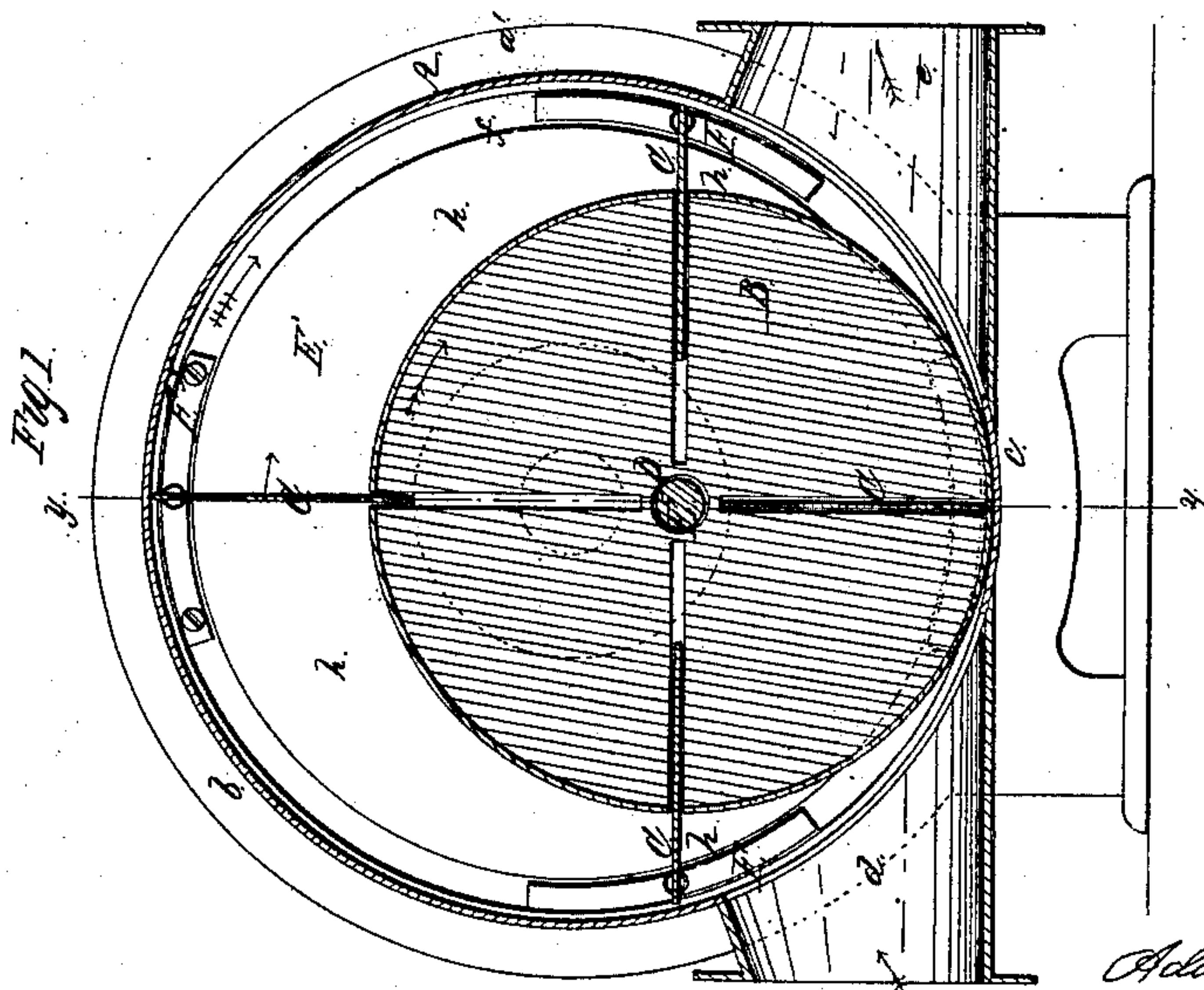
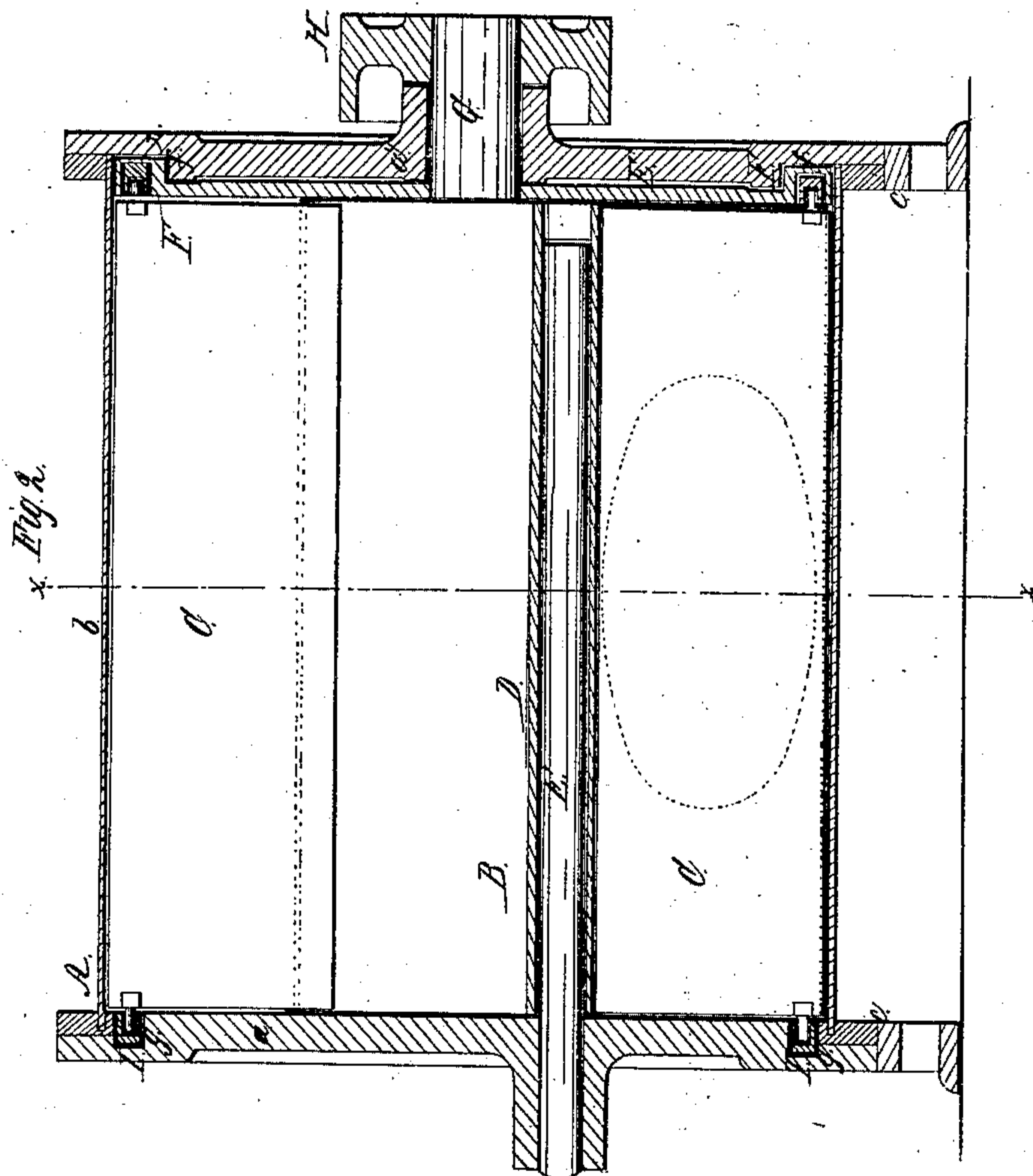


A. SMITH.  
ROTARY BLOWER

No. 34,318.

Patented Feb. 4, 1862.



Witnesses;  
James A. Smith  
Chas. L. Smith

Inventor;  
Addison Smith



# UNITED STATES PATENT OFFICE.

ADDISON SMITH, OF NEW YORK, N. Y.

## IMPROVEMENT IN ROTARY BLOWERS.

Specification forming part of Letters Patent No. 34,318, dated February 4, 1862.

*To all whom it may concern:*

Be it known that I, ADDISON SMITH, of the city, county, and State of New York, have invented a new and Improved Rotary Blower; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a transverse vertical section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a longitudinal vertical section of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in placing a cylinder having radial sliding pistons eccentrically within a cylindrical case, which is provided with an induction and eduction opening, the several parts being arranged as hereinafter fully shown and described, whereby the moving or running parts may be operated at a very high rate of speed without being subjected to a great amount of wear and tear, and the air which enters the device during its operation forced out from it by the action of the pistons in connection with the case, the blast being produced on the same principle as that produced by an ordinary bellows, and not like ordinary rotary fans or blowers produced by a vacuum formed by a rapid revolution of a fan within a case.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a cylindrical case, which may be constructed with wooden heads *aa'* and a sheet-metal body *b*. This case may be of any desirable dimensions, and it is placed on suitable pedestals or supports *cc*. At one side of the case A, near its lower part, there is an induction-opening *d*, and an eduction *e* is at the opposite side of the case. (See Fig. 1.)

Within the cylindrical case A there is placed a cylinder B, which is provided with a number of radial sliding pistons C. These pistons may be formed of metal plates, which extend the whole length of cylinder B, the outer edges of the pistons C bearing against the inner surface of the body *b* of the case A. The cylinder B is placed eccentrically within the case A, and it has a hollow shaft D, which is placed loosely on a permanent shaft E, the

latter being attached at one end to the head *a*, as shown clearly in Fig. 2. In the inner side of the head *a'* there is fitted concentrically a rotary disk *E'*, which has an annular groove *f* made in it near its edge. In this groove *f* there are placed segments F, to which the pistons C at one end are attached—one to each. One of the segments F (designated by *F<sup>x</sup>*) is firmly secured to the disk *E'*, but the others are fitted loosely in the groove *f*, and the disk *E'* has its axis G extending through the head *a'*, and is provided at its outer part with a driving-pulley H. The opposite ends of the pistons are attached to segments I, which are fitted loosely in an annular groove *g* in the inner side of the head *a*.

The operation of the machine is as follows: Power is applied to the pulley H, and the disk *E'* consequently rotated. The cylinder B is rotated from the disk *E'* in consequence of the segment *F<sup>x</sup>* being permanently attached to the disk *E'*, the direction of the movement of the disk and cylinder being indicated by the arrows upon them, as shown in Fig. 1. The pistons C form compartments *h* within the case A, each of which fills with air while passing the induction-opening *d*, the pistons C having their edges kept in contact with the inner surface of *b* by the segments F I and grooves *f g*. The air is carried around within the upper part of the case A and is compressed and forced out of each compartment into the eduction-opening *e*, as said compartments are contracted as they approach the eduction-opening owing to the eccentric position of the cylinder B. (See Fig. 1.) The operation therefore, it will be seen, is similar to that of a bellows as it is forced out from the case A under pressure. The segments F in the disk *E'* rotate with it; but the segments I necessarily travel entirely around the groove *g* in the head *a*. Hence those machines which are designed to have their cylinder B rapidly rotated are provided with a disk *E'* at each end, as much friction and wear and tear are thereby avoided; but in those machines which are designed for a slow movement the disk *E'* may be dispensed with and an annular groove made in the inner side of the head *a'*, in which the segments F move entirely around, like the segments I in the groove *g*. In either case the air will be received within and forced out from the case A in precisely the same way.



This invention, I would remark, like most others of its class, might be used as a pump, rotary engine, or water-wheel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The employment or use for the purposes specified of the external case A, having induction and eduction openings *d e*, in combination with the rotary cylinder B, when the latter is provided with radial sliding pistons C, placed eccentrically within the case A, and

has its pistons C operated or drawn in and out, so that their outer edges will be kept in contact with the inner surface of the body *b* of the case A through the medium of the segments F I and grooves *f g*, either or both of the latter being stationary or rotating, substantially as described.

ADDISON SMITH.

Witnesses:

R. GAWLEY,  
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