Sheet 1-2 Sheets

P. H. Roots,

Rotary Blower,

№ 30,157. Patented Sep. 25, 1860.

Fig. 2.

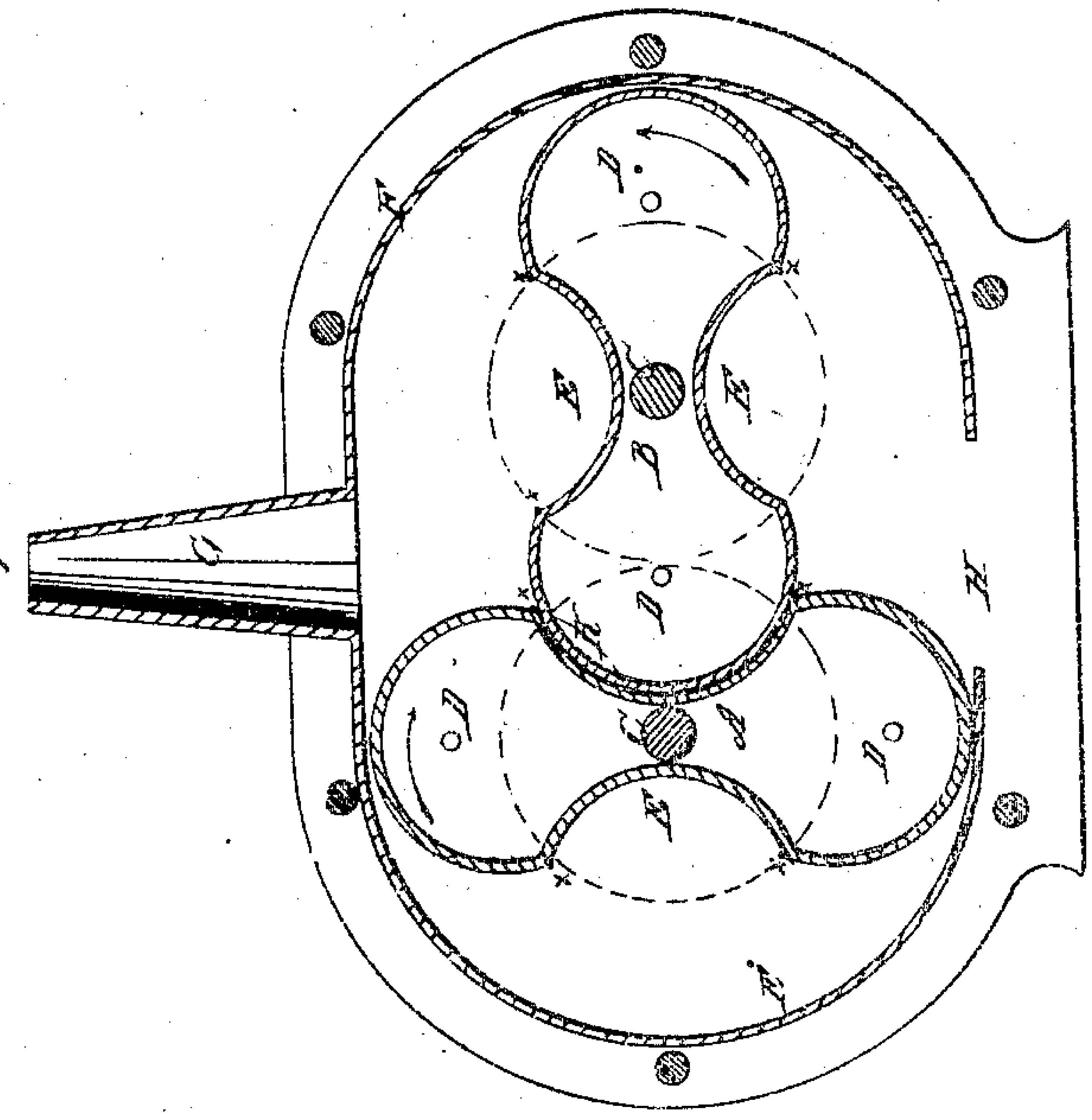
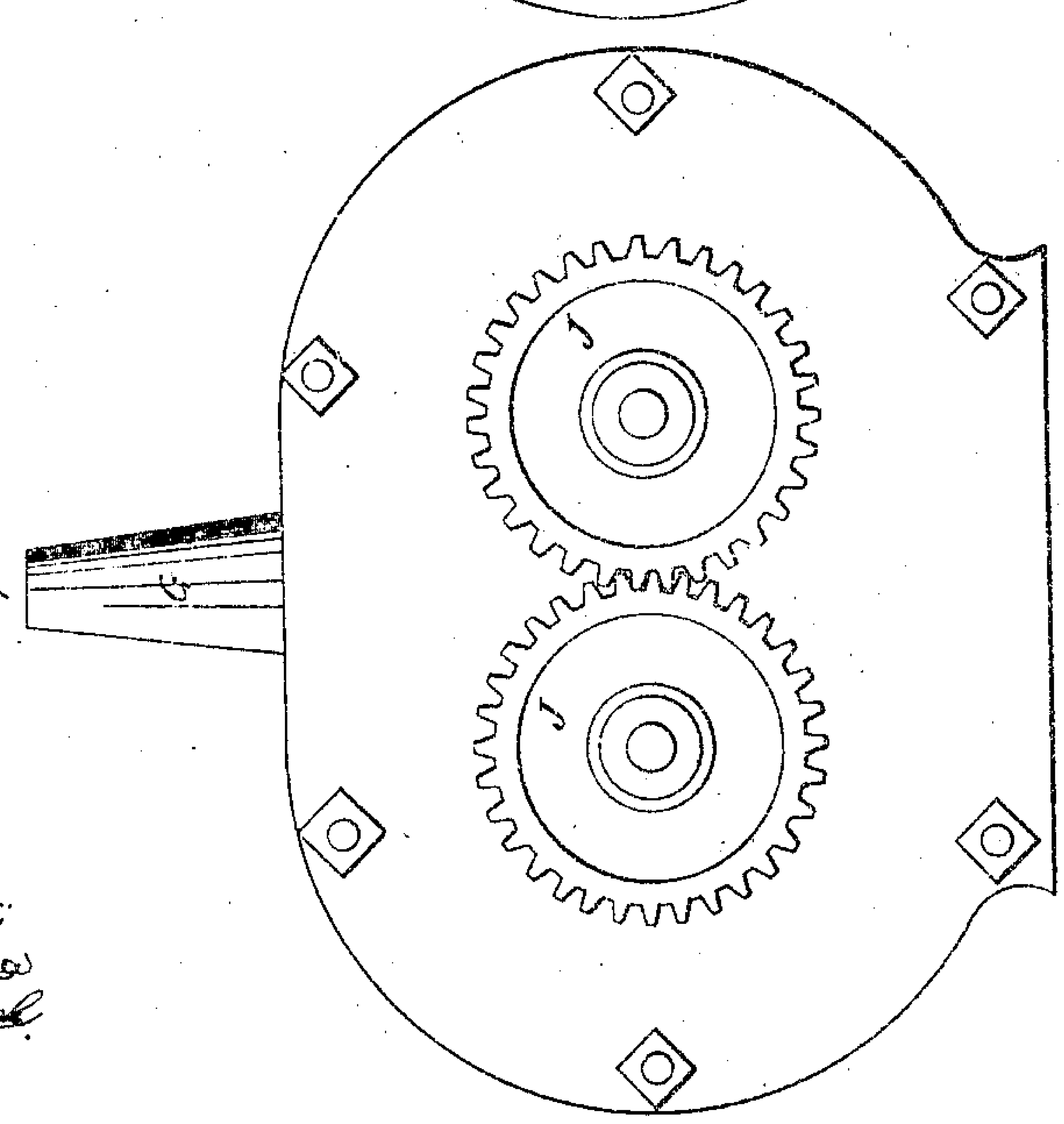


Fig. 1.



Witnesses:
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Inventor:
P. H. Roots
by ... Attorneys

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Rotary Blower,

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Fig. 4.

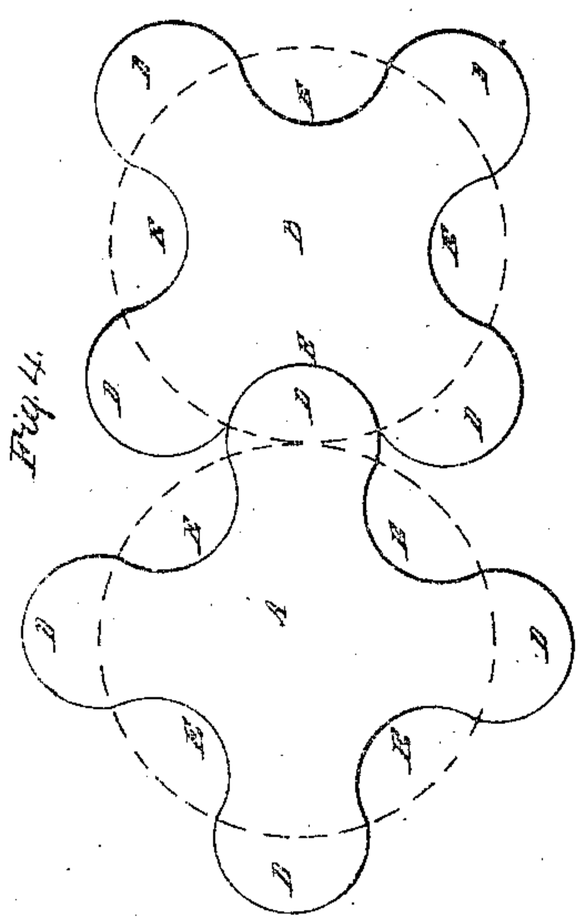


Fig. 5.

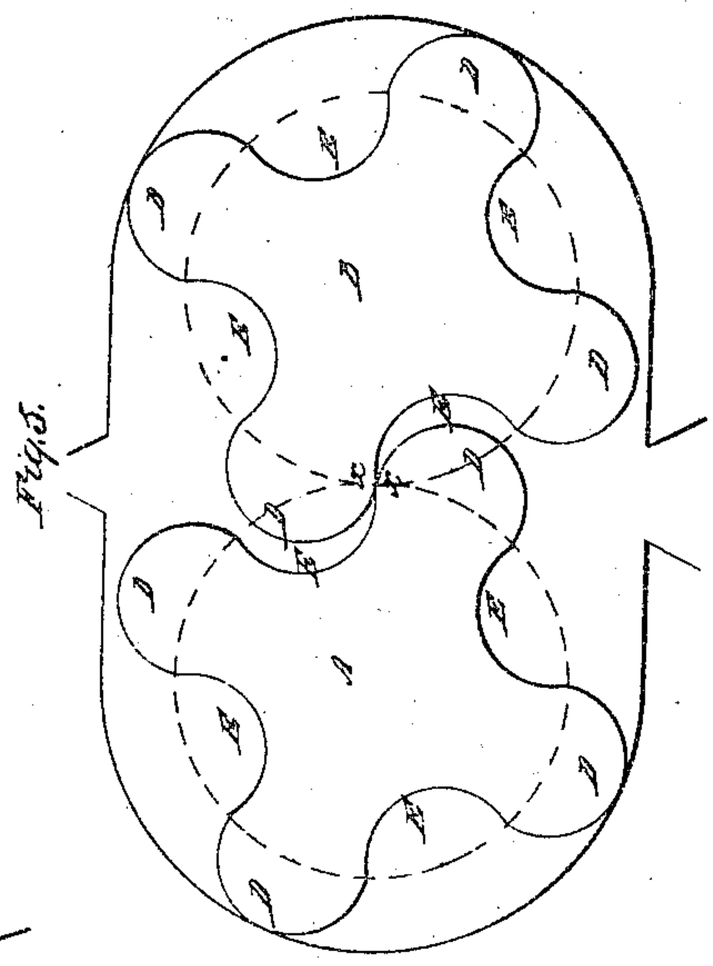
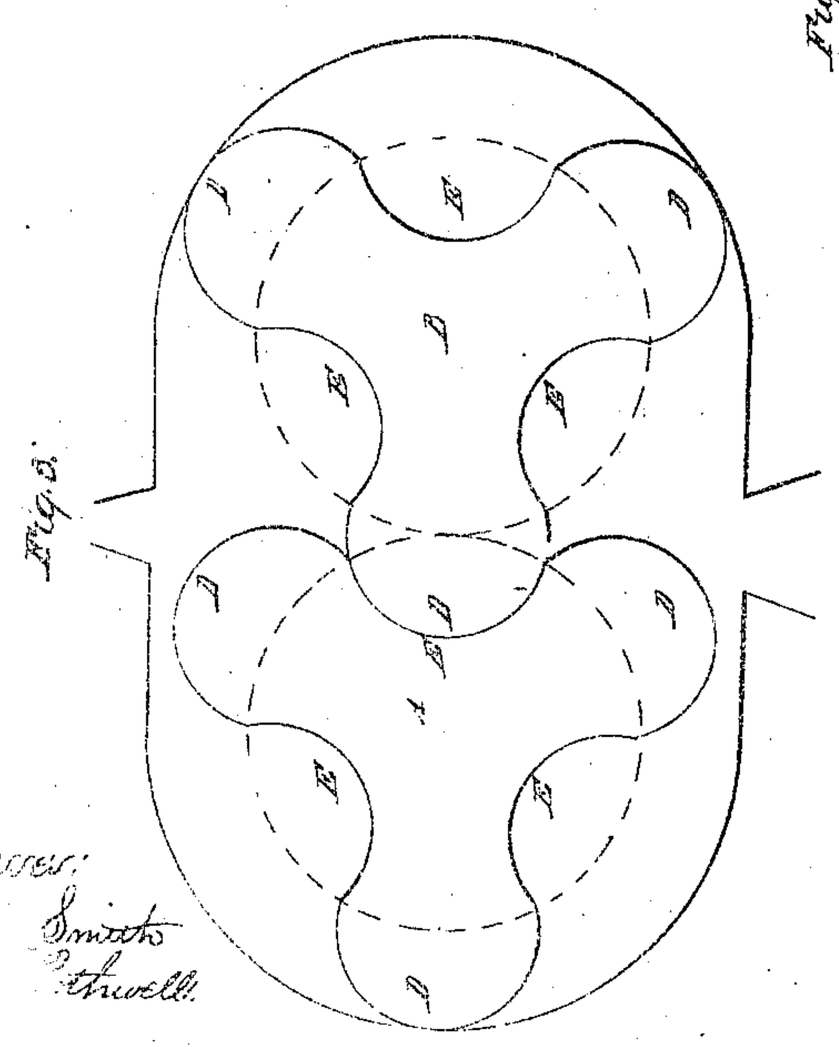


Fig. 6.



Witnesses:
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Inventor:
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By Munn & Co
Attys.

UNITED STATES PATENT OFFICE.

P. H. ROOTS, OF CONNERSVILLE, INDIANA.

BLOWER.

Specification of Letters Patent No. 30,157, dated September 25, 1860.

To all whom it may concern:

Be it known that I, P. H. ROOTS, of Connersville, in the county of Fayette and State of Indiana, have invented a new and useful Improvement in Rotary Blowers; 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, forming a part of this specification, in which—

Figure 1, represents a side view, and Fig. 2, a central vertical section.

Similar letters of reference, in each of the several figures, indicate corresponding parts.

The nature of my invention consists in the combination with two pistons which form arcs of circles and each inclose one quarter the circumference of a given circle, of two recesses which form quadrants of true circles, when each of said recesses occupy just one quarter of the circumference of the said given circle, as hereinafter described. By this combination of pistons and recesses constructed as described but four small essential points of contact during the revolution of the pistons are experienced, and therefore at these points, narrow packing strips can availably be employed for rendering the pistons air-tight, during the time that the vacuum is being formed, and these come into play periodically and successively or at the moment when one ceases its contact another supplies its place.

It is a very essential thing to have the points of positive contact located, for the machine when first made, if employed as a rotary pump can be run for some time without packing and when the parts have worn so as not to be sufficiently tight, the points of contact can be restored and the machine rendered as tight, as when first used, and thus the loss and expense attending the construction of new pistons or the bringing of the parts closer together, obviated. In this particular, my machine differs from all others that I am familiar with and especially from David M. Walker's pump, patented in 1835, whereas, with the combination of pistons and recesses constructed as Mr. David M. Walker describes in the patent granted to him in 1835 on a hydrant pump, the points of contact are continually changing, while the piston is making its movement through the curved recess and therefore it is impossible to availably employ strips of packing at any certain points, and this being so his machine certainly could not be used effectively as a blower, it being essentially important in order to have a machine of this character operate effectively for the blowing of air to pack the pistons air-tight, for if they are not packed air-tight, the effective action of the air will be lost to a great degree by reason of its escape between the abutments.

To enable others, skilled in the art, to make and use my invention, I will proceed to describe its construction and operation.

A, and B, represent two double acting rotating abutments made alike in all respects.

C, C, are their shafts.

D, D, D, D, are pistons which are all alike.

E, E, E, E, are the recesses which receive the pistons and are all alike.

F, F, is a concave or case extending around so as just to clear the pistons as they revolve.

H, and G, are the induction and discharge openings, both of which may be made of a size adapted to the uses to which the machine is to be applied.

The pistons D, D, D, D, and recesses E, E, E, E, are arcs of circles and have one common radius, which radius is the chord of an arc of one-eighth the circumference of the circle on which they are formed, shown by the dotted circle in Fig. 2.

The abutments A, and B, are made to revolve simultaneously by means of two equal cog wheels J, J, upon the shafts C, C, of the abutments, as seen in Fig. 1. In order to have the parts operate very tightly, as in the case of a blower, suitable metallic or other packing is to be inserted in the piston at the points *x*, *x*, said points being the only ones of positive contact which are experienced during the revolution of the abutments.

When very dense fluids are operated, it will be desirable to remove so much of each of the pistons as represented in red at K, as will allow the free escape of the fluids as the pistons enter the recesses. The same arrangement will be useful for high velocities, when the fluids are not very dense, for when a dense fluid is suddenly forced out of the recess, a concussion is the result similar to striking upon a solid substance, whereas by allowing a sufficient outlet, all such concus-

sion is avoided, and the fluid escapes at such reduced velocity through the enlarged opening, that the operation is easy.

If, as a blower machine of operating size is run at a velocity of 300 or 400 revolutions per minute, a distinct sound can be heard as the air is forced from the recesses, in a blower, it will therefore be useful, as considerable motive power would be saved thereby.

The operation is as follows: When the pistons are made to revolve in the direction of the arrows, the air or water or whatever fluid is acted upon, will be carried forward as the pistons approach together, and is forced through the discharge pipe G, and as the pistons fill the recesses there can be no backward escapement. In this manner, the device will act as a blower or pump.

It is evident that by reversing the operation and acting upon the pistons by steam or water, the device becomes a rotary steam engine or a pressure water wheel.

As the peripheries of all the internal parts are in perfect circles, either convex or concave, it will be comparatively easy to construct them with accuracy.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the pistons D, D, and recesses E, E, when so constructed as to present but four essential points, of positive contact as described and for the purposes set forth.

P. H. ROOTS.

Witnesses:
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SAML. ENYANT.