(No Model.) 2 Sheets—Sheet 1.

G. W. SHAMP.

ROTARY PUMP.

No. 283,153. Patented Aug. 14, 1883.

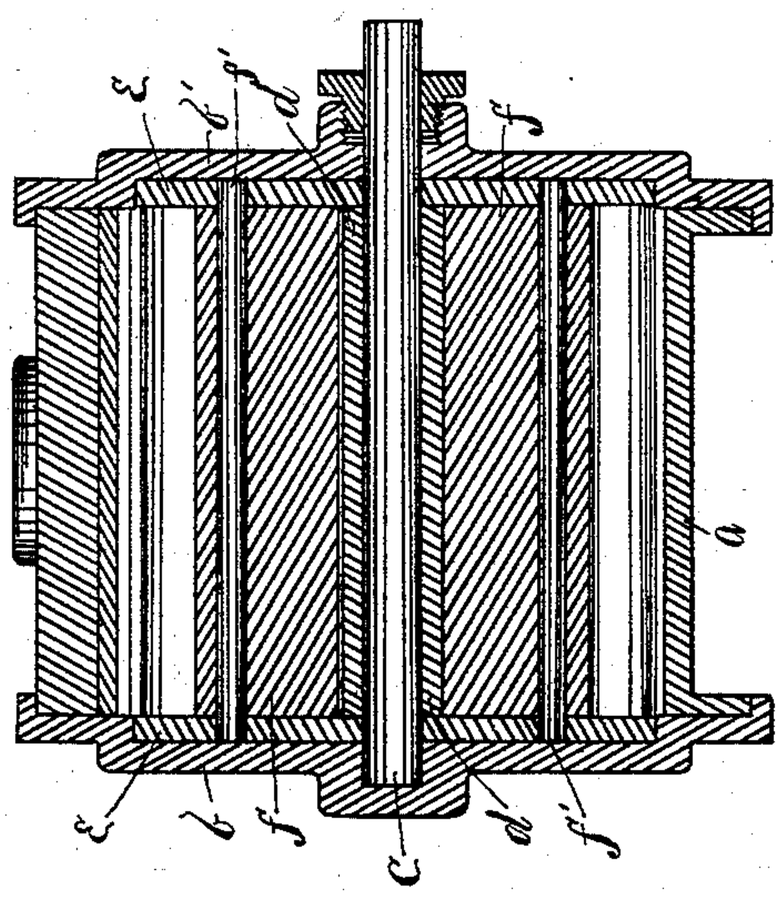

Fig 2

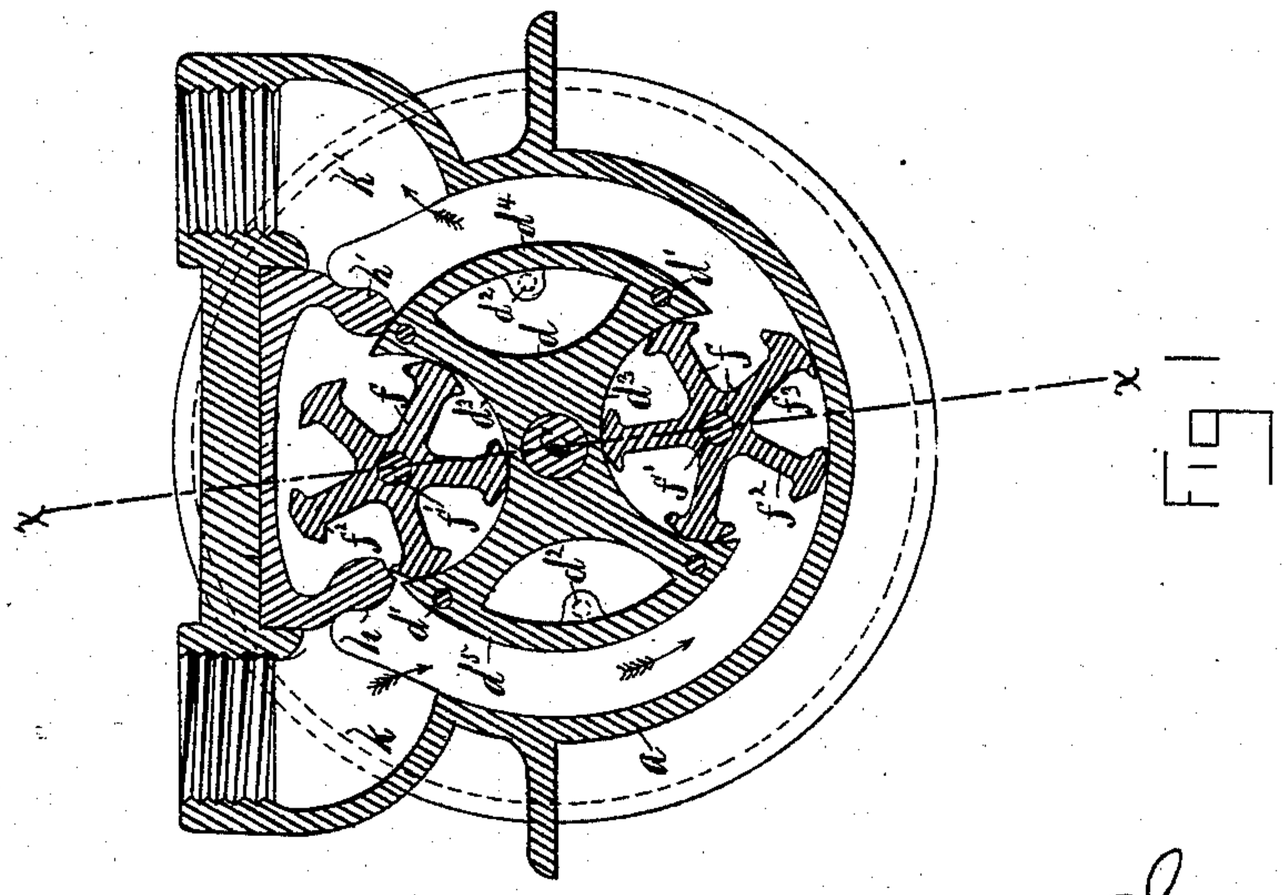

Fig 1

Witnesses:
Otto Hoddick
Wm. A. Kent

Inventor:
George W Shamp
By W T Wilcox
Atty

(No Model.) 2 Sheets—Sheet 2.

G. W. SHAMP.

ROTARY PUMP.

No. 283,153. Patented Aug. 14, 1883.

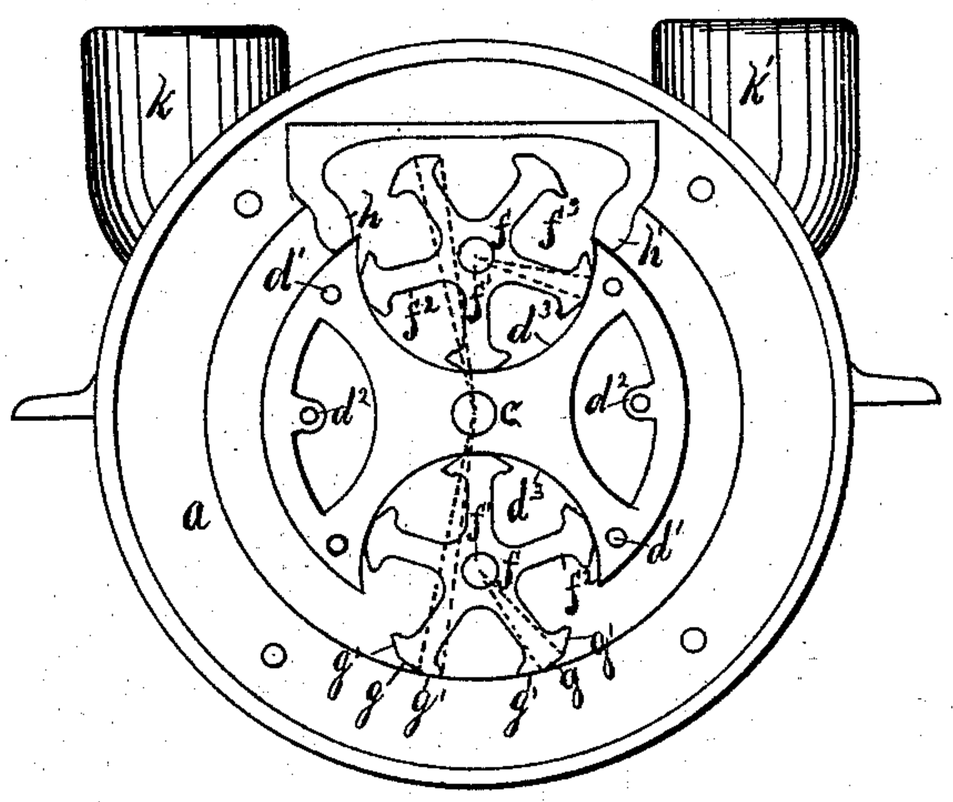

Fig 3

Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE W. SHAMP, OF BUFFALO, NEW YORK, ASSIGNOR TO AUGUSTUS M. WESTFALL AND EDGAR A. GAY, OF SAME PLACE.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 283,153, dated August 14, 1883.

Application filed December 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SHAMP, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Rotary Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates more particularly to certain improvements in the rotary pump for which Letters Patent No. 263,975 were granted on the 5th day of September, 1882, to A. Siegrist. Such pump consists, essentially, of a cylinder provided with a single stationary abutment and winged pistons, which are seated in a rotating hub, and which are capable of rotary movement in their seats in the hub.

My improved construction consists, substantially, in providing the cylinder with two stationary abutments located at a distance apart greater than the width of the piston-recess in the hub, so that while one of the stationary abutments loses contact with the outer surface of the rotating hub as the piston-recess is passing such abutment, a close contact is preserved between the other stationary abutment and the outer surface of the rotating hub, whereby the suction-power principally is greatly increased, all as will be more fully hereinafter described.

In the drawings, Figure 1 is a vertical cross-section of my improved pump. Fig. 2 is a longitudinal section of the same, taken in the line *x x* of Fig. 1; and Fig. 3 is an end elevation with the cylindrical cover removed.

Referring to the drawings, *a* is the cylinder, *b b'* the cylinder-covers, and *c* the shaft.

d is the hub, which is secured to the shaft *c*, and *e e* are two disks or circular heads, secured to both ends of the hub *d* by screw-bolts *d'*; and d^2 d^2 are dowel-pins upon the hub *d*, which project into openings formed in the heads *e e*, and serve as additional means of security for the heads *e e*.

f f are rotary pistons arranged in recesses d^3 of the hub *d*, between the heads *e e* thereof, and provided with pivots *f'*, which turn in bearings in the heads *e e*. These pistons are each provided with wings f^2, some of which bear against the inner surface of the cylinder and some against the concave surface of the recess d^3, in which the piston is located. The face of each wing f^2 is composed of three separate portions, *g* and *g' g'*, the central portion, *g*, of which is concentric with the axis of the piston, the two end portions, *g' g'*, being concentric with the axis of the cylinder, as clearly illustrated by dotted lines in Fig. 3, the central portion, *g*, bearing against the concave surface of the recess d^3 in the hub *d* and the end portions, *g' g'*, against the inner surface of the cylinder during the operation of the pump.

The parts of the pump just described are in substance the same as those shown and described in the patent hereinbefore named, wherein the winged piston is turned by a single stationary abutment located midway between the inlet and outlet ports, a close contact between such abutment and the surface of the recess between the two abutting wings of the piston being maintained while the piston is passing the single abutment. I have found by experiment that for forcing water this construction is amply sufficient for ordinary purposes; but in raising water to any substantial distance by the force of suction it fails to meet the requirements, for the reason that there is more or less escape prejudicial to the suction-power during the time that the outer surface of the hub loses contact with the abutment while the piston-recess is passing such abutment. In order to overcome this difficulty, and thereby materially increase the suction-power of the pump, I have arranged the two stationary abutments *h* and *h'* just inside the recessed inlet and outlet ports *k k'*, the distance between these abutments being greater than the distance across the recess d^3 in the hub *d*. The surfaces of these abutments, which receive contact from the outer surface of the hub, are concentric with the axis of the hub, and are made to fit closely thereon during such contact. These abutments *h* and *h'* are not intended to fit closely in the recesses f^3 between the wings

of the piston, as in the patent hereinbefore named, but are so constructed as to allow the piston to turn loosely and easily as it passes the abutment.

The operation of my improved pump is as follows: The shaft *c* is revolved in the direction of the arrow in Fig. 1, and the top piston is shown as having just passed the abutment *h'* and approaching the abutment *h*. The lower piston in its travel is producing a suction through inlet-port *k*, and is forcing the water in front of it out through the port *k'*. At the instant that the top piston clears the abutment *h'* the surface d^4 of the hub comes in contact with the abutment *h'*, thus preventing any escape of the forced water past such abutment in the direction of the inlet-port *k*, and preserving intact the suction commenced by the upper piston as it clears abutment *h*, and the surface d^5 of the hub is simultaneously released from contact with the abutment *h*, so as not to retard for an instant the suction started by the upper piston. As the upper piston moves out from between the abutments *h* and *h'* and the surface d^4 prevents the water in such space from passing backward toward the abutment *k'*, the displacement of the piston has the effect of producing a partial vacuum in such space, thereby tending to increase the suction already started by the lower piston in its travel toward the outlet-port *k'*.

It will be noticed that in my improved construction there is always a close and effective contact between one of the two abutments and the hub while the piston is passing either of such abutments, thereby furnishing a practically-uninterrupted air and water tight passage for the travel of the piston or pistons from the inlet to the outlet port.

It is apparent that my improved pump is equally well adapted for use as a rotary engine.

I claim—

In a rotary pump, the combination, with a rotary hub, *d*, provided with recesses d^3 and rotary pistons *f*, attached to the hub and provided with wings f^2, of the cylinder *a*, provided with the inlet and outlet ports *k k'* and the two stationary abutments *h* and *h'*, located at a distance apart greater than the width of the recess d^3 in the hub *d*, all arranged and operating substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE W. SHAMP.

Witnesses:

A. M. WESTFALL,

W. T. MILLER.