(No Model.)

E. F. SMITH.

ROTARY PUMP.

No. 395,085. Patented Dec. 25, 1888.

Fig. 1.

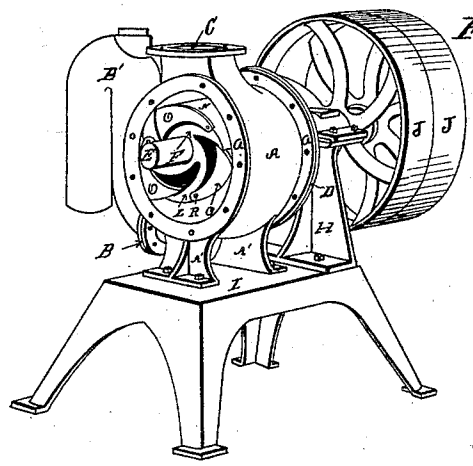


Fig. 3.

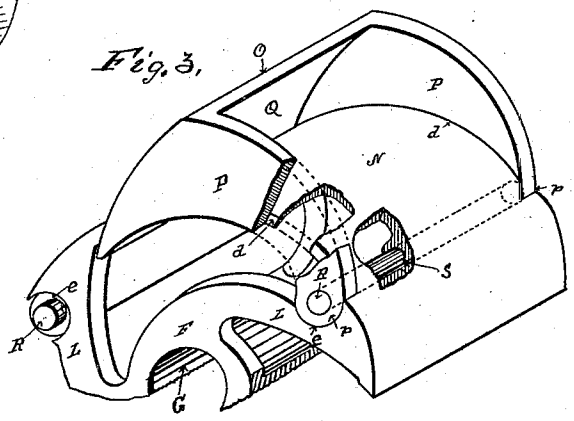
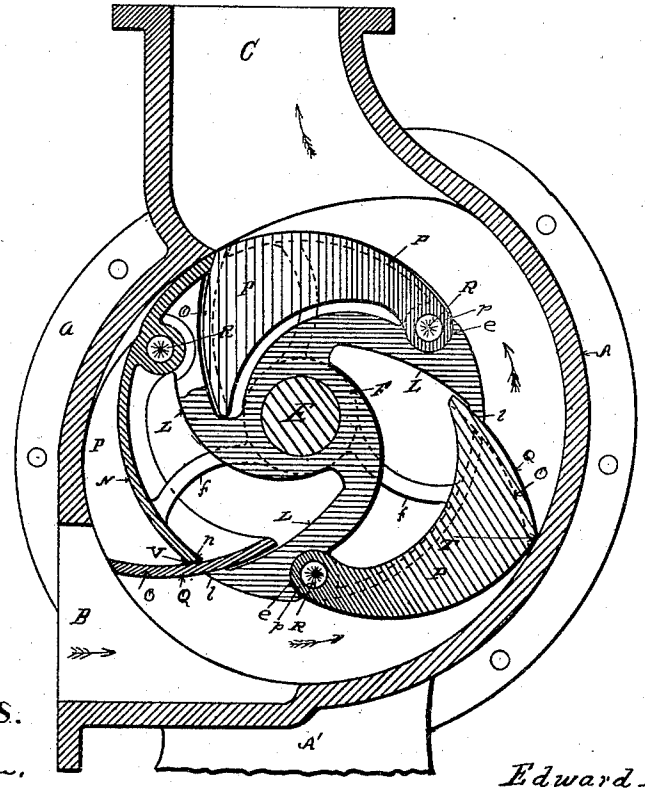


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD F. SMITH, OF CORRY, PENNSYLVANIA.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 395,085, dated December 25, 1888.

Application filed February 25, 1888. Serial No. 265,312. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. SMITH, a citizen of the United States, residing at Corry, in the county of Erie and State of Pennsylvania, 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 the letters of reference marked thereon, forming part of this specification.

My invention consists in the improvements in rotary pumps hereinafter set forth and explained in the specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a perspective view of my improved rotary pump with the cap removed from one end thereof. Fig. 2 shows a vertical central cross-section of the shell of the pump with the cylinder and valves in elevation, parts thereof being broken away. Fig. 3 shows a perspective view of one of the valves, and also a section of the rotary cylinder upon which the valve is mounted.

Like letters refer to like parts in all the figures.

In the construction of my improved rotary pump I make the shell A elliptical in shape, with a suction-opening, B, and discharge-opening C, to which openings suction and discharge pipes (not shown) may be connected. On the ends of the shell A, I secure ordinary heads, D, by means of bolts passing through the flanges *a a* on the ends of the shell A. Centrally through the heads *d*, I place a shaft, E, which passes through and is secured in the opening G in the rotating head or cylinder F, the head F being of the same length as the shell A, so that the ends thereof rotate in close proximity to the shell-heads D D, so as to form substantially a tight joint therewith. The bearings of the shaft E, I make either in the shell-heads D, or, as shown in Fig. 1, in standards H, secured to the pump-frame I. On the shaft E, I also secure driving-pulleys J in the usual manner. The rotating head or cylinder F consists of arms L, having shells N thereon, which form the periphery of the cylinder, the shells N extending from the front sides of the arms L nearly to the rear sides thereof, their front edges being supported by small arms *f* from the hub, the whole being preferably cast in one piece.

Each of the arms L is provided with semicircular recesses or bearings *e*, which recesses receive the ends of the sides or arms of the valves O, which valves consist of the curved face Q and the sides or arms P P, the ends *p* thereof being secured in the recesses or bearings *e* by pintles R, which pass through holes in the ends *p* thereof and through holes S, bored through the arms L from edge to edge, the pintles R being preferably secured in the ends *p* of the arms P and rotating in the holes S in the arms L, so that the wear is distributed over the greater portion of the pintles R in the bearing S thereof. The sides *d* of the shell N are cut away to the depth of the recesses *e*, and the ends *n* thereof extend to the inside of the curved valve-faces Q, the backs *l* of the arms L extending to and forming joints with the outsides of the valve-faces Q, so as to leave narrow longitudinal slits V between the backs *l* of the arms L and the ends *n* of the shells N. In these slits the faces Q of the valves O (being arcs of circles having the pintles R as their axis) operate inward and outward as the outer edges, T, of the valves O follow the contour of the inside of the shell A during the revolutions of the head or cylinder F, upon which the valves are mounted.

In operation the fluid is drawn in through an ordinary suction-pipe, B′, and as the cylinder F is rotated in the direction of the arrows (see Fig. 2) the fluid is carried around in front of the faces O and forced out of the exit-openings C, the centrifugal force exerted on the valves O by the revolution of the cylinder F being at all times sufficient to keep the outer edges, T, of the valves O in close contact with the inner surface of the shell A.

Having thus fully described my invention so as to enable others to construct and operate the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, in a rotary pump, of curved cylinder-arms L, and the curved shells

N, extending from the front sides of said arms and supported at their outer ends by braces *f*, with valves O, having arms P P on the sides thereof pivoted to the cylinder-arms L by pintles R, so that the curved faces Q of the valves operate in longitudinal slits V between the rear edges of the cylinder-arms L and the outer edges of the shells N, substantially as and for the purpose set forth.

2. The combination, in a rotary pump, of the cylinder-arms L, provided with the recessed bearings *e*, and shells N, cut away at the sides *d d* thereof and supported by braces *f*, with the valves O, having the arms thereof, P P, pivoted in the recesses *e e* and occupying the space formed by cutting away the sides *d d* of the shells N, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD F. SMITH.

Witnesses:

A. F. BOLE,

JAMES CARNEY.