

(No Model.)

H. W. POTTER.
ROTARY PUMP.

No. 569,350.

Patented Oct. 13, 1896.

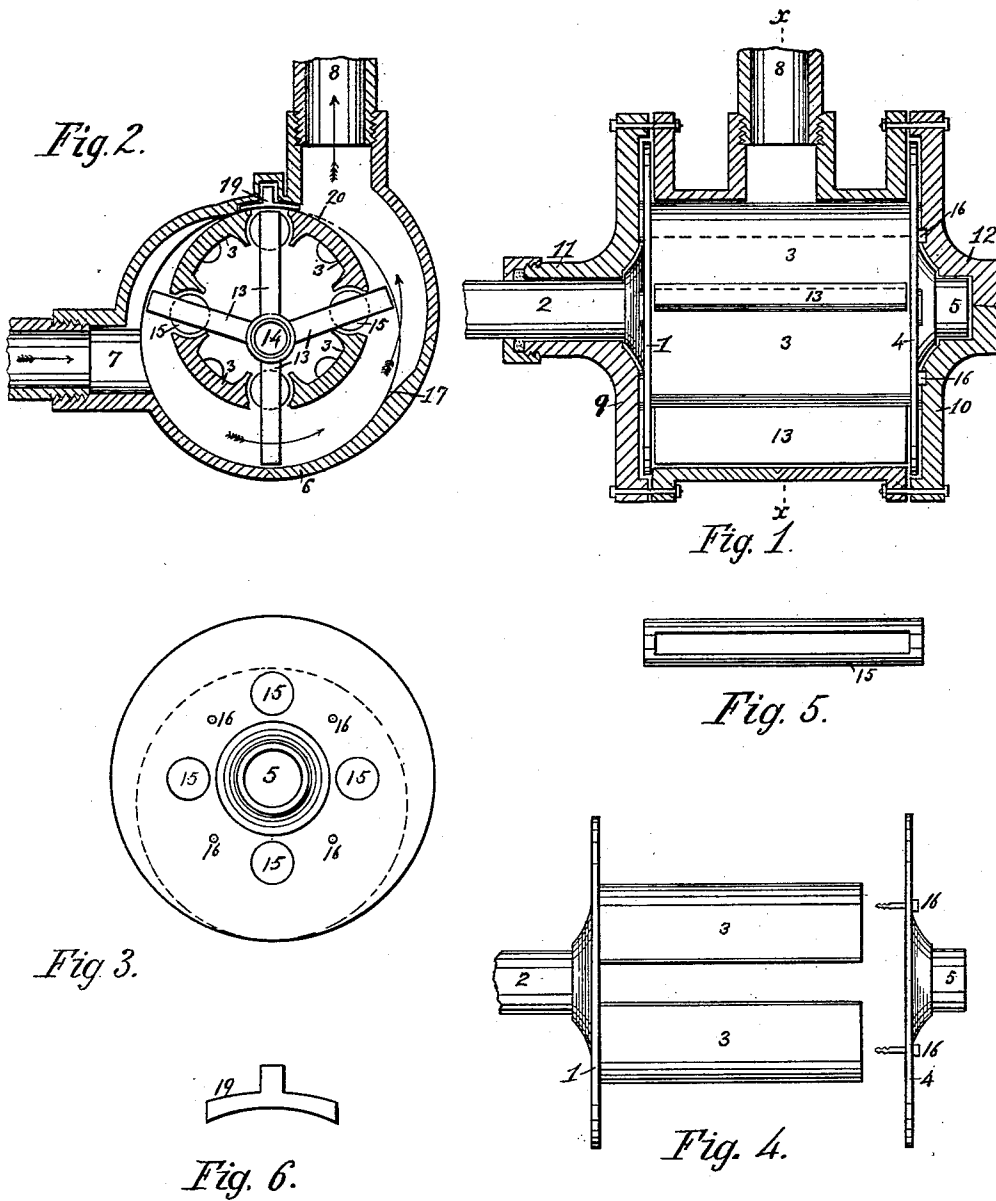


Fig. 3.

Fig. 6.

Fig. 4.

Fig. 5.

Fig. 1.

WITNESSES:
David Weed
Jonas Pusey

Henry W. Potter
INVENTOR

BY *Joseph Smith*
ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY W. POTTER, OF TITUSVILLE, PENNSYLVANIA.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 569,350, dated October 13, 1896.

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To all whom it may concern:

Be it known that I, HENRY W. POTTER, a citizen of the United States, and a resident of Titusville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in Rotary Pumps, of which the following is a specification.

This invention is an improvement on a rotary engine invented by me, and for which I obtained Letters Patent of the United States No. 254,044, dated February 21, 1882, the improvements being for the purpose hereinafter explained, and are for adapting the same to the uses of a pump.

My invention relates more particularly to that class of rotary pumps designed for use in pumping sludge, paper-pulp, spent liquor from tan-vats, &c., such as is only partially liquid or is mixed with solid matter, tending to clog an ordinary pump, my object being to make one with free inlet and discharge pipe that will not clog in any part from matter received through the inlet-pipe. I attain this by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the central running head with the outside cylinder and connections shown in section; Fig. 2, a cross-sectional view on line *x x* of Fig. 1; Fig. 3, an outside view of the removable end of the running head; Fig. 4, a side view of the running head with the pistons removed; Fig. 5, a view of the packing-slips; Fig. 6, a view of the abutment-plate.

In the several views the same numbers are used to indicate the same or similar parts.

The running head is constructed as follows: 1 is a flange firmly secured to and concentric with the driving-shaft 2. To this flange are attached the wings 3, forming a cylinder, also concentric with the shaft, but slotted for the purpose hereinafter explained. 4 is a second flange, similar in all respects to the flange 1, except that it is secured to the outer ends of the wings 3 by bolts after the spider, hereinafter described, is inserted. The flange 4 has the extended bearing 5, virtually an extension of the driving-shaft 2, journaled in the outer head, as hereinafter described.

6 is an outer cylinder inclosing the driving-head, but eccentric thereto, and having the inlet-pipe 7 and outlet-pipe 8. The centers

of the running head and of the outer cylinder are so arranged that the outer surface of the running head at the top is slightly above the circle of the inside of the outer cylinder. This cylinder is of the same length as the driving-head and is inclosed by the heads 9 and 10, securely bolted thereto by the usual arrangement of flanges and bolts, and with the journals 11 and 12 furnishing bearings for the driving-shaft 2 and bearing 5, respectively.

In the running head is inserted what I have designated as a "spider," formed of the pistons 13, which I show here as four in number, but may be more if found desirable. These pistons are hinged on the central pin 14, the pin having no other connection with any part of the driving mechanism. The pistons are all of a length equal to the radius of the outer cylinder. In the slots described in the driving-head (also four in number, one at each quadrant) are inserted the round packing-slips 15, the slots being formed to receive them and hold them in place. These packing-slips are slotted, as shown in Fig. 5, and through each slot is passed one of the pistons. The pistons being all of equal length and bearing against the shell of the outer cylinder, the center pin 14 is held in the center of the cylinder, but in passing through the quadrants of the running head, which is eccentric with the pin 14, a rocking motion is given to the packing-slips. 16, 16, &c., are bolts for securing the outer cap of the driving-head to the end of the wings. The inner head 1 and the outer cap 4, being eccentric with the outer cylinder, must be of sufficient diameter to cover all parts of the outer cylinder, on one side revolving in a recess between the caps 9 and 10 and the lugs of the cylinder, but bearing against the ends of the outer cylinder, so as to make a close joint.

To allow the free discharge of the fluid, the shell of the outer cylinder from the point 17 to the discharge-pipe in the center longitudinally is cut out or raised. The point 17 is fixed, so that one piston is passing it when the following piston is passing the inlet-pipe. This will prevent the too close packing of the fluid between the running head and the outer cylinder after passing the point 17. The other side of the cylinder and the abutment-

plate (hereinafter described) and the inlet-pipe are similarly enlarged to allow the back flow of the fluid or air around the ends of the pistons, preventing a vacuum at that point.

5 19 is an abutment-plate recessed into the shell of the outer cylinder and resting of its own weight and the pressure of the fluid on the running head, making a tight joint, preventing the passage of the fluid past the discharge-pipe. The inner surface of the plate
10 is of the same radius as the running head. At the point 20 the shell of the outer cylinder is cut away the whole length of the cylinder to allow of the discharge of any solid matter,
15 as tanbark, &c., that may be held in suspension by the fluid.

The ends of the packing-slips 15 project through the ends of the running head and are journaled therein, thereby affording additional support and preventing them from
20 wearing so heavily on the wings of the running head.

The putting together of the pump is as follows: The pistons 13 being placed on the
25 pin 14 and a packing-slip 15 being placed on each piston, the whole is inserted in the running head, each packing-slip in a slot in the running head. The cap 4 is then bolted in place and the cap 10 then also put in place
30 and secured. The pump is then ready for use. The power being applied to the driving-shaft, the running head and pistons revolving in the direction indicated by the arrows, the fluid is drawn into the outer cylinder and is
35 discharged through the discharge-pipe, the discharge being facilitated by the central enlargement indicated from the point 17 and described.

The above-described device can be equally
40 well used and is equally well adapted for a rotary engine, attaching the steam-pipe to the

inlet-pipe and the steam exhausting through the discharge-pipe.

I claim as my invention—

1. In a rotary pump; the running head constructed as described firmly attached to and
45 concentric with the driving-shaft, the shell of the running head being slotted and fitted to receive the packing-slips 15, a spider inserted in the running head consisting of the
50 pistons 13, passing through slots in the packing-slips, each piston being hinged on a loose central pin 14, said pistons being of length sufficient to fill the chamber of a stationary
55 and inclosed outer cylinder 6, eccentric to the running head; the outer cylinder having the inlet and outlet pipes 7, and 8; all the parts working in combination substantially as shown and described.

2. A rotary pump, consisting of the running
60 head constructed as described, attached to and concentric with the driving-shaft; a spider in the said running head constructed of pistons extending through packing-slips in the exterior shell of the running head, the
65 pistons being hinged on a loose central pin and of the right length to fill the space in an outer and eccentrically-placed closed cylinder inclosing the running head; the outer cylinder having inlet and discharge ports, and with
70 the inside of the cylinder cut away as shown near the discharge-port so as to facilitate the flow of fluid, and with an abutment-plate inserted in the shell of the outer cylinder and resting on the top of the running head; all
75 the parts working in combination substantially as shown and for the purpose herein set forth.

HENRY W. POTTER.

Witnesses:

A. B. HOWLAND,

F. B. HOWLAND.