F. T. CLARKE.

ROTARY PUMP.

APPLICATION FILED JAN. 19, 1912.

1,039,028.

Patented Sept. 17, 1912.

2 SHEETS—SHEET 1.

Fig. 1

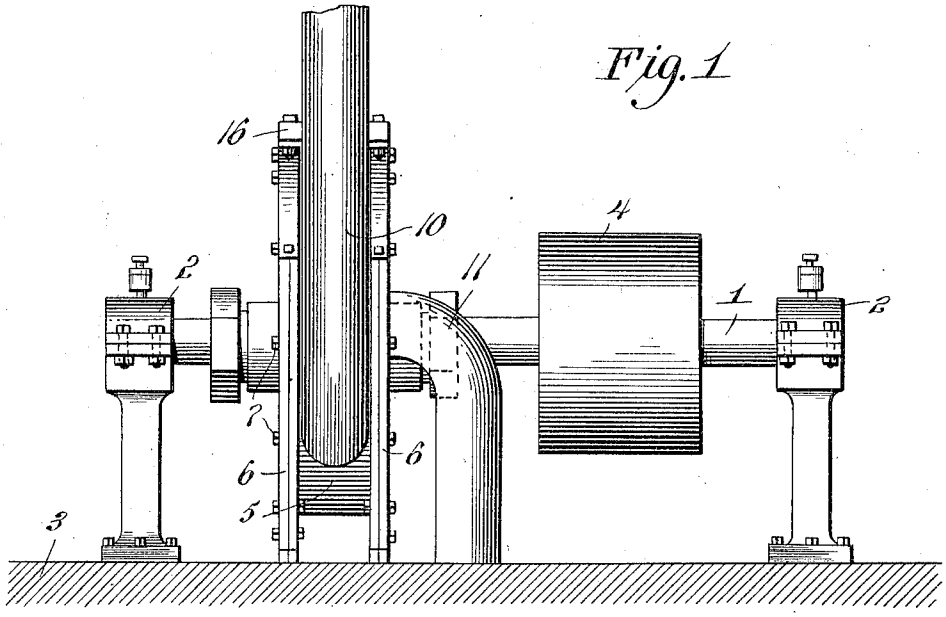
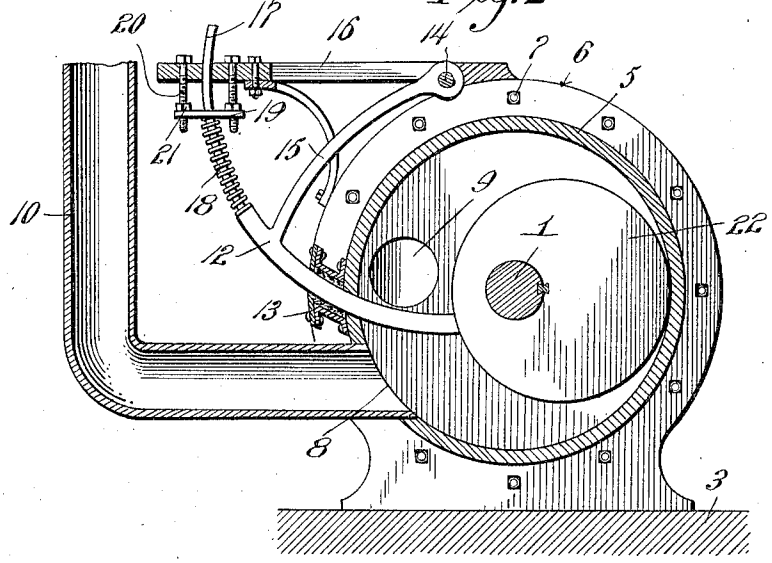


Fig. 2



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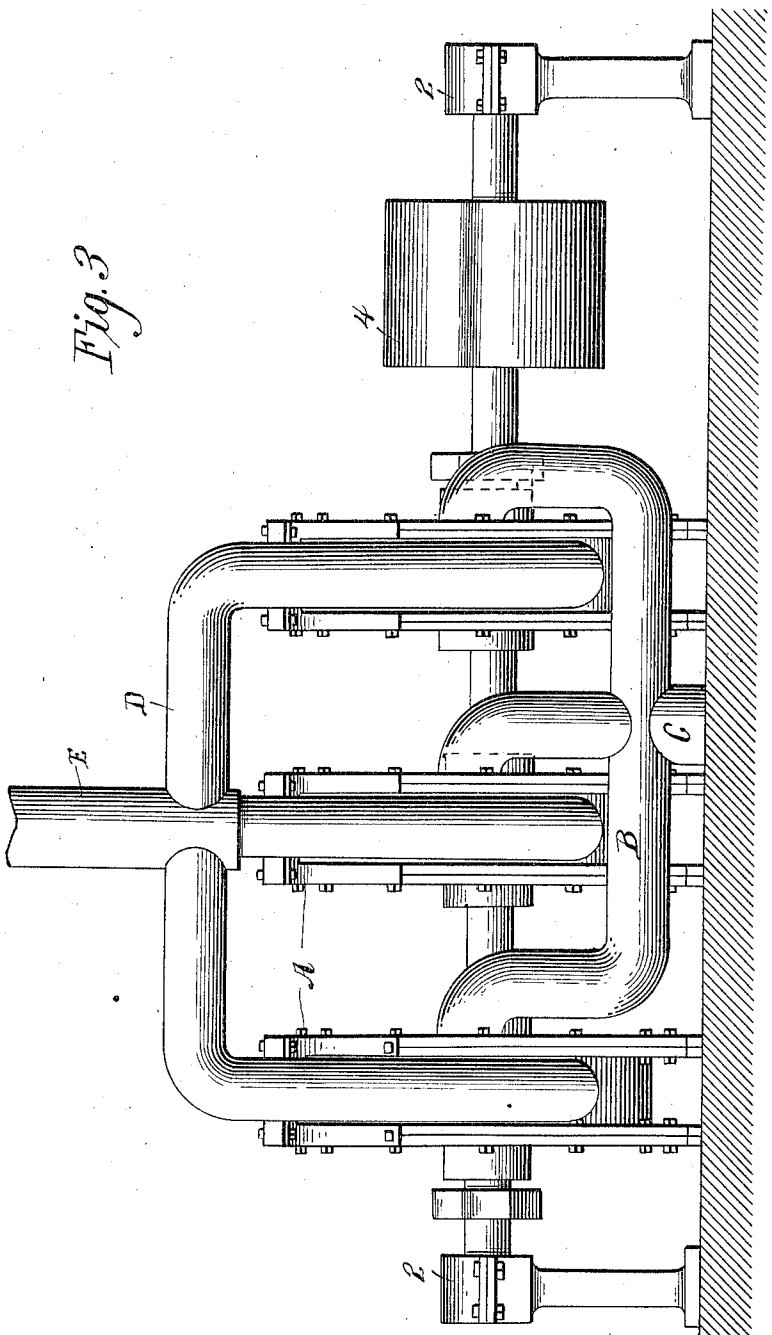
2 SHEETS—SHEET 2.

Fig. 3



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UNITED STATES PATENT OFFICE.

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ROTARY PUMP.

1,039,028. Specification of Letters Patent. Patented Sept. 17, 1912.

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To all whom it may concern:

Be it known that I, FERDINAND T. CLARKE, a citizen of the United States, residing at Finley, in the county of Benton and State of Washington, have invented new and useful Improvements in Rotary Pumps, of which the following is a specification.

The invention provides a mechanism of the type stated for elevating liquids which involves a simple construction, a minimum number of parts and free from gearing of any nature and which is positive and certain in operation.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawings, and pointed out in the appended claim.

Referring to the drawings, forming a part of the specification, Figure 1 is a front view of a rotary pump embodying the invention. Fig. 2 is a side view of the pump having the near plate or head of the casing removed and showing the discharge pipe in section. Fig. 3 is a view similar to Fig. 1, showing a plurality of pumps mounted upon a single shaft.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The shaft of the pump is indicated at 1 and is mounted in suitable bearings carried by uprights or pillars which in turn are mounted upon a bed 3 of any substantial structure. A drive pulley 4 is secured to the shaft 1 and is adapted to receive power from any suitable source. The pump is mounted upon the bed 3 and comprises a casing and a piston.

The pump casing comprises a cylinder 5 and end plates 6, the cylinder being flanged and provided with openings which register with corresponding openings in the edge portions of the plates 6, bolts 7 passing through the registering openings of the flanges and plates to secure the parts when assembled. Ports 8 and 9 are formed in the casing, the port 8 being located in the cylinder and the port 9 being formed in one of the end plates 6. A pipe 10 connects with the port 8 and carries off the liquid from the pump. The pipe 11 communicates with the port 9 and leads to the liquid to be elevated. The ports 8 and 9 have a close relationship and are separated by means of an abutment 12 which operates through an opening formed in the cylinder 5. A stuffing box 13 is fitted to the cylinder opposite the opening through which the abutment 12 operates so as to insure a close joint between the cylinder and abutment at all times. The abutment 12 is formed on the arc of a circle whose center is located at 14 exterior to the cylinder. An arm 15 carries the abutment 12 and is pivoted at 14 to a projecting portion of the cylinder 5. An arm 16 arranged in the plane of the casing and having connection at one end therewith is formed near its outer end with an opening through which a curved rod 17 passes, said rod being struck from a circle having its center at 14. The rod 17 may form a part of the abutment 12 or may be secured thereto in any manner. The rod 17 constitutes a guide and assists materially in directing the abutment in its movements. A helical spring 18 of the expansible type is mounted upon the guide rod 17 and is confined between the abutment 12 and a plate 19 adjustable upon threaded pins 20 attached to the outer end of the arm 16. Set nuts 21 mounted upon the threaded pins 20 admit of adjusting the plates 19 to vary the tension of the spring 18 to cause the abutment 12 to bear against the piston with a greater or less pressure.

The piston 22 is of circular outline and is mounted eccentrically upon the shaft 1 to which it is keyed so as to revolve therewith. That part of the piston farthest from the shaft 1 is arranged in contact with the inner wall of the cylinder 5 and travels thereon in the operation of the pump. The inner end of the abutment 12 is in contact with the outer portion of the piston. The abutment separates the inlet 9 from the outlet 8 and both ports are located as near the abutment as possible so as to obtain the best results.

In the operation of the pump the shaft 1 is rotated to cause the piston 22 to travel in a clockwise direction, with the result that the liquid is drawn into the casing through the intake 9 and is expelled from the casing through the outlet 8. When the abutment 12 is forced outwardly to the limit of its movement the piston 22 closes the inlet 9 and as the piston continues to rotate the inlet 9 is gradually uncovered and the

vacuum created in the rear of the abutment causes the liquid to be elevated to enter the casing through the port 9. The space in front of the abutment 12 is gradually contracted and the liquid contained therein is expelled through the outlet 8 and conveyed by the pipe 10 to the required point of delivery.

It is contemplated to mount a series of pumps upon a single shaft and to have a single supply pipe and a single discharge pipe, each of said pipes making connection with a manifold which in turn has connection with the respective casings of the several pumps. This construction is indicated in Fig. 3 in which 1 designates the shaft, A the plurality of pumps mounted thereon, B the supply pipe, C the manifold thereof, D the discharge pipe and E the manifold connecting the same to the cylinders of the pumps. The internal construction of each of the pumps is substantially the same as that hereinbefore described.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claim appended hereto.

Having thus described the invention what is claimed as new, is:—

A rotary pump comprising a casing embodying a cylinder and end plates, one of the end plates having an inlet, and the cylinder having an outlet and an opening between the inlet and outlet, a piston rotatably mounted within the casing and arranged eccentrically thereto, an abutment slidable through the opening in the cylindrical portion of the casing and formed on the arc of a circle whose center is exterior to the casing, a stuffing box for the abutment fitted to the opening of the casing, an arm carrying the said abutment and having pivotal connection with the casing at a point corresponding with the circle from which the abutment is struck, a support projecting from the casing, a guide connected with the abutment and formed on the arc of a circle having its center coinciding with the center of the abutment, said guide engaging the before mentioned arm, a spring mounted upon the guide, threaded rods carried by the said arm, a plate mounted upon the threaded rods, an expansible helical spring mounted upon the curved guide between the said plate and abutment, and set nuts mounted upon the threaded rods and adapted to adjust the plate for varying the tension of the said spring.

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

FERDINAND T. CLARKE.

Witnesses:

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HENRY N. DRY.