T. A. BATEMAN.

ROTARY PUMP.

APPLICATION FILED MAY 1, 1916.

1,234,262.

Patented July 24, 1917.

2 SHEETS—SHEET 1.

Fig. 1

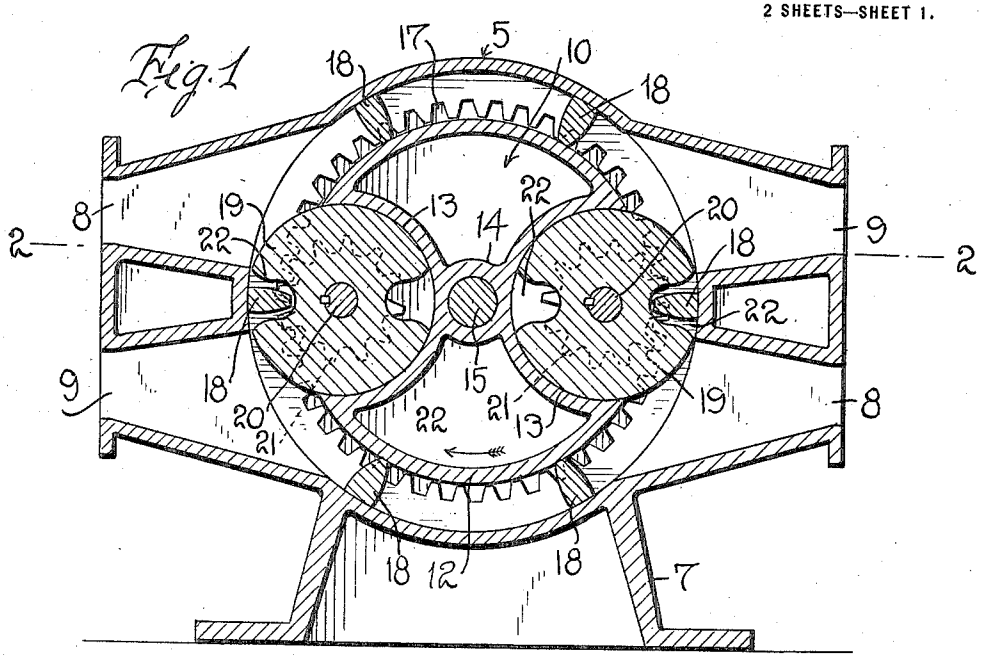
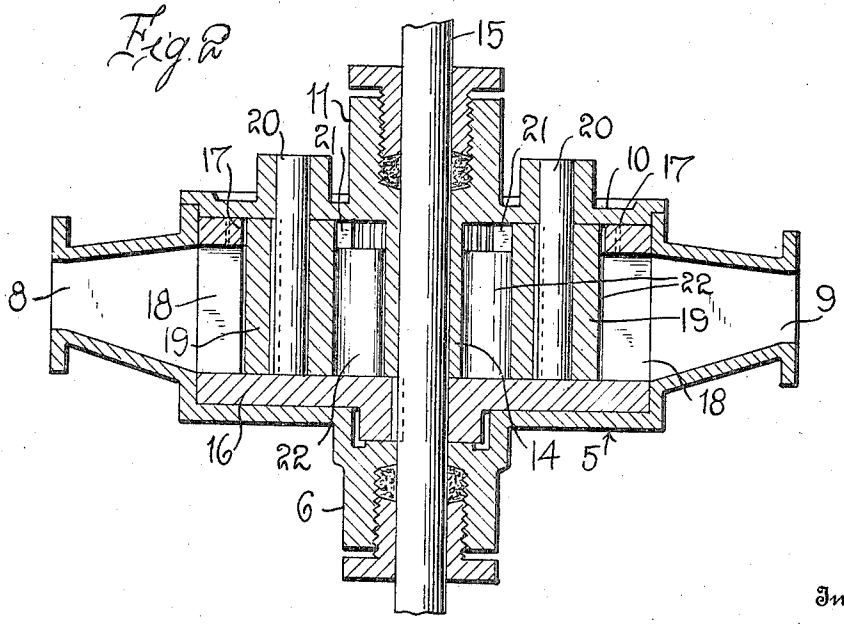


Fig. 2



Inventor

THOMAS A. BATEMAN

By Watson E. Coleman

Attorney

T. A. BATEMAN.

ROTARY PUMP.

APPLICATION FILED MAY 1, 1916.

1,234,262.

Patented July 24, 1917.

2 SHEETS—SHEET 2.

Fig. 3

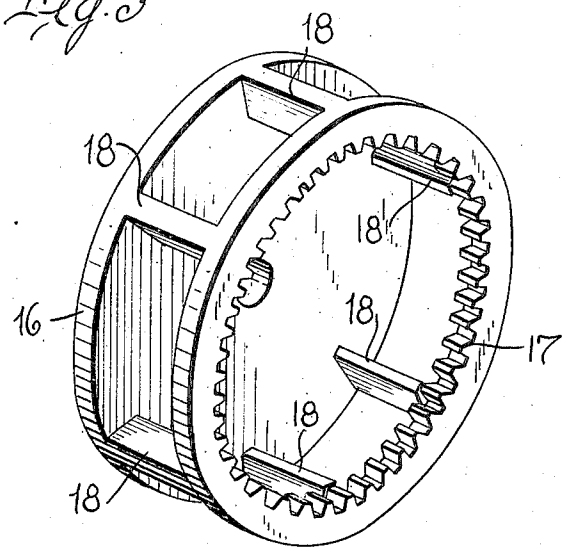
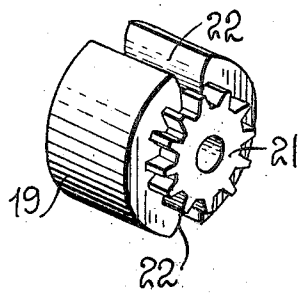


Fig. 4



Inventor

THOMAS A. BATEMAN

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

THOMAS A. BATEMAN, OF PORTLAND, OREGON.

ROTARY PUMP.

1,234,262. Specification of Letters Patent. Patented July 24, 1917.

Application filed May 1, 1916. Serial No. 94,743.

To all whom it may concern:

Be it known that I, THOMAS A. BATEMAN, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to rotary pumps and has for one of its objects to simplify and improve the construction of pumps of that character disclosed in Patent, Number 1,178,617, issued to me April 11, 1916.

It is another important object of the invention to provide a pump of the rotary type wherein a minimum number of operating parts are employed which are very compactly arranged in a pump having a relatively high capacity.

It is one of the more particular objects of the invention to provide a rotary pump embodying a rotor mounted in a case provided with inlet and discharge ports, rotary cut off valves, and means carried by the rotor and operatively engaging means on the cut off valves to continuously rotate said valves.

It is an additional object of my invention to provide a double acting rotary pump having inlet and discharge ports on opposite sides of the pump case, and a single rotor operating in the case to continuously draw water through the inlet ports and discharge the same from the outlet ports.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which,

Figure 1 is a vertical sectional view of a rotary pump constructed in accordance with the preferred embodiment of my invention;

Fig. 2 is a section taken on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the rotor; and

Fig. 4 is a similar view of one of the cut off valves.

Referring in detail to the drawing, 5 designates generally the body section of the pump cylinder or case, one side of which is closed and provided with a suitable stuffing box 6 while the opposite side of said case body is open. This case body 5 is provided with an integral base or standard 7, whereby the same may be suitably mounted or anchored upon a platform or other supporting structure. Upon the annular wall of the case 5, at diametrically opposite points, intake and discharge ports 8 and 9 respectively, are provided, said ports being arranged in pairs. An inlet port is disposed below the center of the case on one side thereof, and the corresponding outlet port below the center of the case on the opposite side thereof.

10 designates the removable side plate which is adapted to be bolted or otherwise secured upon the open side of the case body 5 and is also provided with a stuffing box 11. Upon the inner side of the plate 10, the longitudinally extending, hollow, cylindrical body 12 is integrally formed, and in diametrically opposite sides thereof the valve receiving chambers or pockets 13 are provided. The walls of these pockets are integrally connected by a hub 14. 15 designates the power shaft which is mounted in the hub 14 and extends through the side plates of the pump case. Upon this shaft, within the case and next adjacent to the closed end of the case 5, the head plate 16 of the rotor is securely keyed or otherwise fixed. 17 designates an internal gear laterally spaced from the plate 16 and connected thereto by the integral bars or blades 18 which are disposed in suitably spaced relation between the gear and the rotor plate 16 at their outer edges. It will be observed that the inner edges of these connecting blades 18 are disposed on a line coincident with the edges of the teeth of the internal gear 17.

In each of the pockets or chambers 13 of the cylindrical body 12, a rotary cut off valve 19 is mounted. Each of these cylindrical cut off valves is splined or keyed upon a shaft 20 which is journaled in a suitable bearing projection on the removable case plate 10. The valves 19 are of a length equivalent to the width of the ports 8 and 9, and the peripheries of the valves are disposed in close contiguous relation to the integral connecting walls between said pairs of ports on the opposite sides of the pump case, the axes of said rotary valves being disposed in the same horizontal plane as the axis of the shaft 15. Each of the cylindrical cut off valves is provided upon its end face next adjacent to the case plate 10, with

a gear or pinion 21, preferably formed integral with the valve body and at diametrically opposite points each cut off valve is further provided with a deep groove or channel 22 extending the entire length of the valve body and to the base line of the teeth of the pinion 21.

In the operation of the pump, the rotor may be driven directly through the shaft 15 or indirectly through either one of the rotary valves 19. Assuming that the rotor carrying the internal gear 17 is rotating in the direction indicated by the arrow in Fig. 1, as the bars or blades 18 of the rotor successively pass the intake port 8 on the left, water is drawn into the upper portion of the case through said ports, and in a similar manner is drawn into the lower portion of the case through the intake port 8 on the right. The gear 17 and the pinions 21 are of such ratio that as the blades 18 approach the cut off valves, they will enter one of the channels or grooves 22 in the periphery of the valve, and as the outer edges of these blades frictionally contact with the wall of the case between the ports 8 and 9, it will be manifest that communication is entirely cut off between the upper and lower sections of the case so that there can be no backward flow of the water as it is drawn into the intake port or discharged through the discharge ports on opposite sides of the case. The blades 18 will thus successively discharge a quantity of water through the ports 9 in the continued rotation of the rotor in one direction so that such discharge is practically continuous. The rotor thus operating both above and below its axial center, carries the water through only a comparatively small arc or curve so that there will be but little frictional resistance which insures the easy operation of the pump with a minimum of power. Attention is also invited to the extremely simple construction of the water expelling means which may be formed in one integral casting with the body of the rotor, thus eliminating the usual provision of sliding blades or vanes as shown in my prior patent, which are commonly employed in this type of pump. The cut off valves being located between the opposite side walls of the case and entirely within the operating plane of the rotor blades, enable me to very compactly arrange the several elements so that the pump will occupy but small space. It will also be appreciated that I have devised such a pump construction which may be manufactured and sold at comparatively small cost even in the larger sizes, though having a maximum pumping capacity in operation.

While I have above disclosed the preferred form and construction of the several elements of my improved pump, it is, of course, apparent that the elements thereof may be greatly modified without departing from the essential features or sacrificing any of the advantages of the invention within the spirit and scope of the appended claims.

Having thus fully described my invention, what I desire to claim and secure by Letters Patent is:—

1. A rotary pump including a case having an intake and discharge port on each side thereof, a single, rotary valve member mounted in the case between each pair of intake and discharge ports, a rotor mounted in the case including a plurality of spaced blades traversing the entire width of the ports in the rotation of the rotor, gearing operatively connecting the rotor to the valve members to continuously rotate the latter, each of the valve members being provided in its periphery at diametrically opposite points with grooves to receive the rotor blades.

2. A rotary pump including a case having an intake and discharge port on each side thereof, said case including a hollow cylindrical body provided with pockets at diametrically opposite points, rotary cut off valves mounted in said pockets between the intake and discharge ports on each side of the case, and a rotor mounted within the case and having relatively fixed fluid impelling means movable between said cylindrical body and the annular wall of the pump case, and gearing operatively connecting the rotor and the cut off valves to continuously rotate the latter and at all times prevent communication between the intake and discharge ports on the same side of the pump case.

3. In a rotary pump, a case having an intake and discharge port on each side thereof, a single rotary valve mounted in each side of the case and preventing communication between the intake and discharge ports on the same side thereof, a rotor mounted in the case and provided with spaced impelling blades to traverse the intake ports and draw water into the case and discharge the same from the discharge port on the opposite side of the case, and gearing operatively connecting the rotor and the cut off valves to continuously rotate said valves in the direction of the discharge, each of said valves being formed to permit of the passage of the impelling blades between the valves and the wall of the case.

4. A rotary pump including a case having an intake and discharge port on each side thereof, rotary valves mounted in the case between the intake and discharge ports, a rotor including a plate mounted within the case, an internal gear laterally spaced from said plate and integrally connected thereto by a series of spaced fluid impelling blades, each of the valves being grooved to receive said blades to permit of the passage of the

same between the valves and the wall of the pump case, and a pinion on one end of each valve in constant mesh with said internal gear whereby the valves are constantly rotated in the operation of the rotor.

5. A rotary pump including a case having an intake and discharge port on each side thereof, a cylindrical body within said case in spaced concentric relation to the annular wall of the case, said body being provided with pockets at diametrically opposite points, rotary valves mounted in said pockets, a rotor mounted within the case having a plurality of water impelling blades movable between said cylindrical body and the case wall, each of said valves being provided with a plurality of longitudinal grooves to accommodate said blades and permit the same to pass between the valves and the case wall, an internal gear connecting the ends of said blades, and a pinion on one end of each valve meshing with said gear whereby the valves are constantly rotated in the operation of the rotor.

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

THOMAS A. BATEMAN.

Witnesses:
FRED WILSON,
W. O. DALY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."