

I. B. HUMPHREYS.
 ROTARY PUMP.
 APPLICATION FILED MAY 13, 1910.

991,314.

Patented May 2, 1911.
 2 SHEETS—SHEET 1.

Fig. 1.

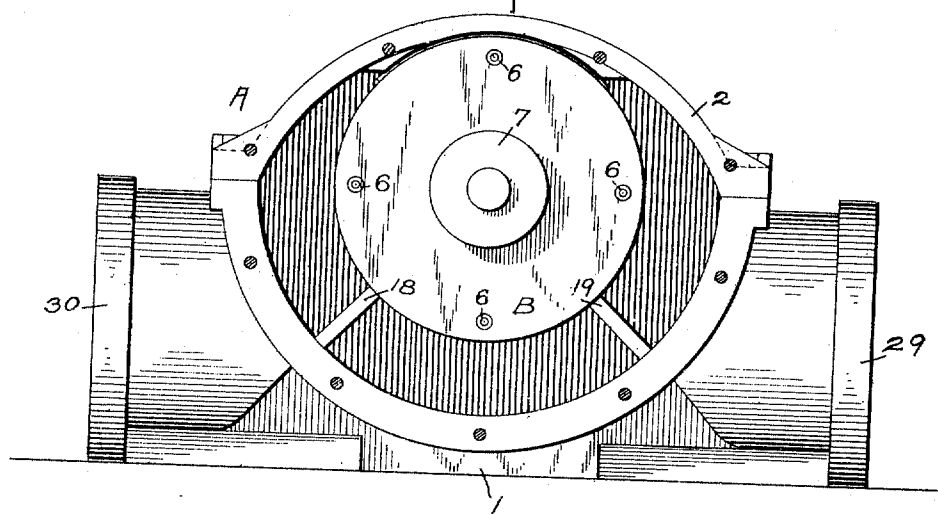
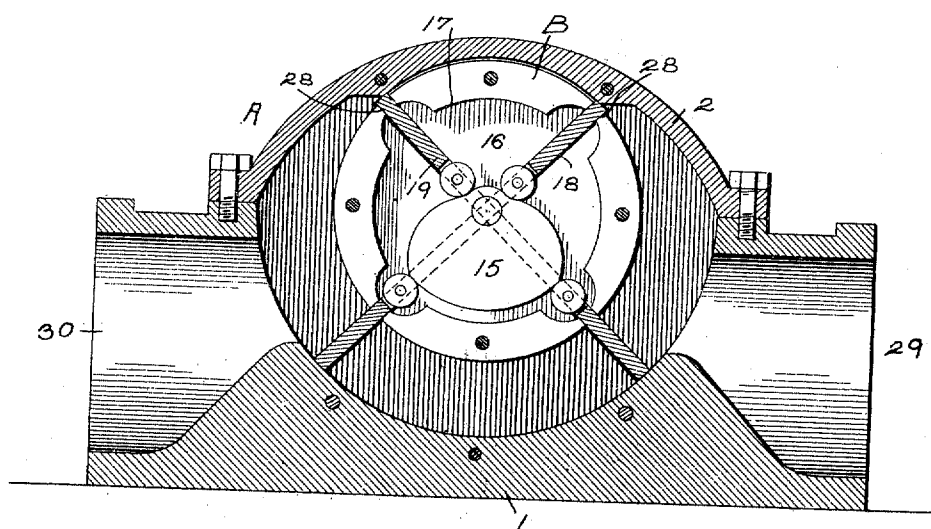


Fig. 2.

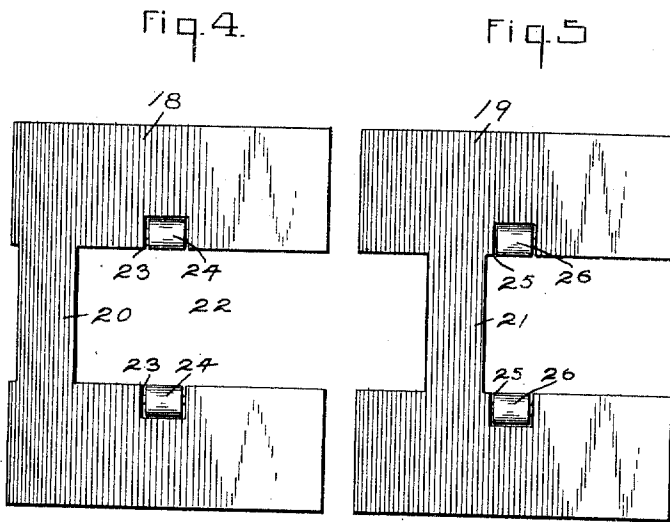
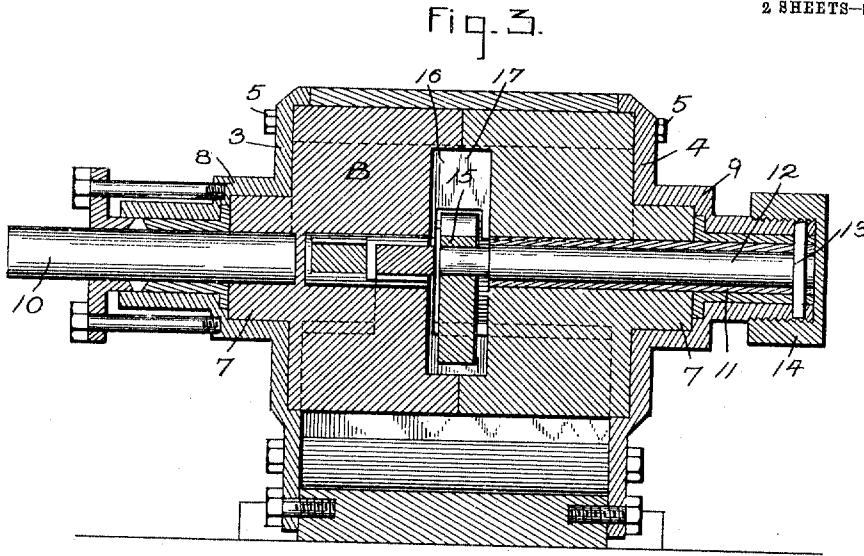


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ROTARY PUMP.

991,314.

Specification of Letters Patent.

Patented May 2, 1911.

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To all whom it may concern:

Be it known that I, IRA BOYD HUMPHREYS, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

My invention relates to an improvement in rotary pumps, and the object is to provide a runner having blades which are adapted to slide radially through the runner, and which are caused to slide through the radial member as they travel over a stationary cam or eccentric.

The invention consists in certain novel features of construction and combinations of parts which will be hereinafter fully described and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a view in side elevation, with one of the ends removed; Fig. 2 is a longitudinal vertical sectional view; Fig. 3 is a transverse vertical sectional view; and Figs. 4 and 5 are views in elevation of the blades.

A represents the casing or housing, which consists of a base 1, the inner surface of which is concave, to produce, preferably, a 90-degree arc, and 2 is the top, the inner surface of which is concave, to produce a 90-degree arc. The ends 3 and 4 are connected to the top and base by means of bolts 5. A runner B, is made in two sections, which sections are connected together by means of bolts 6. The hubs 7 of the runner B are journaled in the hubs 8 and 9 of the ends 3 and 4. The shaft 10 is journaled in the hub of the end 3, and is connected to one of the sections of the runner B, and the other section of the runner is journaled on a hollow shaft 11, which is mounted in the hub 9. Mounted in the hollow shaft 11 is a shaft 12, which is held against movement by a pin 13, which passes through the hub 9, and through the shaft 12. A cap 14 is screwed upon the hub 9, which retains the pin 13 in place. Mounted upon the inner end of the shaft 12 is a cam or eccentric 15, which is received in a chamber 16 in the runner B which is formed by recesses 17 formed on the inner faces of each section of the runner B.

The runner B is provided with slots 28 for the reception of the blades 18 and 19. The blades 18 and 19 are made in pairs, and each pair is connected by a webbing 20 and

21. The webbing 20, which connects the blades 18 together, connects them at or near one end, so that a slot 22 is formed between the blades, and mounted along the inner surfaces and in suitable recesses 23 are rollers 24, which are adapted to bear against the cam or eccentric 15. The web 21, which connects the blades 19 together, connects them near the center, and the rollers 25, which are mounted in recesses 26, are at the center of the blades 19, and are adapted to be received upon the eccentric or cam 15, and the web 21 is received in the space formed between the web 20 and the rollers 24 between the blades 18. In this manner of assembling the blades, the blades 18 would lie in a direction at right angles to the position taken by the blades 19. The webs 20 and 21 extend through the opening 27, which is formed at the center of one of the sections B, whereas the blades 18 and 19 will be received on each side of the shaft 11, and over the eccentric or cam 15, whereby the rollers 25 and 24 will have engagement with the eccentric for causing the blades to be moved through the slots in the runner.

A suction opening 29 is formed at one side of the casing, and the discharge opening 30 is formed at the other, so that as the runner is rotated, the blades will be caused to come into engagement with the stationary eccentric 15, and one of the blades 18 or 19 will be caused to slide through one of the slots 28, whereby the water will be drawn into the pump casing through the opening 29, and carried along the base 1 and discharged through the opening 30. As the runner continues to rotate, the blade which has just acted upon the water for forcing it through the casing will tend to move upward toward the top of the casing, and the eccentric will have caused another blade to be forced outward to act upon the water and force it through the casing, while the previous blade is being drawn into the runner, whereby the duplicate blade will be acted upon by the eccentric and forced outwardly through a slot by the eccentric, to bring it in position to draw the water into the casing and force it out through the outlet or discharge opening.

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

1. In a rotary pump, the combination with a casing, of a runner mounted therein

110

having slots, double blades mounted in the slots, and a cam engaging the blades for forcing them in and out of the runner, the operating point of the cam being the same
5 for all blades.

2. In a rotary pump, the combination with a casing, of a sectional runner mounted therein having slots, a chamber formed between the two sections of the runner, double
10 blades mounted in the slots, and a cam engaging the blades for forcing them in and out of the runner, the operating point of the cam being the same for all blades.

3. In a rotary pump, the combination
15 with a casing, of a runner mounted in the casing made in sections, said runner having

slots therein, double blades received in the slots, webs connecting the blades of each double blade together, one section of said runner having a passage for the webs of the
20 blades, a chamber formed between the ends of the two sections, a stationary shaft, and a cam on the stationary shaft received in the chamber, adapted to engage the inner ends of the blades and force them out-
25 wardly.

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

IRA BOYD HUMPHREYS.

Witnesses:

A. E. HUMPHREYS,

E. J. MALONE.

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