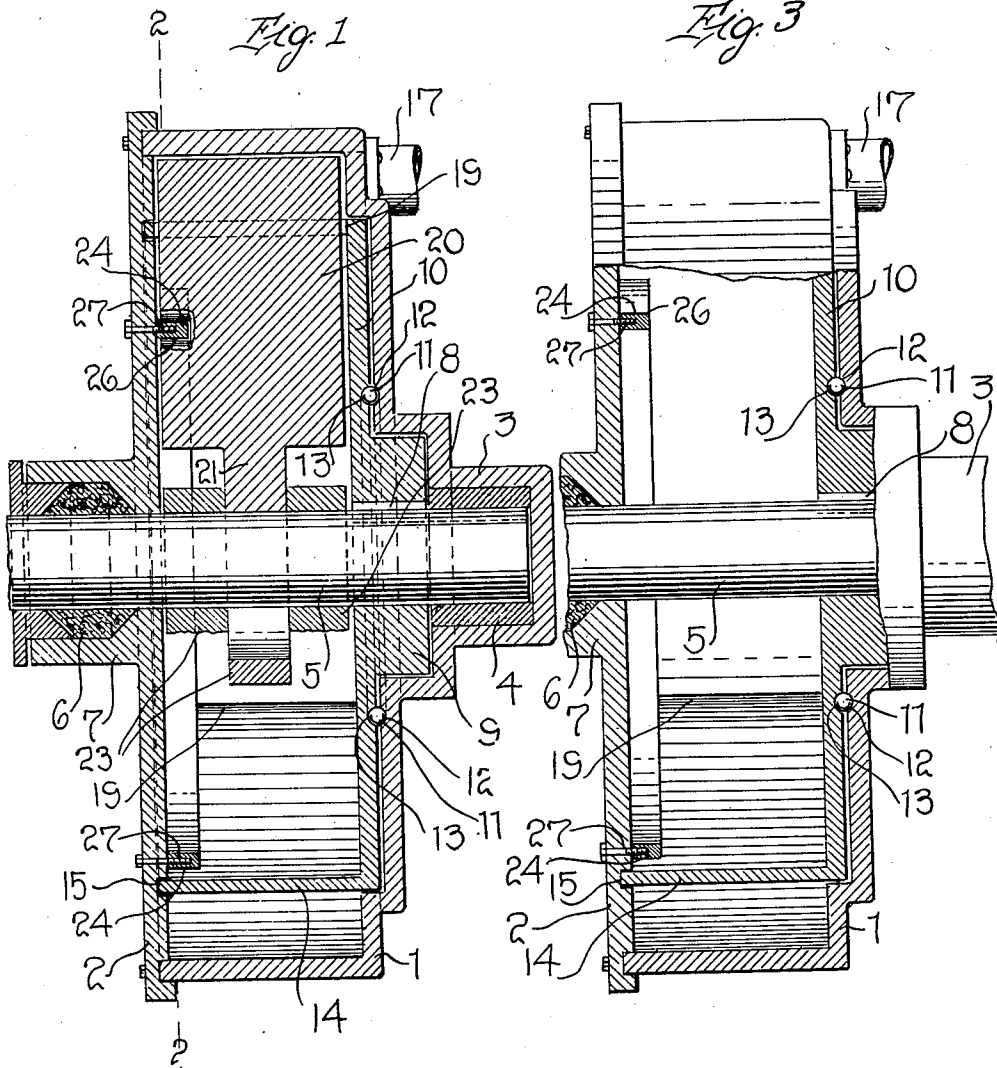


F. D. CAMPBELL.
 ROTARY PUMP.
 APPLICATION FILED JAN. 12, 1914.

1,101,904.

Patented June 30, 1914

2 SHEETS—SHEET 1.



Inventor

FRANK D. CAMPBELL

Witnesses
 Robert M. Sutphen
 A. L. Hind.

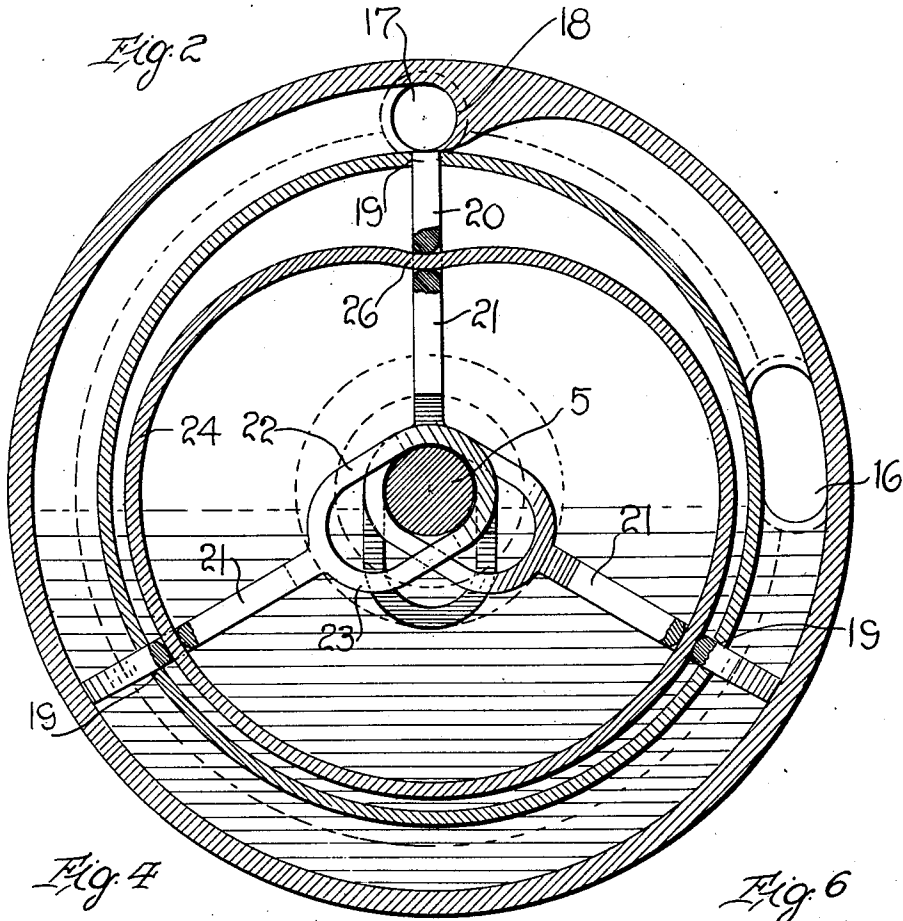
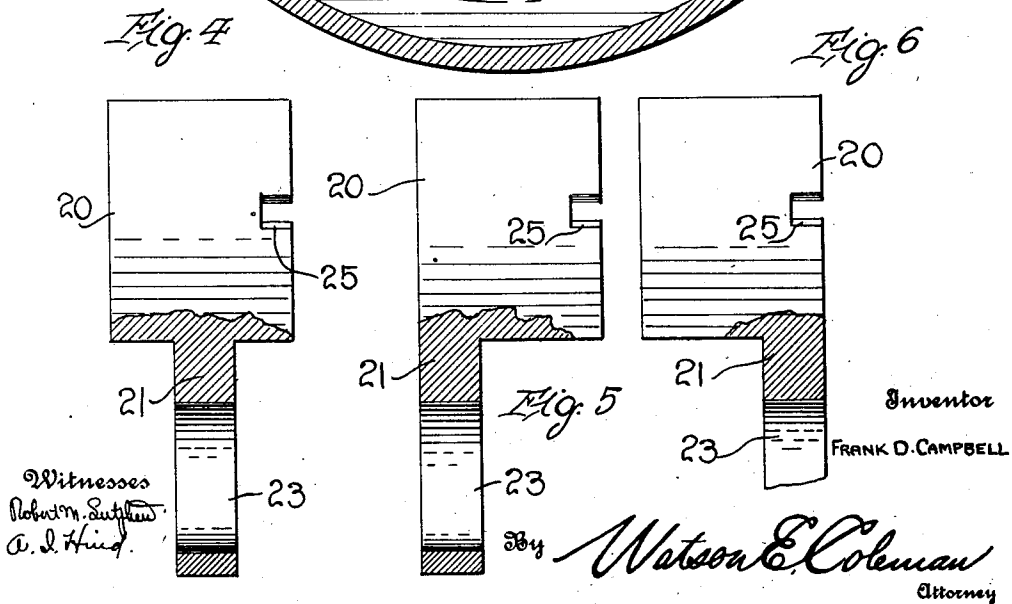
By *Watson E. Coleman*
 Attorney

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

FRANK D. CAMPBELL, OF BLOCKHOUSE, WASHINGTON.

ROTARY PUMP.

1,101,904.

Specification of Letters Patent.

Patented June 30, 1914.

Application filed January 12, 1914. Serial No. 811,651.

To all whom it may concern:

Be it known that I, FRANK D. CAMPBELL, a citizen of the United States, residing at Blockhouse, in the county of Klickitat and State of Washington, 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 comprehends certain new and useful improvements in pumps and has for its primary object to provide a rotary pump in which the rotor will be arranged concentrically to the shaft and will rotate around a cam guide ring with which are engaged the plungers carried by said rotor.

A further object is to construct the plungers and cam guide ring in such manner that the plungers will be moved inwardly and upwardly as the rotor travels around the shaft, to allow the blades to pass the stop wall adjacent the outlet opening of the pump.

A further object is to provide a pump of this character in which the inner ends of the plungers will be provided with longitudinally extending elongated openings, whereby said plungers may be properly engaged upon the shaft.

A still further object is to generally improve the construction and operation of the various parts of the pumps of this character and increase the efficiency thereof without materially increasing the cost of the same.

With the above and other objects in view, as will more fully appear as the description proceeds, the invention consists in certain novel constructions, arrangements, and combinations of parts to be hereinafter more fully described, claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a transverse sectional view of my improved pump with parts of two of the plungers broken away; Fig. 2 is a sectional view on the line 2—2 of Fig. 1; Fig. 3 is a view similar to Fig. 1, partly in elevation, with all of the plungers removed; Fig. 4 is a detail elevational view, partly in section, of the central plunger; Fig. 5 is a similar view of the other plungers; Fig. 6 is a like view of the other outer plunger, part of the same being broken away.

Referring more particularly to the drawing in which similar reference characters designate corresponding parts throughout the several views, 1 designates the station-

ary casing having the removable head 2. The casing 1 has an outwardly offset central portion 3 within which is positioned a suitable shaft bearing 4 for one end of the rotary shaft 5, which shaft also extends through the bearing 6 positioned in the outwardly offset central position 7 of the head 2. Fixed to the shaft 5 by the key 8 is the hub 9 of the rotor 10, which hub 9 extends into the outwardly offset portion 3 of the casing 1. To reduce friction to the minimum, I have provided a plurality of bearing balls 11 mounted in the bearing grooves 12 and 13 formed in the adjacent faces of the casing 1 and the rotor 10 respectively. The rotor 10 is in the form of a disk having a circular flange 14 projecting in one direction from its peripheral edge to form the outer circular portion of the rotor, the free circular edge of which is engaged in the annular groove 15 formed in the inner face of the head 2.

The casing 1 is provided with an inlet opening 16 and an outlet opening 17 between the circular outer portion 14 of the rotor 10 and the circular outer portion of the casing 1, said inlet opening 16 and outlet opening 17 being suitably spaced from one another. A transverse stop wall 18 is formed at one side of the outlet opening 17 by forming an inwardly directed lug on the inner face of the outer circular portion of the casing 1 and providing said lug with a curved wall at the side of the outlet opening 17 and an inclined inner wall, the purpose of which will presently appear.

The outer circular portion 14 of the rotor is provided with a plurality of transverse plunger openings 19 through which are engaged the outer ends of the plunger heads 20. I have shown three plungers 21 with the main portions thereof extended inwardly and having enlarged inner ends 22 provided with longitudinally extending elongated slots 23, whereby said plungers may be engaged over the shaft 5. The main portions of the plungers 21 are offset from one another to allow proper engagement of the enlarged inner ends thereof with the shaft 5 and thereby permit proper operation of said plungers. It will therefore, be seen that the main portion of the central plunger, shown in Fig. 4 extends from the center of the inner end of the head 21 thereof, while the main portions of the outer plungers, shown in Figs. 5 and 6 are extended from the inner

ends of the heads 20 thereof adjacent the outer edges thereof.

The plungers are drawn inwardly and forced outwardly by the cam guide ring 24 with which said plungers are engaged, the notches 25 being provided in one outer face of each plunger head 20 to receive the cam guide ring 24, it being understood that opposite walls of said notches 25 are rounded to reduce friction to the minimum and permit proper operation of the device. The cam ring 24 is provided with an inwardly offset or cam portion 26 opposite the outlet opening 17, whereby each plunger will be drawn inwardly as it reaches the point opposite the outlet opening 17, whereby said plunger will avoid the stop wall 18 but will again be gradually returned to normal position before reaching the inlet opening 16. The cam guide ring 24 is secured in position against the inner face of the head 2 by the bolts 27 engaged through said head 2 and into the ring 24, or by other suitable means.

It is believed that from the foregoing, the complete operation of the pump will be clearly apparent and that further description is unnecessary.

It will be understood that while I have shown the preferred embodiment of my invention, minor changes in the details of construction and arrangement of parts may be made within the scope of the appended claims without departing from the spirit of my invention or sacrificing any of the advantages of the same.

What I claim is:—

1. A device of the class described comprising a stationary casing, a head for said casing, a rotatable shaft mounted in said casing and head, a rotor mounted for rotation with said shaft, a cam guide ring carried by said head, said casing having inlet and outlet openings, a stop wall adjacent said outlet opening, plungers carried by said rotor and having their inner ends mounted upon the shaft, said plungers being engaged with the cam ring whereby the former will be drawn inwardly upon each revolution of the rotor to avoid the stop wall adjacent the outlet opening.

2. A device of the class described comprising a stationary casing and head, a rotatable shaft mounted in said casing and head, a rotor within said casing and adapted for rotation with the shaft, a cam guide ring carried by the casing and head, a plurality of

plungers having their inner ends offset and provided with longitudinally elongated openings, said shaft being engaged through said openings, said casing being provided with inlet and outlet openings, said cam guide ring being provided with a cam portion opposite the outlet opening, plungers being engaged with the cam guide ring whereby said plungers will be drawn inwardly as they pass the outlet opening, said rotor being provided with openings for the plungers, and a stop wall to one side of the outlet opening.

3. A device of the class described, comprising a stationary casing, a head for said casing, a shaft mounted for rotation in said casing, a rotor mounted for rotation with the shaft and provided with spaced plunger openings, a plurality of plungers engaged through said plunger openings and having their inner ends mounted for rotary and reciprocating movement upon said shaft, a cam guide ring within said rotor and fixed to the head, said casing being provided with inlet and outlet openings, said plungers being engaged with said cam guide ring, a stop wall to one side of the outlet opening, said cam guide ring being provided with an inwardly offset cam portion opposite said outlet opening and stop wall whereby the plungers will be drawn inwardly as they pass opposite said outlet opening and stop wall.

4. A device of the class described, comprising a casing, a head for said casing, a cam guide ring carried by said head, said casing having inlet and outlet openings, a shaft within said casing, a rotor within said casing and mounted for rotation with the shaft, a plurality of plungers having longitudinally slotted inner ends engaged around said shaft, said plungers being engaged through and adapted to rotate with the rotor, the inner ends of said plungers being offset from one another, and a stop wall adjacent the outlet opening, the heads of the plungers being provided with notches to receive the cam guide ring, whereby said plungers will be drawn inwardly upon each revolution of the rotor to avoid the stop wall.

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

FRANK D. CAMPBELL.

Witnesses:

N. B. BROOKS,
N. B. CAMPBELL.