

June 26, 1934.

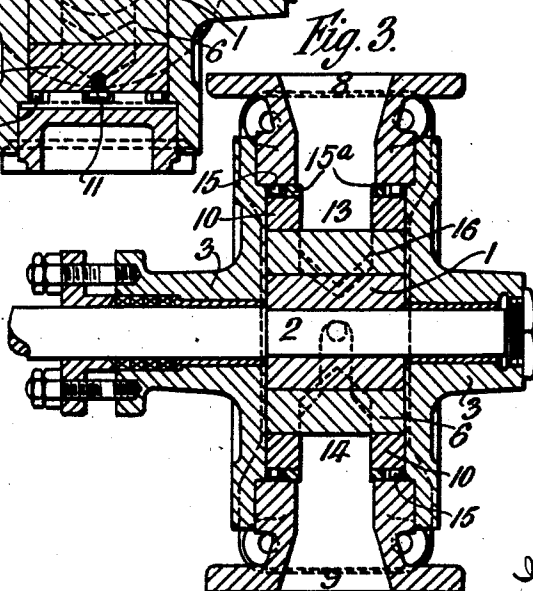
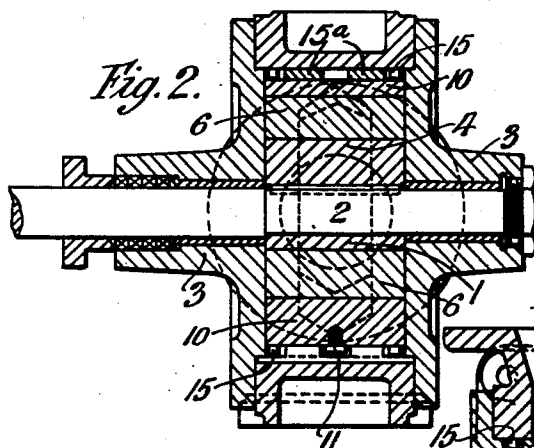
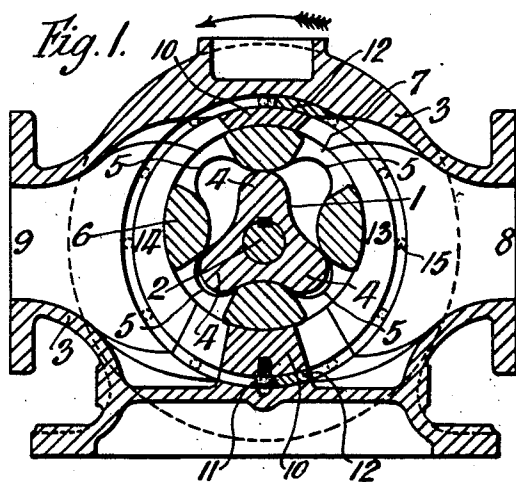
R. B. PITT

1,964,330

ROTARY PUMP

Filed Oct. 8, 1931

2 Sheets-Sheet 1



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Robert B. Pitt
By his Attorneys,
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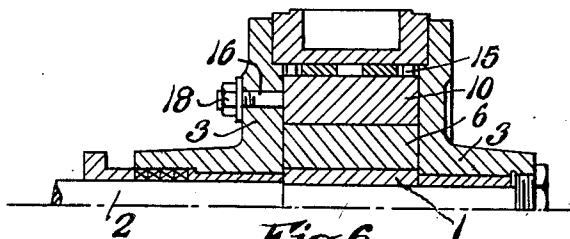
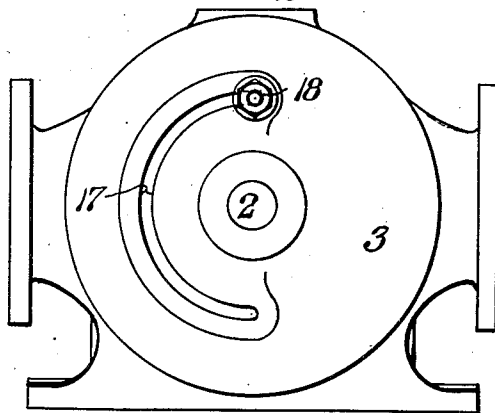
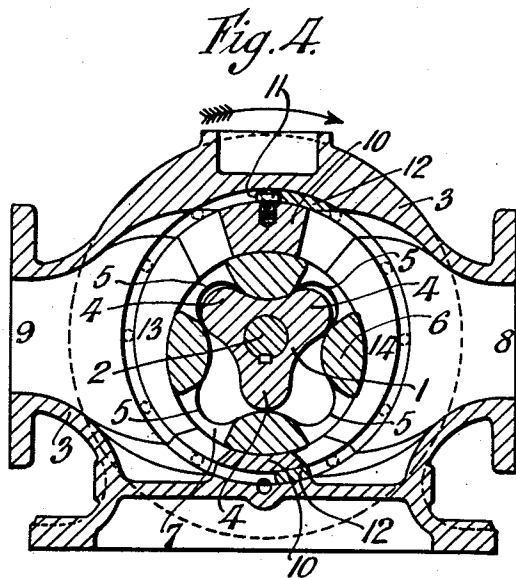
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

1,964,330

ROTARY PUMP

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Application October 8, 1931, Serial No. 567,728
In Great Britain September 1, 1931

2 Claims. (Cl. 103—126)

This invention relates to improvements in rotary pumps.

The invention is particularly applicable to pumps which rely for their operation on a movement derived from an eccentric or the like, the member causing the eccentricity to be shifted through 180°.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a vertical transverse section, Figure 2 a vertical longitudinal section, and Figure 3 a horizontal section showing the invention applied to the pump described and claimed in the specification of British Patent No. 130,839; Figure 4 is a view similar to Figure 1 showing the parts in the position which they occupy after reversal in the direction of rotation of the driving member; Figure 5 is a part elevation and Figure 6 a part sectional view of a modification.

The pump comprises a member 1 secured to a driving shaft 2 mounted in a casing 3. The member 1 is formed with projections 4 which are adapted to enter recesses 5 formed in a member 6 mounted in the casing 3, there being one less projection than there are recesses. The member 6 is provided with ports 7 which alternately communicate with inlet and delivery passages 8, 9 formed in the casing.

The member 6 is received by a bore formed eccentrically with respect to the shaft 2 in a ring 10 which is mounted in a cylindrical bore formed in the casing 3 concentrically with the shaft 2. The ring is capable of rocking through 180°, the movement being limited by stops 11 which in the limiting positions of the ring engage abutments 12 on the casing 3. The ring 10 is provided with passages 13, 14 which enable liquid to be drawn in by the chambers from the inlet passage 8 and delivered from the chambers to the delivery passage 9.

When the shaft 2 is rotating in the direction of the arrow shown in Figure 1, the projections 4 will co-operate with the recesses 5 to form chambers of increasing size as they pass on the suction side of the pump, and the chambers of decreasing size as they pass on the delivery side of the pump, the chambers thus alternately drawing in and then expelling the liquid. If, now, the direction of rotation of the shaft 2 be reversed, the ring 10 will be caused to move through 180° in a clockwise direction by the frictional drag exerted between the ring 10 and the member 6. The eccentricity is thus shifted through 180° and thus the chambers will continue to increase in size as they pass on the suction side of the pump, and to decrease in size as they pass on the delivery side of the pump. The provision of the ring 10 thereby maintains a constant direction of flow of the liquid, despite the change in the direction of rotation of the shaft 2.

If desired, the ring may be mounted in a race of balls or rollers 15, bushes 15a—15a interposed between the balls or rollers and the supply and delivery passages preventing the passage of fluid between the passages 8 and 9 except through the passages 13 and 14 formed in the ring 10.

A pointer may be provided to indicate that the ring has duly reversed.

A hand lever may be provided to effect reversal of the ring to enable a pump to be provided in which, with a constant direction of rotation of the driving member, the direction of flow of the liquid could be reversed at will.

Such an arrangement is illustrated in Figures 6 and 6 in which the ring 10 has secured thereto a pin 16 which extends through an arcuate slot 17 formed in the casing 3. The pin is screw threaded to receive a clamping nut 18 which can be released to enable the pin 16 (and hence the ring 10) to be turned and then locked by the nut.

What I claim is:—

1. In a rotary pump, the combination of an inner rotor, an outer rotor eccentrically disposed relatively to the inner rotor, the rotors having cooperating projections and recesses, and the outer rotor having one projection more than the inner rotor and having inlet and outlet passages formed therein, a housing for the rotors having inlet and outlet passages, a driving shaft to which the inner rotor is secured, a ring disposed between the housing and the outer rotor, which has an outer cylindrical face supported from the housing and an inner relatively eccentric cylindrical face against which the outer rotor bears, the ring having inlet and outlet passages formed therein which place the passages in the housing into communication with those in the outer rotor, means for effecting change in the position of the ring, and means for locking the ring in position.

2. In a rotary pump, the combination of an inner rotor, an outer rotor eccentrically disposed relatively to the inner rotor, the rotors having cooperating projections and recesses, and the outer rotor having one projection more than the inner rotor and having inlet and outlet passages formed therein, a housing for the rotors having inlet and outlet passages, a driving shaft to which the inner rotor is secured, a ring disposed between the housing and the outer rotor and which has an outer cylindrical face supported from the housing and an inner relatively eccentric cylindrical face against which the outer rotor bears, the ring having inlet and outlet passages formed therein which place the passages in the housing in communication with those in the outer rotor, and the ring being automatically moved when the direction of rotation of the spindle is reversed so as to reverse the eccentricity thereof, and means which limits the movement of the ring.

ROBERT BRINDLEY PITT.