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J. C. BIRD

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ROTARY PUMP

Filed March 5, 1929

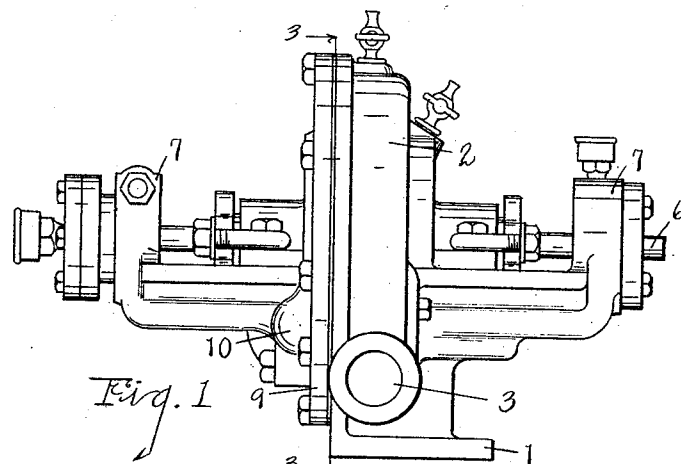


Fig. 1

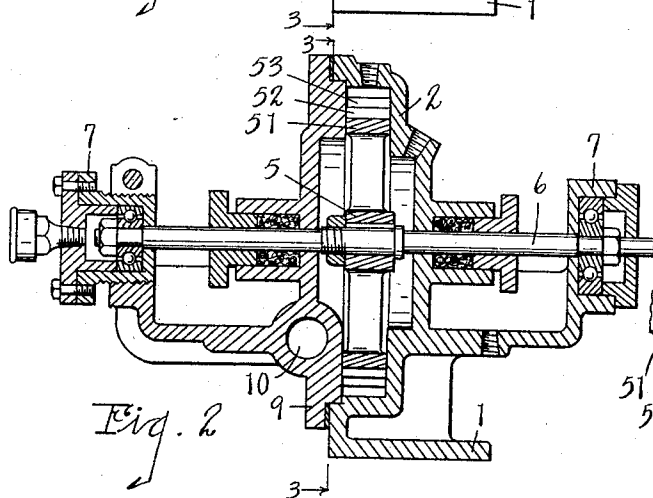


Fig. 2

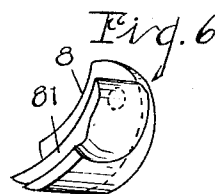


Fig. 6

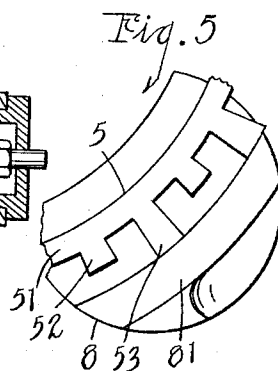


Fig. 5

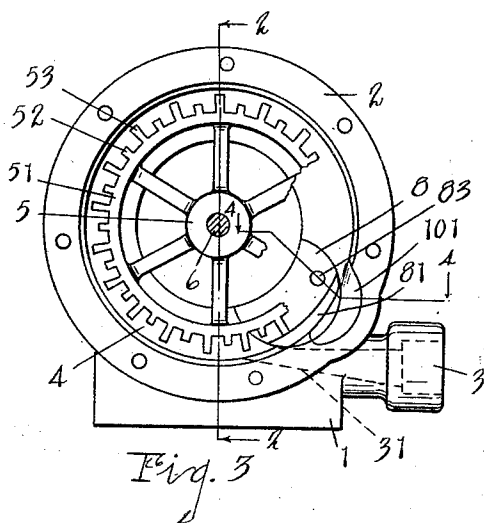


Fig. 3

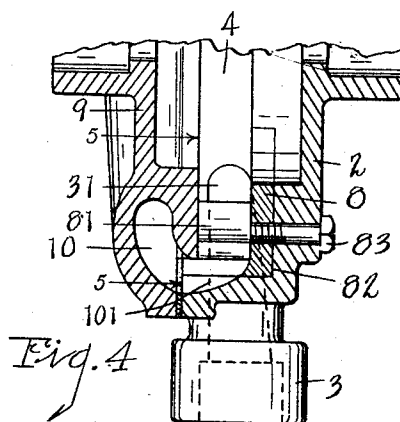


Fig. 4

INVENTOR
John C. Bird
BY *Clapp & Earl*
ATTORNEYS

UNITED STATES PATENT OFFICE

JOHN C. BIRD, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO UNION STEAM PUMP COMPANY, OF BATTLE CREEK, MICHIGAN

ROTARY PUMP

Application filed March 5, 1929. Serial No. 344,243.

The objects of the invention are:

First, to provide an improved form of rotor projection and passage for insuring high efficiency.

Second, to provide an improved abutment structure.

Objects pertaining to details and economies of construction and operation will definitely appear from the description to follow. A preferred embodiment of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a side elevation of the pump from the suction side.

Fig. 2 is a longitudinal end sectional elevation on line 2—2 of Fig. 3 also from the suction side.

Fig. 3 is an end elevation from the left of Figs. 1 and 2 with discharge cover removed showing the form of the rotor and its periphery and relation to the abutment.

Fig. 4 is an enlarged sectional view on irregular line 4—4 of Fig. 3 showing the close fit of the abutment rotor and the projections.

Fig. 5 is an enlarged detail section on line 5—5 of Fig. 4 showing the form of projections on the rotor and relation to the abutment member.

Fig. 6 is a detail perspective of the abutment structure and its relation to the chamber and case.

The parts will be identified by their numerals of reference.

1 is the base. 2 is the shell of the pump supported on the base. 3 is the intake connection opening into the hollow cylindrical chamber 4 at port 31. The rotor 5 is in the form of a spoked wheel carried on the pump shaft 6 which is supported in suitable bearings 7, 7. The rotor is provided with a heavy rim 51 provided with alternate radial rectangular-ended tooth-like projections of different lengths, 52, 53. The elongated projections 53 are rectangular in cross-section, with their outer ends broader than their inner ends, this being accomplished by placing the front and rear faces of the projections in radial planes.

The longer projections 53 coact with the abutment 8 which has a segment 81 concentric

with the peripheral wall of the pump chamber and is of sufficient peripheral length to embrace two of the said longer projections 53.

The abutment 8 is formed as a separate piece inserted in a seat 82 and held by cap screw 83 securely in position. The front end of the same is just to the rear of the intake port 31. The cover plate 9 of the pump comprises the discharge connection 10 which connects to discharge port 101 which is just in advance of the said abutment 8. The cover plate 9 fits closely against the face of the rotor and the rotor fits closely against the inner face of the pump chamber. When the rotor is driven forward the projections 52, 53 engage any fluid that is brought in at the intake port 31 and carry it around at a high rate of speed which causes the same to act by centrifugal force and fill the periphery of the chamber.

As the outer ends of the projections 53 are a close fit to the abutment 8, the fluid cannot pass at that point and is forced at strong pressure out through discharge port 101 to the discharge 10. The form of the rotor and its coaction with the abutment close fitting thereto insure very high efficiency.

I have shown both the long and short projections with rectangular ends and radial faces. I have shown the abutment in the preferred form. I desire to claim the structure because of its peculiar efficiency specifically and I also desire to claim the same broadly to the extent indicated in the appended claims.

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

1. In a pump of the class described, the combination of a pump casing, a cylindrical chamber having an intake port opening into the periphery of said chamber, a rotor wheel with a heavy rim filling the said casing and with rectangular ended projections of alternate different height at its periphery, the higher of which conform to the peripheral wall of said chamber and are spaced therefrom for engaging and advancing the liquid being pumped, the forward faces of the higher of said projections being in radial planes,

- a segmental abutment on an arc concentric with the periphery of said chamber on a detachable plate in said casing and of sufficient length to subtend at least two of the said longer projections and conforming to the ends thereof and closely engaging the same, a discharge port in advance of said abutment, and a cover plate with discharge connection disposed to connect to said discharge port.
- 10 2. In a pump of the class described, the combination of a pump casing, a cylindrical chamber having an intake port opening into the periphery of said chamber, a rotor wheel with a heavy rim filling the said casing and
- 15 with rectangular-ended projections of alternate different height at its periphery, the higher of which conform to the peripheral wall of said chamber and are spaced therefrom for engaging and advancing the liquid
- 20 being pumped, the forward faces of said projections being in radial planes, a segmental abutment on an arc concentric with the periphery of said chamber on a detachable plate in said casing and of sufficient length to sub-
- 25 tend at least two of the said longer projections and conforming to the ends thereof, a discharge port in advance of said abutment, and a cover plate with discharge connection disposed to connect to said discharge port.
- 30 3. In a pump of the class described, the combination of a pump casing, a cylindrical chamber having an intake port opening into the periphery of said chamber, a rotor wheel with a heavy rim filling the said casing and
- 35 with rectangular-ended projections of alternate different height at its periphery, the higher of which conform to the peripheral wall of said chamber and are spaced therefrom for engaging and advancing the liquid
- 40 being pumped, a segmental abutment on an arc concentric with the periphery of said chamber on a detachable plate in said casing and of sufficient length to subtend at least two of the said longer projections and con-
- 45 forming to the ends thereof and closely engaging the same, a discharge port in advance of said abutment, and a cover plate with discharge connection disposed to connect to said discharge port.
- 50 4. In a pump of the class described, the combination of a pump casing having a cylindrical chamber, and having an intake with a port opening into the periphery of the said
- 55 chamber, a rotor wheel disposed within said casing and having heavy rim and rectangular-ended tooth-like projections alternately of different height at its periphery, the higher of which conform to the peripheral wall
- 60 of said chamber and are spaced therefrom and with radial front faces for engaging and advancing liquid, an abutment within the said chamber with an arc concentric with the periphery thereof disposed and arranged to
- 65 closely engage the ends of the said longer projections and a discharge port with connection in advance of said abutment.
- In witness whereof I have hereunto set my hand.
- JOHN C. BIRD. 70
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