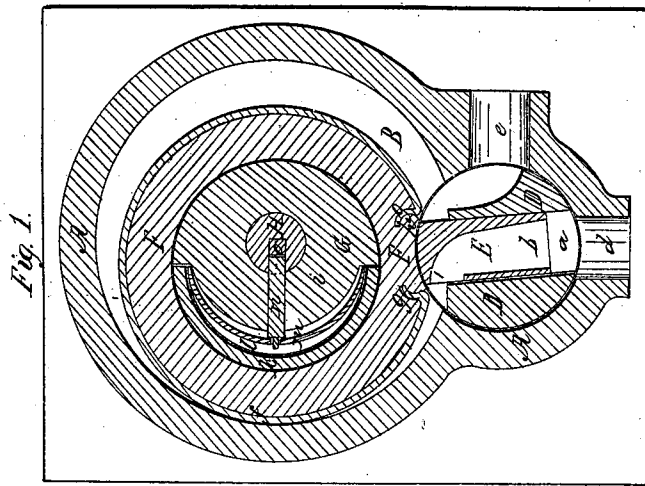
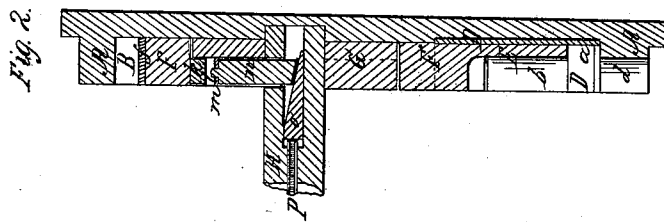
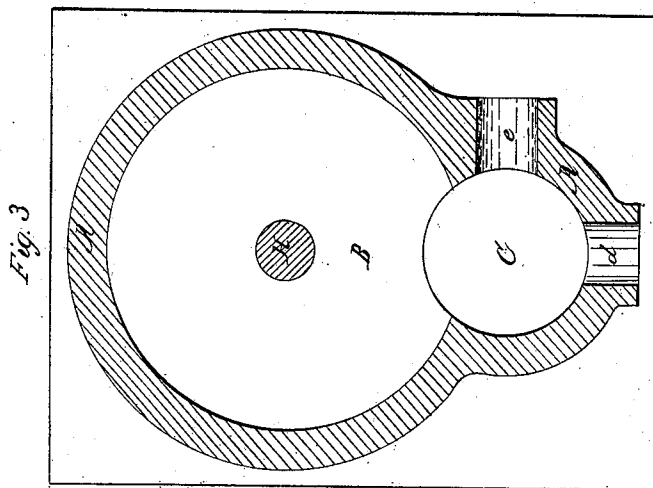


J. S. Barden,

Rotary Pump.

N^o 19,180.

Patented Jan. 26, 1858.



UNITED STATES PATENT OFFICE.

JOHN S. BARDEN, OF NEW HAVEN, CONNECTICUT.

ROTARY PUMP.

Specification of Letters Patent No. 19,180, dated January 26, 1858.

To all whom it may concern:

Be it known that I, JOHN S. BARDEN, of New Haven, in the county of New Haven and State of Connecticut, have invented an Improved Hydraulic Engine or Rotary Pump; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

10 Figure 1, denotes a sectional view of the said pump, the same being taken at right angles to the pump arbor or shaft. Fig. 2, is another sectional view taken in line of the axis of the said arbor or shaft. Fig. 3, is a sectional view of the pump case as shown in Fig. 1, but without the piston and other operative parts placed within the said case.

In such drawings A, represents the case of the rotary pump which is constructed so as to contain or have within it two cylindrical chambers B, and C, one of which is arranged below the other and made to open into it as shown in the drawings. The smaller chamber C, is constructed somewhat deeper than the main chamber B, and is for the purpose of receiving what may be termed the reciprocating cylinder D, which is constructed with a straight passage *a*, extending diametrically through it for the reception of a slide wing E, projecting from and firmly attached to an annular or ring piston F, which is arranged within the chamber B. This annulus by means of an eccentric G, fixed upon the shaft or arbor H, (extending through the axis of the pump chamber B,) is caused, during the revolution of the said eccentric, to have up and down and reciprocating vibratory movements within the chamber B, and during the same, always has some point or part of its periphery in contact with that of the chamber B. As the slide wing E, projects from the annulus F, without being connected thereto by any hinged joint, it will be caused not only to move up and down, but to vibrate laterally by the annulus or ring piston, the reciprocating cylinder D, allowing such to take place and turning in accordance with the vibratory movements of the slide wing.

This pump is provided with induction and eduction passages, one of which *b*, is made through the slide wing E, as shown in Fig. 1, the other (viz *c*,) being constructed in the reciprocating cylinder D, such passages being made to open respectively

through the case A, as shown at *d*, and *e*, where the induction and eduction pipes of the pump may be attached to the case. Instead of the eduction passage being made in the cylinder D, it may lead out of the pump case at a point just above the said cylinder.

Around the periphery of the ring piston an elastic encircling belt of either leather or proper material is applied as shown at *f*, (Figs. 1, and 2) its two ends being extended respectively into recesses *g*, *g*, and confined therein by means of wedges *h*, *h*, (see Fig. 1). This elastic belt when compressed between the annulus piston and inner surface of the case serves to make a tight joint at the place of contact.

In constructing the eccentric G, it is made in two parts *i*, *k*, the former of which is permanently fixed to the arbor H, while the part *k*, is constructed as a circular arc, there being a space *l*, between it and the part *i*, such space being for the reception of a bent spring *m*, whose office is to force the part *k*, in a direction away from the part *i*, in order to compensate for any wear of the external curved surface of the piston or its encompassing belt.

In order to regulate the pressure of the spring, or increase or diminish such pressure, the part *i* of the eccentric is furnished with a slide *n* which abuts at one end against the spring, while at its other end it rests against a wedge *o*, (see Fig. 2) against which a screw *p*, (placed axially within the arbor) operates. Thus, by means of the screw acting against the wedge, the pressure of the spring against the part *i*, may be increased as occasion may require.

During the rotation of the arbor, of the pump, there is a tendency to form a vacuum on one side of the piston and a plenum on its opposite side, and thus if the induction pipe of the pump is in communication with a body of water, such water will be raised into the main chamber of the pump by the piston and will be expelled from the same and will pass out thereof by the outlet passage of the reciprocating cylinder, D.

I do not claim a rotary pump constructed with a cylindrical case, an annulus or ring, piston and a wing or slide either hinged or fastened firmly to the piston, and made to slide through a recess in the edge of the case, the said ring piston being moved around in the case by an eccentric placed within such piston, this principle of con-

struction being common to the pumps or propellers, described in the specifications of the United States patents, numbered 13979, 14599, and 18314, and also in the specifications of several foreign patents; but

What I do claim is—

1. The above described application or arrangement of the reciprocating cylinder, D, and its chamber C, with the case chamber B, the induction opening *d*, and the slide wing E, fixed permanently to and so as to vibrate with the ring piston and slide up and down in accordance with other movements thereof and have a water passage through it, as specified.

I do not claim making both the induction and eduction passages in the slide wing, as this is shown in the pumps, described in the said patents, 13979 and 14599, but

What I do claim is—

2. Arranging one passage only in the slide wing and the other in the reciprocating cylinder D, or through the case as specified.

In testimony whereof, I have hereunto set my signature this 8th day of December 1857.

JOHN S. BARDEN.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.