D. C. BAKER & H. F. HANSEN.

ROTARY PUMP.

APPLICATION FILED DEC. 23, 1913.

1,136,756.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 1.

Fig. 2.

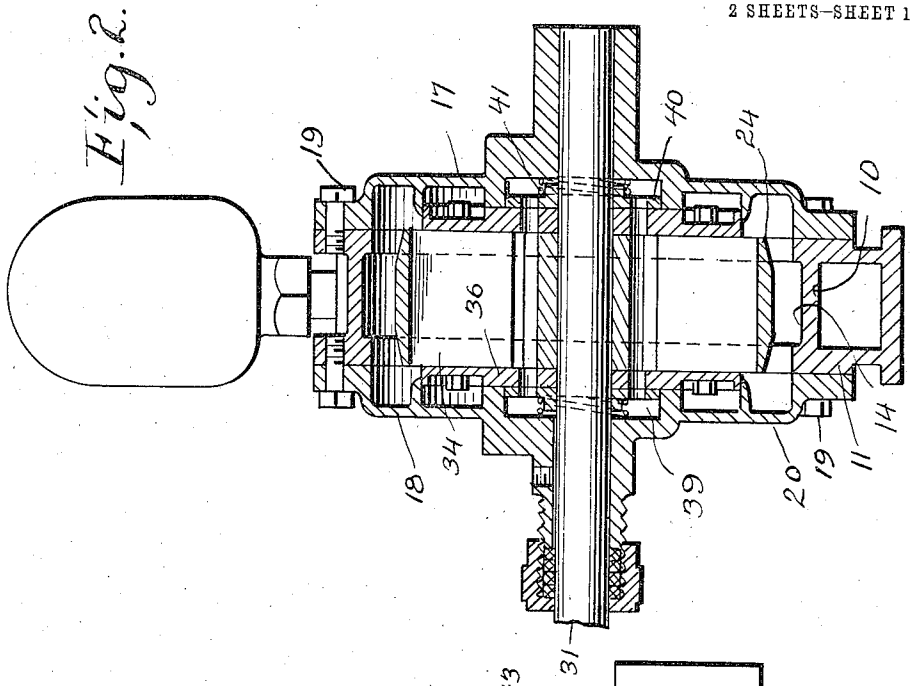
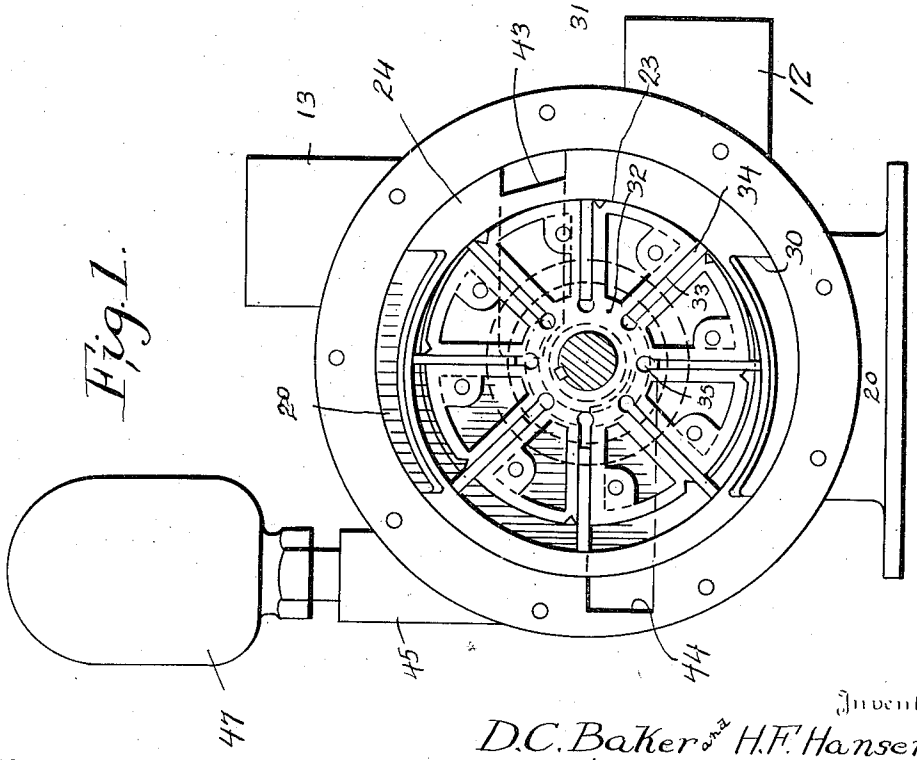


Fig. 1.



Witnesses

R. M. Jones

E. S. Johnson.

Inventors

D. C. Baker and H. F. Hansen.

By A. Randolph Jr.

Attorney

D. C. BAKER & H. F. HANSEN.

ROTARY PUMP.

APPLICATION FILED DEC. 23, 1913.

1,136,756.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 2.

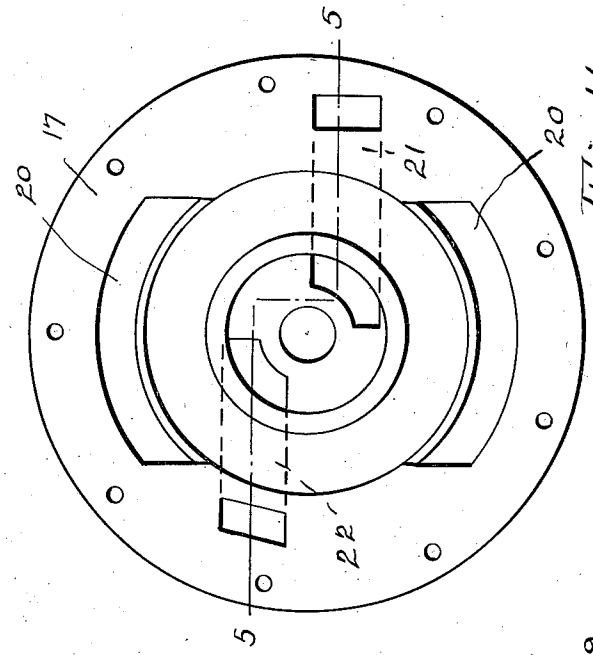


Fig. 4.

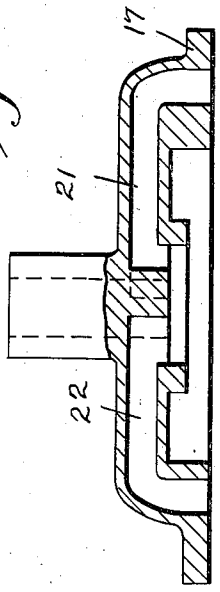


Fig. 5.

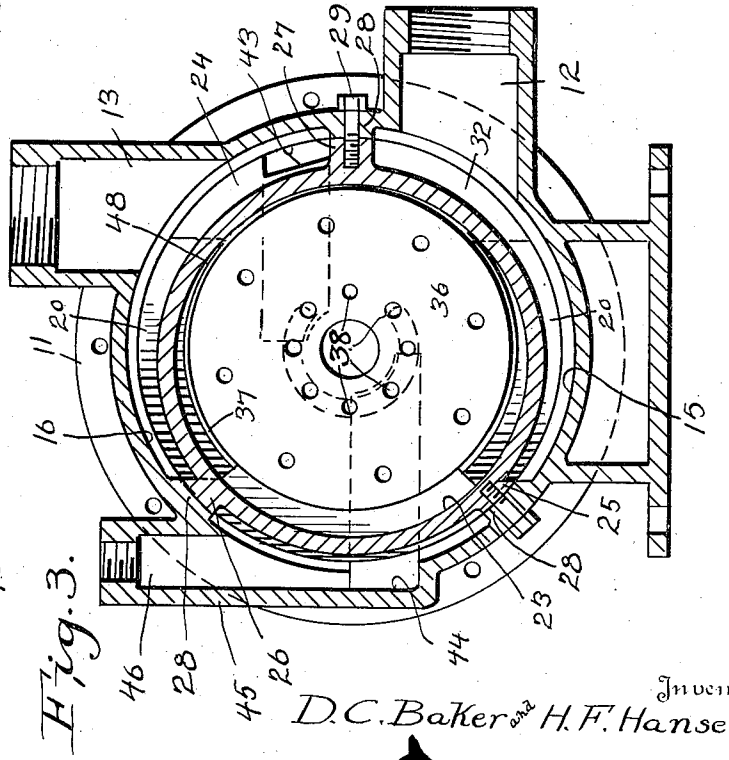


Fig. 3.

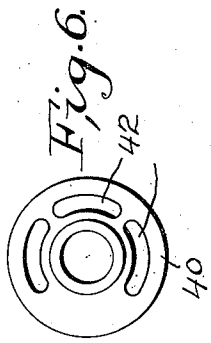


Fig. 6.

Witnesses

R. N. Jones

A. E. Johnson.

Inventor

D. C. Baker and H. F. Hansen.

By A. Landreth Jr.

Attorney

UNITED STATES PATENT OFFICE.

DEXTER C. BAKER AND HARVEY F. HANSEN, OF OAKLAND, CALIFORNIA, ASSIGNORS TO BAKER-HANSEN MANUFACTURING COMPANY, OF EAST OAKLAND, CALIFORNIA, A CORPORATION OF CALIFORNIA.

ROTARY PUMP.

1,136,756. Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed December 23, 1913. Serial No. 808,466.

To all whom it may concern:

Be it known that we, DEXTER C. BAKER and HARVEY F. HANSEN, citizens of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Rotary Pumps; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention comprehends improvements in rotary pumps, and relates more particularly to improvements on our Patent #1,038,477.

One of the objects of the invention is to provide in a pump of this nature, a removable sleeve of a novel construction mounted eccentrically within the pump cylinder and spaced from the peripheral wall thereof.

Another object of the invention is to provide a pump having intake and exhaust passages, which are of a somewhat different construction than those shown in the aforementioned patent, and which constitute an improvement thereover.

A further object of the invention is to provide a pump having novelly constructed heads formed with fluid passages, whereby pressure upon opposite ends of the piston blades will be equalized.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts, as will be hereinafter more fully described and claimed.

For a complete understanding of our invention, reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a side elevation of our improved pump with one of the cylinder heads and side plates removed, Fig. 2 is a vertical sectional view taken on a plane at right angles to the plane of Fig. 1, Fig. 3 is a central sectional view through the pump taken on a plane at right angles to the drive shaft, Fig. 4 is a side elevation of one of the cylinder heads, Fig. 5 is a sectional view taken on a plane of line 5—5 of Fig. 4, and Fig. 6 is a detail view of one of the valve disks.

Referring in detail to the drawings by numerals, 10 designates as an entirety the circular drum or cylinder of the pump, which is formed with the annular flanges 11 and which is provided with an intake port 12 and a discharge port 13, said ports opening upon the recess 14 formed on the interior of the cylinder. The cylinder is also cut away interiorly to form the oppositely disposed pockets or chambers 15 and 16.

Cylinder heads 17 and 18 are bolted to the drum by means of the screw bolts 19, as shown in Fig. 2. Each of the heads is formed with two offset portions 20 which register with the pockets 15 and 16 of the drum 10. These heads are also formed with passages 21 and 22, the purpose of which will be hereinafter explained.

Within the cylinder or drum is eccentrically positioned a sleeve 23 having parallel exterior flanges 24 formed adjacent the sides thereof and being also provided with exterior ribs 25, 26 and 27 which engage ribs 28 formed on the inner side of the drum. Suitable fasteners, such as the screw bolts, 29 may be employed for holding the sleeve properly in place within the pump.

It will be noted, upon reference to Fig. 1, that the flanges 24 are cut away opposite the offsets 20 of the cylinder heads, as indicated by the numeral 30. It will therefore be seen that the flanges 24 prevent the fluid from entering or leaving the sleeve 23 except at the pockets 15 and 16 of the drum 10.

A shaft 31 extends eccentrically through the sleeve 23 and has keyed thereto a rotor 32 formed with radial slots 33 in which blades or pistons 34 slide. The inner ends of the slots 33 communicate with transverse channels 35, said channels extending entirely through the rotor. Circular disks or supporting plates 36 are bolted to opposite sides of the rotor and engage the inner walls 37 of the offsets 18, said walls terminating short of the sides of the rotor proper, as clearly shown in Fig. 2. The disks or plates 36 are formed with circular openings 38 which register with the transverse passages 35 of the rotor.

Referring to Fig. 2, it will be seen that

the cylinder heads are offset adjacent their centers to form valve chambers 39 in which are positioned the disk valves 40, said valves being stationary and being forced against the plates 36 by means of the springs 41. These valves are formed with arcuate slots 42 which register with the openings 38, as will be apparent upon reference to Fig. 3. The inner ends of the passages 21 open upon the disk valves, and the outer ends of these passages register with openings 43 and 44 respectively, the former being formed in the flanges 24 of the sleeve and the latter being formed in the drum 10.

An offset 45 is formed upon the drum 10 opposite the intake and discharge ports and provides a chamber 46 which communicates with the opening 44 at one end and with an air reservoir 47 at its other or outer end.

In operation, the shaft 31 is driven by any desired means, and in turn rotates the rotor, the blades or pistons of which tend to slide outwardly into engagement with the sleeve 23, and it will be noted that the sleeve provides a continuous, smooth and unbroken surface for the extremities of the pistons to work against. Liquid is drawn into the pump through the intake 12 and flows into the adjacent or lowermost offset 20 and then to the interior of the sleeve. The pistons carry the fluid around the sleeve to a point opposite the other of the offsets 20, from whence said liquid flows into the outlet or discharge 13. By having the inner walls 37 of the offsets 20 cut away, so as to space them from the side of the rotor, the fluid is prevented from backing up at the point indicated by the numeral 48. The passages 21 and 22, by establishing communication between the passages 35 of the rotor, the chamber 46 and the chamber formed between the sleeve and that portion of the rotor adjacent the discharge 13, insure the blades or pistons being held into engagement with the inner face of the sleeve.

From the foregoing description taken in connection with the accompanying drawings, it will be seen that we have provided a pump which is an improvement over our former patent, in that it is provided with the removable sleeve which gives an unbroken surface for the blades or pistons to bear against, and that the liquid is allowed a free passage into and from the pump.

While we have shown and described the preferred embodiment of our invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the scope and spirit of the invention as claimed.

Having thus described our invention, we claim:—

1. In a pump, a cylinder, cylinder heads secured thereto, a sleeve eccentrically positioned within the cylinder, a rotary piston operable within the sleeve, means for spacing the sleeve from the inner face of the cylinder, and exterior flanges formed upon the sleeve and engaging the interior of the cylinder, the cylinder heads being formed with offsets providing interior recesses, said flanges being cut away opposite said recesses, whereby a fluid may pass into and from the sleeve.

2. In a pump, a cylinder, cylinder heads secured thereto, said cylinder heads forming with the cylinder a chamber, a stationary sleeve within said cylinder, a rotary piston operable within the sleeve, means for spacing the sleeve from the inner face of the cylinder, and exterior transverse flanges formed upon the sleeve and engaging the interior of the cylinder, the cylinder heads being formed with offsets providing interior recesses, said sleeve having exterior opposite side flanges, the last mentioned flanges being cut-away opposite said recesses, whereby a fluid may pass into and from the sleeve.

3. In a pump, a cylinder, cylinder heads secured thereto and formed with offsets providing interior recesses, said heads being also provided with a central recess and transverse extensions connected with said central recess at their inner ends, an air supply pipe connected with said cylinder, one of the transverse recesses of each head being connected with said air supply pipe, a sleeve eccentrically positioned within the cylinder, a rotary piston operable within the sleeve, means for spacing the sleeve from the inner face of the cylinder, said cylinder having inlet and outlet ports, said inlet and outlet ports communicating with the recesses of the cylinder heads, exterior flanges formed upon the sleeve and engaged with the interior of the cylinder, said flanges being cut-away opposite said recesses, whereby a fluid may pass into and from the sleeve, the air supply pipe and the transverse passages in the head serving to conduct air to the center of the rotor.

4. In a pump, a cylinder, cylinder heads secured thereto, a sleeve eccentrically positioned within the cylinder, and said sleeve being provided with an unbroken inner surface, a rotor within said sleeve, said rotor having radially directed slots with transverse passages at the inner ends of said slots, pistons within said slots and having their outer ends engaged with the inner unbroken surface of the sleeve, said cylinder having inlet and outlet ports, said cylinder heads having offset portions, parallel flanges projecting outwardly from said sleeve and bearing against the inner face of the cylinder, said flanges having cut-away portions opposite the recesses in the heads, an air supply pipe for said cylinder, said cylinder

heads having transverse passages and central openings, said transverse passages communicating at their inner ends with the central opening of said cylinder heads, the outer ends of the corresponding transverse passages of the cylinder heads connecting with the air supply pipe, plates positioned against the opposite sides of said rotor and having openings registering with the transverse passages of said rotor, and valve disks mounted in the center of the cylinder heads and having arcuate slots communicating with the openings of the plates to control the passage of air to said transverse passages of the rotor.

In testimony whereof we affix our signatures in presence of two witnesses.

DEXTER C. BAKER.
HARVEY F. HANSEN.

Witnesses:
H. A. THOMAS,
JAY ERWIN BAKER.