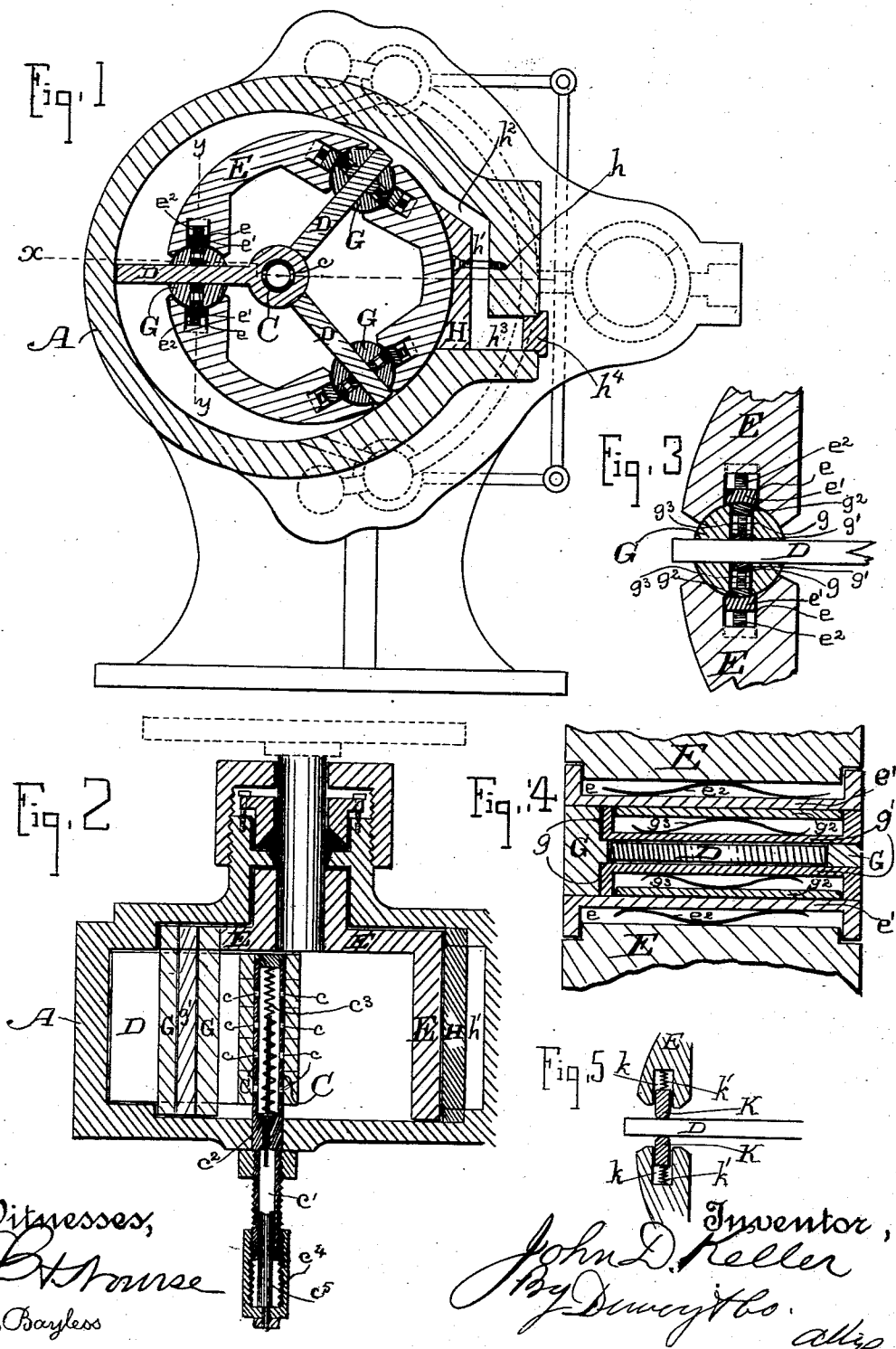


(No Model.)

J. D. KELLER.
ROTARY PUMP.

No. 570,643.

Patented Nov. 3, 1896.



Witnesses,
J. H. Bourse
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Inventor,
John D. Keller
by *Dumy & Co.* atty

UNITED STATES PATENT OFFICE.

JOHN D. KELLER, OF SANTA CLARA, CALIFORNIA, ASSIGNOR OF ONE-HALF
TO OTTO LEU, OF SAME PLACE.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 570,643, dated November 3, 1896.

Application filed October 21, 1895. Serial No. 566,406. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. KELLER, a citizen of the United States, residing at Santa Clara, county of Santa Clara, State of California, have invented an Improvement in Rotary Pumps; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of rotary pumps or rotary engines in which radially-slidable pistons, revolving concentrically with the interior of the shell, are operated by an eccentrically-located cylinder or carrier, which forms an abutment at one side with the interior of the shell and a water or steam space on the other side.

My invention consists in certain improvements, some of which are applicable to rotary engines, though all are particularly and especially applicable to rotary pumps.

These improvements consist, first, in providing an abutment past which the sand and other foreign substances in muddy or unclean water are adapted to pass; second, in a novel adjustable bearing between the pistons and the wall of the eccentrically-located cylinder or carrier through which said pistons pass, and, third, in the novel construction by which the pivotal center bearings of the pistons are kept lubricated.

These improvements, together with their several advantages, I shall hereinafter fully describe and specifically claim, by reference to the accompanying drawings, in which—

Figure 1 is a cross-section of my pump. Fig. 2 is a horizontal section. Fig. 3 is an enlarged cross-section of the rocking bearing G. Fig. 4 is a vertical section of same. Fig. 5 is a view of a modification of the adjustable bearing.

A is the shell of the engine, mounted upon or formed with a suitable base. In the center of this shell is a shaft or pin C, on which are pivotally mounted the pistons D, there being one or more of these pistons, and for the sake of illustration I have here shown three. They extend in the radial planes of the shell and reach from the center to its interior peripheral surface. Mounted upon an axis eccentric to the shell is a cylinder or carrier E, adapted to rotate within said shell. This cyl-

inder or carrier encircles the shaft or pin C, which forms the center of the shell, and at one side said cylinder forms an abutment with the interior of the shell, while at either side it leaves a water or steam space. The wear at the abutment between the cylinder and the shell is very great and needs to be constantly taken up and compensated for. To effect this result, I insert in the interior of the shell, at the abutment, a wearing-piece H, which, being held in place by a bolt h, may, when it becomes worn and loosened, have a suitable washer placed behind it, or if necessary it may be removed entirely and another substituted. Now, while this abutment-piece has been found by experience to answer very well with respect to an engine, I have found that in the use of the device as a pump and when working with dirty or unclean water containing sand and other foreign substances it is liable to such great wear as to make it impracticable. This is due to the sand and other foreign substances coming over with the water and working down between the cylinder or carrier and the abutment-piece. To remedy this difficulty and provide for the discharge of the sand and other foreign matters without allowing it to get within the abutment, I form the abutment-piece with a back passage by recessing it out, as shown at h', which said passage begins at the top with a flaring portion h², leading out from the point of abutment from a sharp edge, and the bottom portion of said passage is closed in by the shell below and has a communication through a passage h³, which may be controlled by a suitable plug or valve h⁴. The sand and other foreign substances coming to the point of the abutment will not follow on down the abutment-face, but will pass in over the sharp lip and down through the flaring portion h² of the back passage of the abutment-piece and down through said passage, from the bottom of which it can be drawn off through the passage h³.

This improvement I have found to entirely remedy the difficulty in the use of the machine as a pump. Also in its use as a pump I have found that the wear upon the bearings of the pistons where they pass through the cylinder or carrier is very great, and in

order to keep them adjusted and to compensate for this wear I have the following improved construction:

G represents the rocking or oscillating bearings, through which the pistons freely pass. Formed in these bearings, radially in planes at right angles to the pistons, and on each side thereof, are sockets g , in the bottoms of which are seated plates g' , within the flanged ends of which are movable wearing-plates g^2 , and between these wearing-plates and plates g' are springs g^3 , the tendency of which is to hold the wearing-plates g^2 constantly against the corresponding wearing-plates in the cylinder or carrier, which I shall now describe.

In the adjacent walls of the cylinder or carrier are made sockets e , in which are seated movable wearing-plates e' , which are held out by springs e^2 . The wearing-plates e' bear against the wearing-plates g^2 in the rocking bearings. The springs g^3 and e^2 have a tendency to keep the wearing-plates up to one another constantly, thus taking up all the wear.

As a modification of the above construction I may have the adjustable wearing-bearings shown in Fig. 5, in which the rounded wearing-plates K are seated yieldingly in sockets k in the cylinder or carrier and are held out to their bearing against the piston by means of springs k' . Their ends are rounded, and sufficient play being given to the piston as it passes through the cylinder or carrier said piston may have its proper rocking movement and at the same time be constantly kept in adjustment and the wear compensated for by the spring-projected wearing-plates. It is also a matter of necessity to keep the pivotal bearing of the pistons well lubricated, which necessity applies both to the use of the device as a pump and as an engine. In order to provide for this, I provide holes c in the pin or shaft C on which the pistons are hinged or journaled and make said pin or shaft hollow. Its hollow interior communicates with the extension c' on the outside by means of a valve c^2 , controlled by a spring c^3 . This extension c' is exteriorly threaded and receives a nut c^4 , to which is secured a plunger c^5 , which operates within the hollow extension. This hollow extension is to be filled with lubricant, and as the nut is turned upon it and the plunger advanced the lubricant is driven in through the valve c^2 to the interior of the pin or shaft C and thence out through its holes c to the bearings of the pistons.

The inlet and outlet passages are shown by dotted lines; and while these passages may be of any appropriate and well-known form they are herein indicated as substantially like similar passages shown, described, and claimed in my former patent, No. 550,721, dated December 3, 1895.

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

1. In a rotary pump, a combination of the shell, the rotating pistons operating concentrically within said shell, the eccentrically-located cylinder or carrier through which the pistons operate, and an abutment in said shell against the cylinder or carrier, said abutment having a downwardly-extending back passage joining the water-space within the shell and adapted to receive the sand and other foreign matters at the beginning of the abutment and to dispose of them.

2. In a rotary pump, a combination of the shell, the rotating pistons operating concentrically within said shell, the eccentrically-located cylinder or carrier through which the pistons operate, and an abutment in said shell against the cylinder or carrier, said abutment having a downwardly-extending back passage joining the water-space within the shell adapted to receive the sand and other foreign matters at the beginning of the abutment and to dispose of them, and a discharge-way communicating with the base of said passage.

3. In a rotary pump, the combination of the shell, the pistons rotating concentrically therein, the eccentrically-located cylinder or carrier within the shell and through which the pistons operate, and the adjustable abutment-piece within the shell having a hollow back passage communicating at the top of the abutment with the water-space.

4. In a rotary pump, the combination of the shell, the pistons rotating concentrically therein, the eccentrically-located cylinder or carrier within the shell and through which the pistons operate, and the abutment-piece within the shell having a hollow back passage communicating and joining at the top of the abutment with the water-space by a sharp lip, whereby the sand or other foreign matter is readily delivered into the top of said passage.

5. In a rotary pump, the combination of the shell, the pistons rotating concentrically therein, the eccentrically-located cylinder or carrier within the shell and through which the pistons operate, the abutment-piece within the shell having a hollow back passage communicating and joining at the top of the abutment with the water-space by a sharp lip, whereby the sand or other foreign matter is readily delivered into the top of said passage, and a controllable discharge-passage communicating with the base of said back passage.

6. In a rotary pump having pistons and a carrier or cylinder through which said pistons slide, the adjustable bearings between said pistons and cylinder or carrier consisting of the oscillating or rocking bearings through which the pistons pass, said bearings having sockets, the wearing-plates in said sockets and springs by which they are controlled, and the wearing-plates in a socket in the bearing-wall of the cylinder or carrier

and springs for holding them to contact with the opposing wearing-plates in the oscillating bearings.

7. In a rotary pump having rotating pistons moving about a common center, a hollow pin or axle upon which said pistons are mounted, said pin or axle having discharge-holes from its interior to supply lubricant to the bearings of the pistons, a tubular exteriorly-threaded extension to the exterior of said pin or shaft, a spring-controlled valve controlling a communication between the cavity of the pin or shaft and that of the tu-

bular extension, and an interiorly-threaded nut engaging the threaded extension and provided with a plunger operating upon and in the tubular extension to force the lubricant past the valve into the cavity of the pin or shaft upon which the pistons are mounted. 15

In witness whereof I have hereunto set my hand. 20

JOHN D. KELLER.

Witnesses:

E. J. BAKER,
K. FRAZIER.