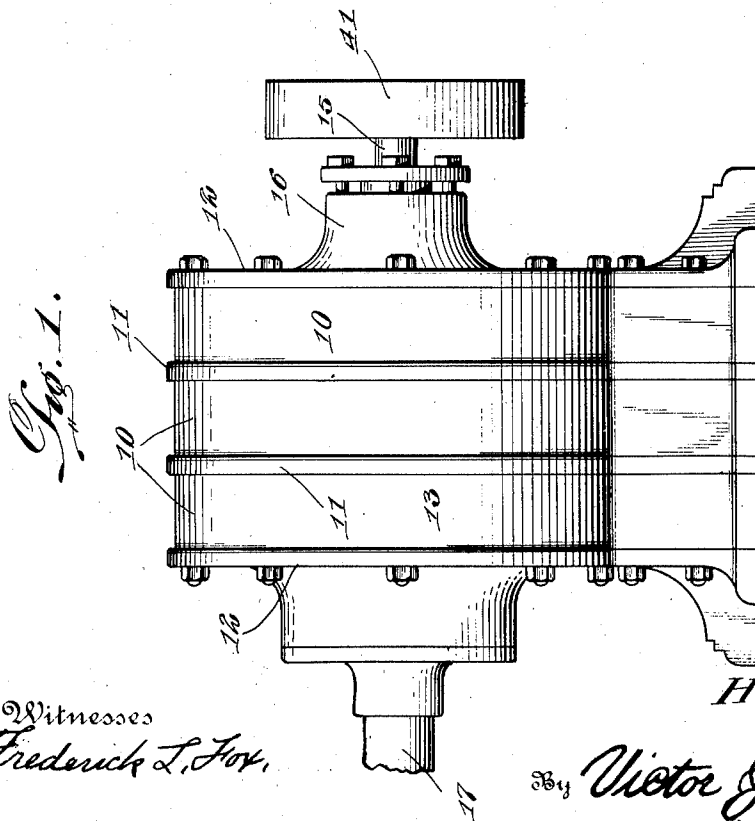
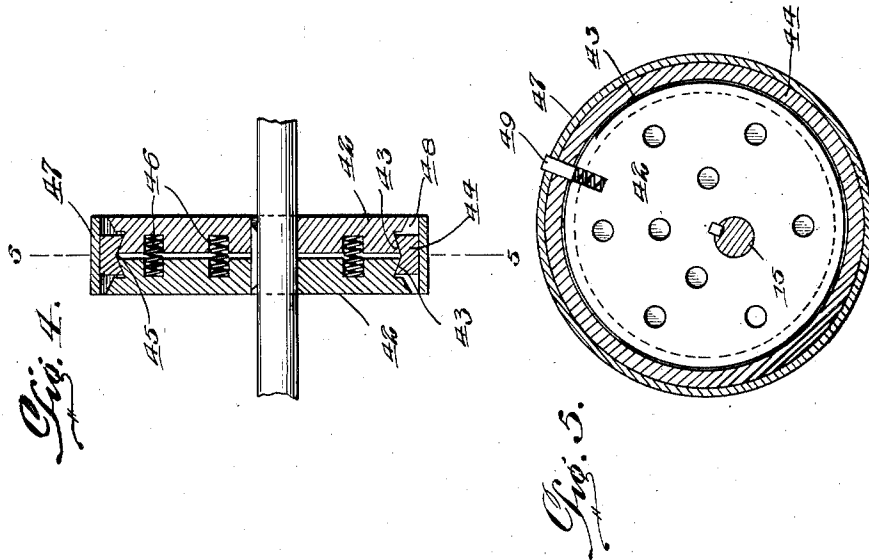


H. M. KEITH.
PUMP.
APPLICATION FILED APR. 29, 1919.

1,334,906.

Patented Mar. 23, 1920.
2 SHEETS—SHEET 1.



Witnesses
Frederick L. Fox,

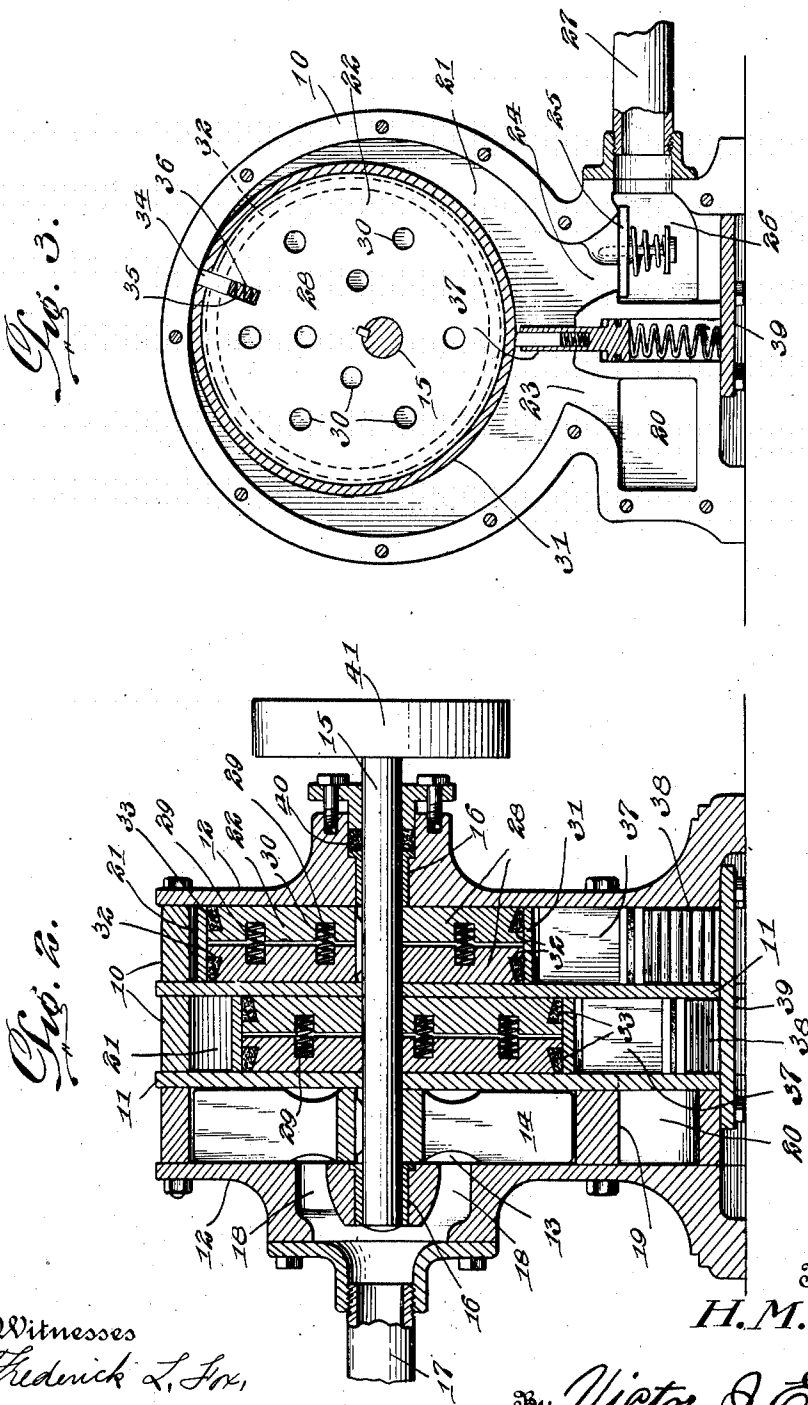
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UNITED STATES PATENT OFFICE.

HENRY M. KEITH, OF FRANKFORT, ILLINOIS.

PUMP.

1,334,906.

Specification of Letters Patent.

Patented Mar. 23, 1920.

Application filed April 29, 1919. Serial No. 293,381.

To all whom it may concern:

Be it known that I, HENRY M. KEITH, a citizen of the United States, residing at Frankfort, in the county of Franklin and State of Illinois, have invented new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps and aims to provide a rotary pump in which may be employed one or more rotors, as desired.

Another object of the invention is the provision of means operated by the drive shaft of the pump for adding to the force of the water supply.

Another object is to provide a novel form of rotor in which wear due to operation is automatically taken up, resulting in practically eliminating leakage and thereby increasing the power of the pump.

Another object is the provision of a pump of the above character, which is exceedingly simple of construction, durable in operation and which may be manufactured and operated at a moderate cost.

Other objects and advantages of the invention will appear as the following description is read in connection with the accompanying drawings.

In the drawings:

Figure 1 is a side elevation of a pump embodying the present invention.

Fig. 2 is a vertical sectional view of the same.

Fig. 3 is a section through one of the rotor chambers taken at right angles to Fig. 2.

Fig. 4 is a detail sectional view of a modified form of rotor, and

Fig. 5 is a sectional view on the line 5-5 of Fig. 4.

Referring to the drawings in detail, wherein like characters of reference denote corresponding parts, the pump is made up of a casing formed of separate sections 10, partition plates 11 and end plates 12, the partition plates dividing the casing into separate compartments.

One of these compartments, for example, a compartment 13, accommodates a fan 14, the latter being mounted upon a shaft 15 disposed transversely of the compartments and operating in bearings 16 provided in the end plates 12. The compartments 13 may, therefore, be styled a suction chamber, water being drawn into this chamber through a pipe 17 and entering the chamber through ports 18, from whence it passes

through a port 19 into a distributing chamber 20. The remaining compartments, which are formed by the sections 10 and the plates 11, provide chambers 21, for the accommodation of rotors 22, which are eccentrically mounted upon the shaft 11. Each of the rotor chambers 21 communicate with the distributing chamber 20 through ports 23, so that water drawn in through the pipe 17 is distributed to various rotor chambers, of which there may be any desired number. The rotor chambers 21 are also provided with outlet ports 24, which are controlled by valves 25, the water discharging from the chambers 21 entering a common discharge chamber 26 and passing therefrom into a pipe 27.

Each of the rotors 22 is preferably formed of a pair of disks 28, which are mounted for sliding movement longitudinally of the shaft 15, but held against rotary movement with respect to the shaft. They are forced apart through the action of springs 29, which are seated in sockets or depressions 30, provided in the opposed faces of the disks 28. The purpose of this is to force the outer faces of the disks against the side walls of the chambers 21 to prevent leakage. Surrounding each of the rotors is a ring 31 and the peripheral edge of each disk is provided with a groove 32, the ring 31 forming one wall of this groove. A suitable packing 33 is inserted in the groove 32 and the springs 29 act to take up wear on this pack. The rotors 22 are so mounted upon the shaft 15 as to provide continuous contact with the inner periphery of the chambers 21 during their rotary movement, and to insure this contact to prevent water from passing between the rotor and the casing at the point of such contact, there is provided a packing block 34, which operates in a transverse groove 35 provided in the rotors, a spring 36, which is seated within this groove, serving to force the block outward.

Projecting within each of the rotor chambers 21 is a spring actuated abutment 37, the latter being positioned between the inlet ports 23 and the outlet ports 24, so that water entering the rotor chambers will be forced to travel in one direction until it reaches the discharge outlet 24, this operation acting to increase the force of water delivered.

The abutment 37 operates within a chamber 38 when forced outward by the action of

the rotor and this chamber and the discharge chamber 26 is open at its bottom, a removable plate 39 covering these openings, so that access may be had to the interior of these chambers, when desired. The shaft 15 passes through one of the end plates 12, which is suitably packed, as indicated at 40, so as to prevent leakage, the said shaft carrying a fly-wheel or pulley 41.

10 In Figs. 4 and 5, there is illustrated a modified form of rotor. In this form of the invention each of the disks 42, of which the rotor is formed, is provided around the edge of their abutting faces with grooves 15 43, which, when the disks are removed provide a seat for a split ring 44. The under-surface of the ring is angularly grooved, as indicated at 45 and the adjacent or bottom wall of the seat formed in the periphery of 20 the rotor is similarly inclined, the purpose being to force the split ring outward to take up wear, this action being due to the action of springs 46, similar to the springs 29, previously mentioned. The split ring 25 44 is surrounded by a ring 47, which together with the ring 44 and the adjacent edge or periphery of the disk 42 provide a groove 48 for the accommodation of soft metal or other packing. In this form of 30 rotor there is also provided a packing or wear block 49, similar to the block 34, previously described.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention, what is claimed is:

40 1. A rotary pump embodying a casing divided into separate rotor chambers having inlet and outlet ports, means for supplying water to the rotor chambers, a shaft journaled for movement within said casing and 45 rotors eccentrically mounted upon said shaft and operating within the rotor chambers, each of said rotors comprising separate disks mounted for sliding movement upon the shaft, means for forcing the disks apart for 50 contact with the walls of the rotor chambers and means carried by the rotors for contact with the inner periphery of said chambers.

2. A rotary pump embodying a casing 55 divided into separate rotor chambers having inlet and outlet ports, means for supplying water to the rotor chambers, a shaft journaled for movement within said casing and rotors eccentrically mounted upon said shaft 60 and operating within the rotor chambers, each of said rotors comprising separate disks mounted for sliding movement upon the shaft, means for forcing the disks apart

for contact with the walls of the rotor chambers, means carried by the rotors for contact 65 with the inner periphery of said chambers and a longitudinally movable spring actuated abutment positioned within each of the rotor chambers between the inlet and outlet ports. 70

3. A rotary pump embodying a casing divided into separate rotor chambers having inlet and outlet ports, means for supplying water to the rotor chambers, a shaft journaled for movement within said casing and 75 rotors eccentrically mounted upon said shaft and operating within the rotor chambers, each of said rotors comprising separate disks mounted for sliding movement upon the shaft, means for forcing the disks 80 apart for contact with the walls of the rotor chambers, a ring surrounding each of the rotors and a packing located within a groove formed around each of the rotors, one wall of said groove being formed by 85 said ring.

4. A rotary pump embodying a casing divided into separate rotor chambers having inlet and outlet ports, means for supplying water to the rotor chambers, a shaft 90 journaled for movement within said casing and rotors eccentrically mounted upon said shaft and operating within the rotor chambers, each of said rotors comprising separate disks mounted for sliding movement 95 upon the shaft, means for forcing the disks apart for contact with the walls of the rotor chambers, a ring surrounding each of the rotors, a packing located within a groove formed around each edge of the rotors, one 100 wall of said groove being formed by said ring and an expansible ring positioned between the first mentioned ring and the outer periphery of each of the rotors.

5. A rotary pump embodying a casing 105 divided into separate rotor chambers having inlet and outlet ports, means for supplying water to the rotor chambers, a shaft journaled for movement within said casing and rotors eccentrically mounted upon said shaft 110 and operating within the rotor chambers, each of said rotors comprising separate disks mounted for sliding movement upon the shaft, means for forcing the disks apart for contact with the walls of the rotor chambers, a ring surrounding each of the rotors, 115 a packing located within a groove formed around each edge of the rotors, one wall of said groove being formed by said ring and an expansible ring positioned between the 120 first mentioned ring and the outer periphery of each of the rotors and controlled by the sliding movement of the rotor disks.

In testimony whereof I affix my signature.

HENRY M. KEITH.