April 14, 1925. 1,533,333

C. F. OITTO

WATER PUMP

Filed May 28, 1924

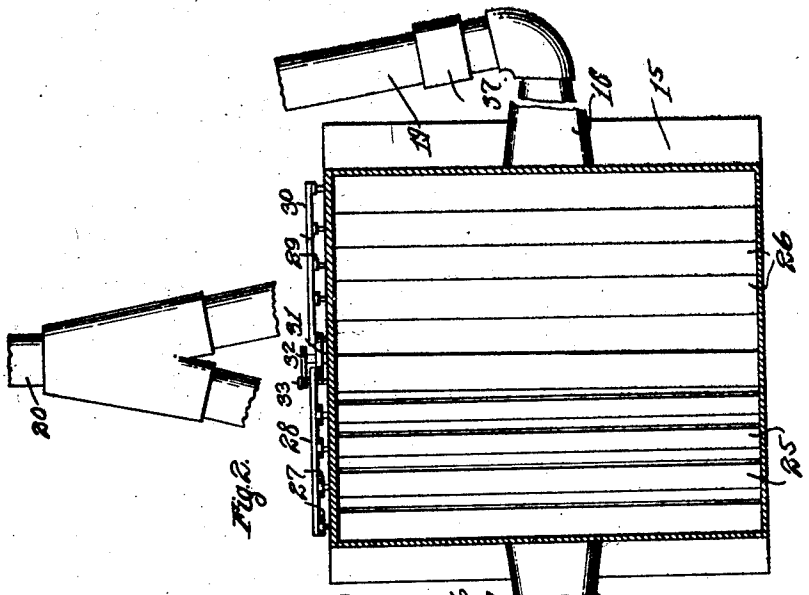


Fig. 2.

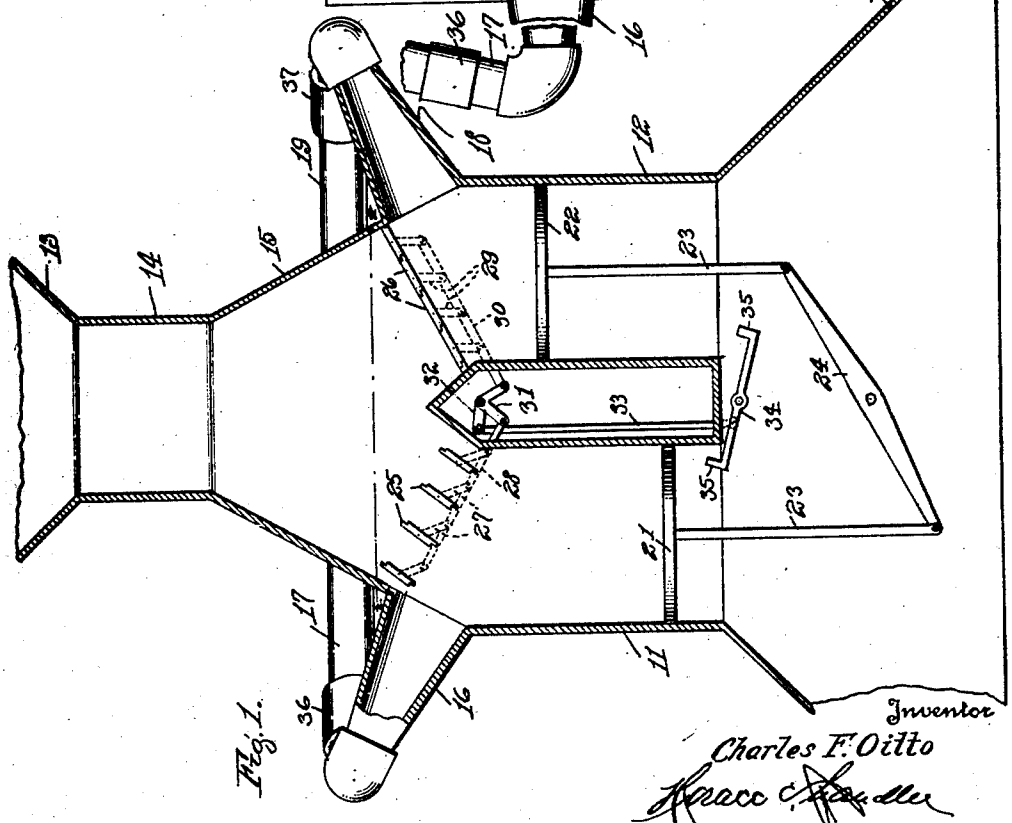


Fig. 1.

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UNITED STATES PATENT OFFICE.

CHARLES F. OITTO, OF NEMO, SOUTH DAKOTA.

WATER PUMP.

Application filed May 28, 1924. Serial No. 716,387.

To all whom it may concern:

Be it known that I, CHARLES F. OITTO, a citizen of the United States, residing at Nemo, in the county of Lawrence, State of South Dakota, have invented certain new and useful Improvements in Water Pumps; and I 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 relates to new and useful improvements in pumps, and particularly to pumps for pumping water.

One object of the invention is to provide a pump which is automatic in its action.

Another object is to provide a pump having a plurality of pistons and cylinders, and an elevated container of water in position to discharge, by gravity, into the cylinders alternately, with means for controlling the flow of water to the cylinders.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawing.

In the drawing:

Figure 1 is a vertical sectional view through a pump made in accordance with the present invention.

Figure 2 is a horizontal sectional view on on the line 2—2 of Figure 1.

Referring particularly to the accompanying drawing, 10 represents a suitable base having the vertical cylinders carried on the upper portion thereof, as shown at 11 and 12, respectively. Mounted above the cylinders is a reservoir 13 having the discharge neck 14, which flares out at 15 and connects with the upper ends of the cylinders, in position to permit its water contents to fall by gravity into the cylinders. From one side of the upper end of the cylinder 11 there extends a nipple 16 to which is connected a water conduit 17, while a similar nipple 18 is formed on the upper end of the cylinder 12, and has a water conduit 19 connected therewith and extended to and connected with the outer end of the first conduit 17. A single conduit 20 joins with these two conduits 17 and 19, to conduct the water to the place of use. Disposed for reciprocation in the respective cylinders are the pistons 21 and 22, each having a rod 23 extending from its lower end and pivotally connected to an end of a centrally pivoted rocker 24, which is mounted within the base 10, whereby to cause the simultaneously opposite reciprocatory movement of the pistons.

Pivotally mounted in the upper end of the cylinder 11, at the point of connection with the flared member 15, are the transversely extending flat plates 25, which are arranged to overlap, when closed, and to extend upwardly in parallel relation, when open. Water from the reservoir flows or falls, by gravity, when these plates are open. In the corresponding portion of the cylinder 12 are pivotally mounted the elongated flat metal plates 26, the pivots of both the plates 25 and 26 being arranged centrally of the ends thereof. Rigidly secured to the pivot of each of the plates 25, at one end thereof, is a downwardly extending link, said link being pivotally connected with a sliding rod 28, the links being indicated by the numeral 27. To corresponding ends of the plates 26 are secured the depending links 29, and these links are pivotally connected to a sliding rod 30. Pivotally mounted centrally between the upper ends of the cylinders is a bell crank lever 31, the arms being pivotally connected respectively with the adjacent ends of the rods 28 and 30. On the pivot of the bell crank lever 31 is secured an arm 32, and pivotally connected to the outer end of this arm is the upper end of a link 33. Pivotally mounted centrally within the base, and above the rocker 24, is a somewhat shorter rocker 34, the opposite ends of which are upturned, as indicated at 35, said ends being disposed in position to be engaged by the pistons 21 and 22, in their descent. Pivotally connected to this rocker 34, at one side of the pivot thereof, is the lower end of the vertical link 33. The vertical reciprocations of the link 33 causes the rocking of the bell crank lever 31, with the result that the rods 28 and 30 will be moved in opposite directions, simultaneously, to open one set of valve plates 25 or 26, and close the other set. This is accomplished by the rocking of the rocker 34, when a piston engages and moves said rocker.

Assuming the plates 25 to be in open position, and the plates 26 to be in closed position, it will be noted that the piston 21 is in the act of descending while the piston 22 is in the act of ascending. The water from the reservoir will cause the piston 21 to de-

scend and rock the rocker 24, so that the piston 22 will be moved upwardly. The upward movement of the piston 22 causes the water thereabove to be forced out through the conduit 19 and into the conduit 20. In the juncture between the nipples 16 and 18, and the conduits 17 and 19, there are disposed check valves 36 and 37, respectively, and when the piston 22 is forcing its water through the nipple 18, the check valve 37 will be open, while the valve 36 will be closed. When the piston 21 has reached the lower end of its stroke it strikes the adjacent end of the rocker 34, and rocks the same so that the bell crank lever 31 moves the rods 28 and 30, thereby closing the plates 25 and opening the plates 26. On opening the plates 26 the weight of the water from the reservoir will press on the piston 22 causing the same to descend, which transmits its movement to the rocker 24, with the result that the piston 21 will be forced upwardly. The check valve 36 will then be opened while the valve 37 will be closed, resulting in the water above the piston 21 being forced out through the conduit 17. Each time that a piston descends it rocks the rocker 34 which causes the reversal of the positions of the valve plates 25 and 26.

What is claimed is:

1. A pump including cylinders, pistons reciprocable in the cylinders, a reservoir mounted in position to discharge directly into the cylinders, valves between the reservoir and the cylinders, one of the valves being normally open and the other closed, and means actuated by the pistons for alternately opening the closed valve and closing the open valve.

2. A pump including cylinders, pistons in the cylinders, a reservoir mounted in position to discharge into the cylinders, discharge outlets for the cylinders, valves between the reservoir and the cylinders, one of which is normally open and the other closed, connections between the cylinders, and actuating means connected with the valves and operable alternately by the pistons for closing the open valve and opening the closed valve.

3. A pump including cylinders and pistons in the cylinders, a rocker, a reservoir connected with the cylinders, valves between the reservoir and the cylinders, rods connected with the valves, and connections between the rods and the rocker whereby to open one valve and close the other upon rocking engagement of the rocker by a piston.

4. A pump including juxtaposed cylinders, a reservoir connected with corresponding ends of the cylinders for discharging thereinto, pistons reciprocable in the cylinders, connections between the pistons for simultaneous reciprocation thereof, a valve between each cylinder and the reservoir one of which is normally open and the other normally closed, and operating means for the valves including a rocking element having its ends disposed for alternate depression by the pistons.

5. A pump including a reservoir and cylinders connected therewith, pistons reciprocable in the cylinders, a valve in each cylinder for controlling the flow of fluid from the reservoir to the cylinder, said valve including a plurality of shutters, operating connections between the shutters of each valve, a rocker element having its ends disposed in position for alternate engagement by the pistons to rock the element, and operative connections between the rocker and the shutters whereby to alternately move the shutters of one valve into open position and the shutters of the other valve into closed position, simultaneously.

In testimony whereof, I affix my signature, in the presence of two witnesses.

CHARLES F. OITTO.

Witnesses:

RICHARD OITTO,

F. L. THORPE.