Nov. 18, 1924. 1,516,479

R. B. STRONG

WATER PUMP

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Fig. 1.

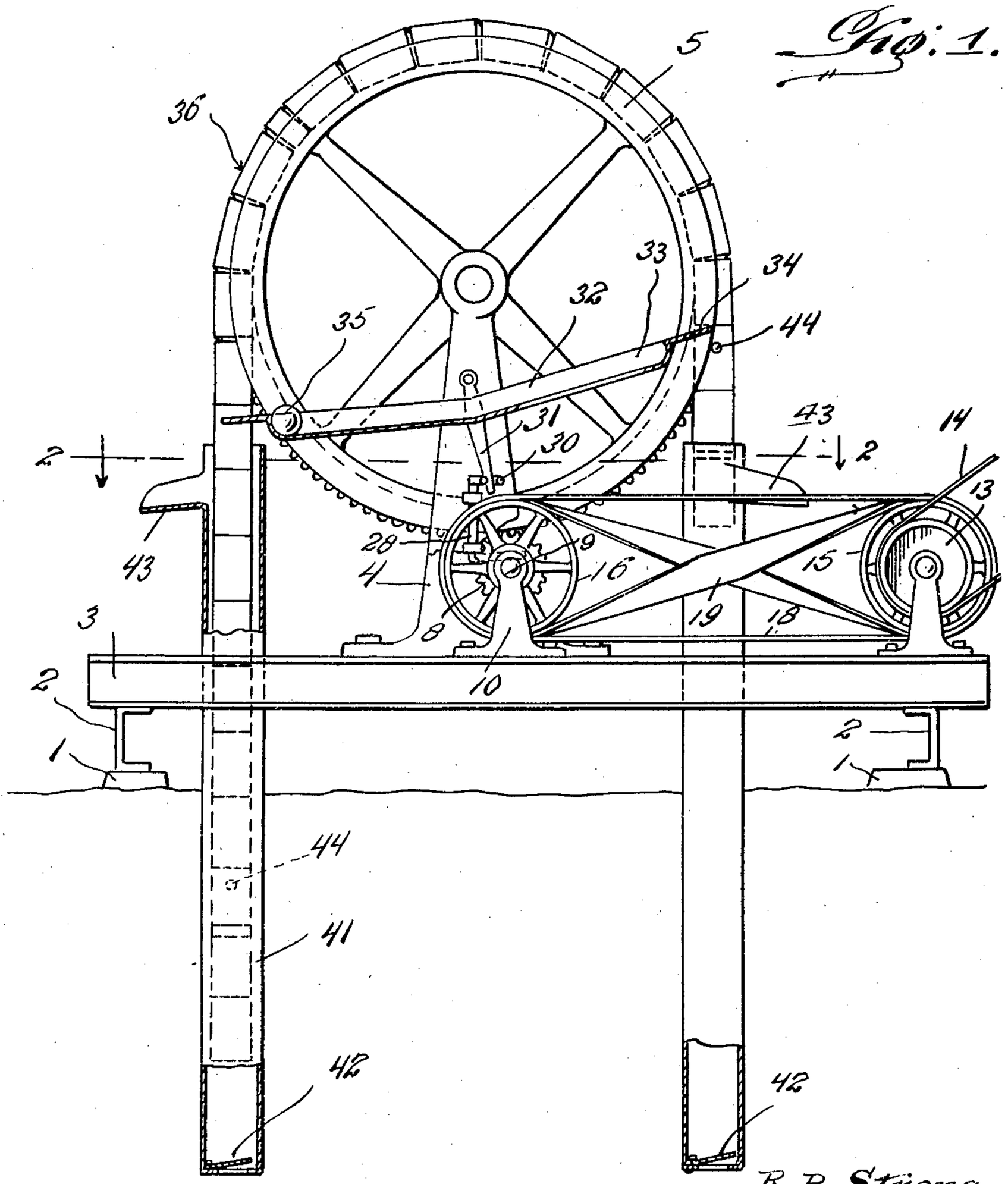

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Fig. 2.

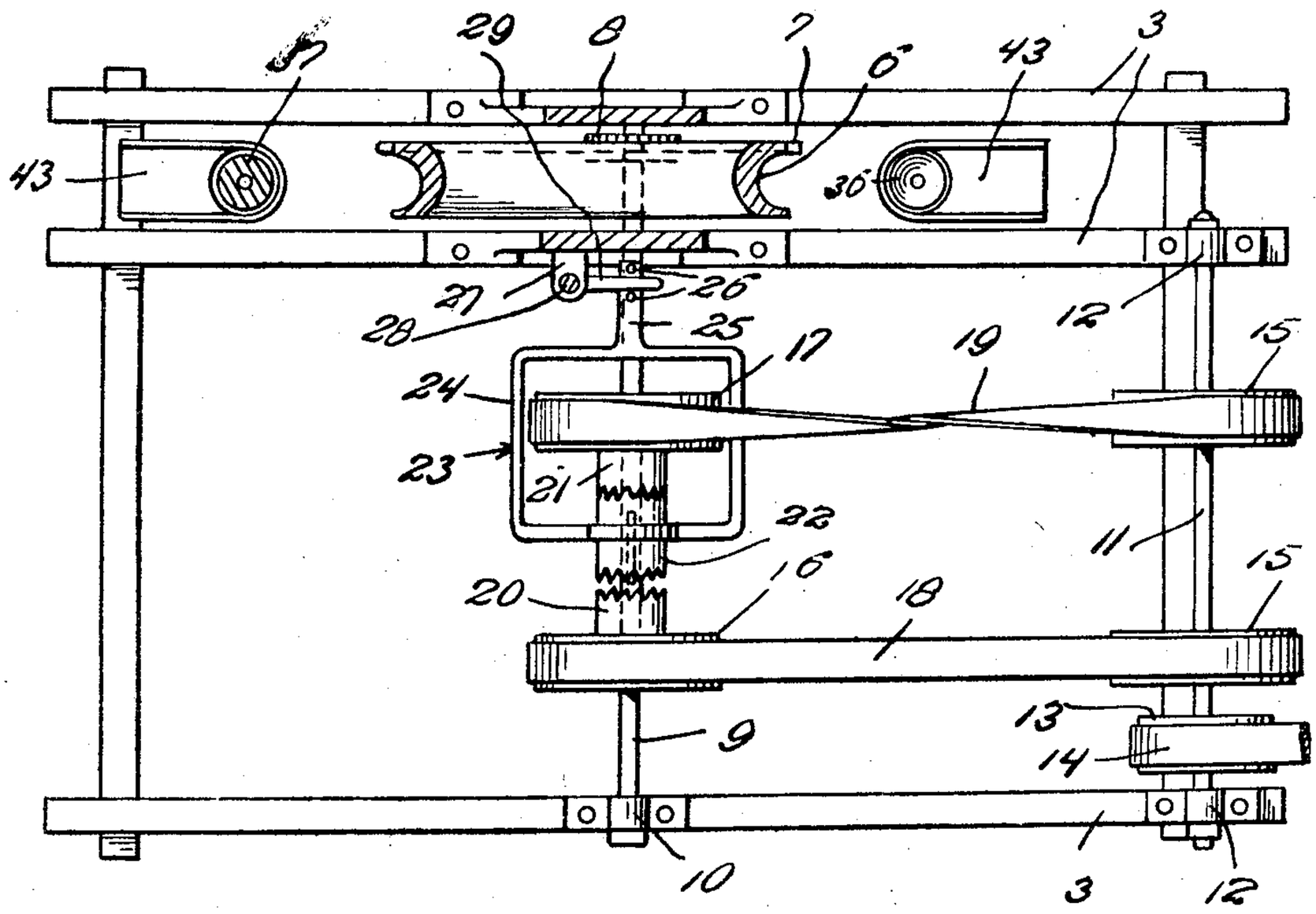
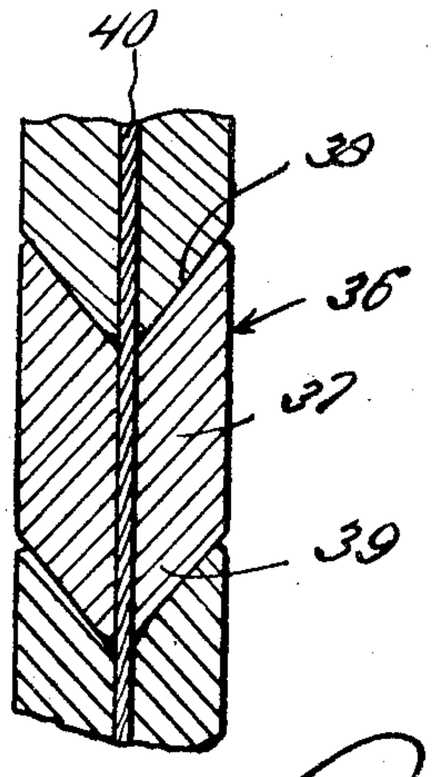


Fig. 3.



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Patented Nov. 18, 1924. 1,516,479

UNITED STATES PATENT OFFICE.

RALPH B. STRONG, OF RED LAKE, NEW MEXICO.

WATER PUMP.

Application filed February 19, 1924. Serial No. 693,793.

To all whom it may concern:

Be it known that I, RALPH B. STRONG, a citizen of the United States, residing at Red Lake, in the county of Roosevelt and State of New Mexico, have invented certain new and useful Improvements in Water Pumps, of which the following is a specification.

This invention relates to improvements in water pumps and particularly to a pump more especially adapted for use with shallow wells and the like.

An object of the invention resides in providing a tube or pump casing mounted in a frame and extending below the level of the water in the well and provided at its bottom with an intake valve or check valve, and a flexible plunger element carried by operating means on the frame and movable into and out of said pump casing for displacing the water therein and forcing it out of the outlet spout at the top part of the casing, means being provided for continuously reciprocating said plunger carrying member in pumping the water.

Another object of the invention resides in providing a frame, a flanged wheel member rotatably mounted on the frame and carrying a flexible plunger element adapted for alternate movement into a pair of spaced pump casings carried by the frame and extended below the level of water within the well for displacing the water therein and forcing it out of the spout at the upper end of the pump casing, means being provided for rotating said flanged wheel predetermined amounts in opposite directions for alternately forcing the water out of the pump casing.

A further object of the invention is to provide a frame having a flanged wheel rotatably mounted thereon and supporting and operating a flexible plunger element adapted for alternate reciprocation and movement into a pair of spaced pump casings for displacing water therein, means being provided on the plunger element for operating a clutch shifting mechanism adapted to reverse the rotation of the wheel at a predetermined time for effecting a reciprocation of the plunger element alternately into one pump casing and then the other.

The invention comprehends other objects and improvements in the details of construction and arrangement of parts which are more particularly pointed out in the following description and claims directed to a preferred form of the invention, it being understood however, that variations of the constructions and arrangements of these parts may be made within the scope of the description and as claimed.

In the drawings, forming a part of this application,

Figure 1 is a side elevation of the pump forming the subject matter of this invention with parts broken away and shown in section.

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

Figure 3 is a detail sectional view of a flexible plunger element showing the manner of securing the blocks forming said elements together.

1 indicates a suitable face on which is mounted lower parallel frame bars 2, to the upper sides of which are secured a plurality of upper frame bars 3 arranged in spaced parallel relation, a pair of said bars being positioned substantially close to one another to provide a support for the wheel carrying member 4 having spaced parallel upwardly extending arms, in the upper end of which is rotatably mounted the flanged wheel 5, the flanges forming a groove in the periphery of the wheel as indicated at 6, one of the flanges being formed with outwardly extending gear teeth 7 for engagement with a spur gear 8 mounted on the operating shaft 9 extending through the arms of the wheel supporting member 4 and having an additional bearing 10 mounted on one of the frame bars 3. A power shaft 11 is mounted in bearings 12 carried by the upper frame bars 3 which carries a power pulley 13 over which is passed a belt 14 from a suitable source of power for driving said shaft and rotating the driving pulleys 16 mounted thereon in spaced relation and connected with driven pulleys 16 and 17 respectively, rotatably mounted on the driving shaft 9 in spaced relation corresponding with the pulleys 15. A belt 18 is directed over one of the driving pulleys 15 and the pulley 16 for driving in one direction and a belt 19 has the central portion crossed and the ends passed over the pulleys 17 and the second pulleys 15 on the power shaft 11, so that the pulley 17 is driven in a reverse direction from the pulley 16.

The pulleys 16 and 17 are formed with hub extensions 20 and 21 respectively, each provided at the ends with clutch teeth, the extensions being directed toward each other

and concentric with the shaft 9. A movable clutch collar 22 is keyed onto the shaft 9 and adapted to be operated by a shifting member 23 having a rectangular open frame portion 24 extending around the pulley 17 and formed with an end extension on top of the shaft as indicated at 25 provided with a pair of spaced studs 26. One of the upright arms of the wheel supporting member 4 is formed with a pair of laterally projecting ears 27 which rotatably mounts a lever member 28 having a lever extension 29 on the lower end engaged between the studs 26 and having another lever extension 30 on the free end thereof with which is engaged the free end of the pivoted hanger bar 31 for the operating member 32, the upper end of said hanger member 31 being pivotally secured in one of the upright arms of the wheel supporting member 4. The operating member 32 includes an elongated trough 33 having the end portions extending from opposite sides of the hanger member 31 arranged at an obtuse angle in the free ends provided with extensions 34 terminating adjacent the periphery of the wheels 35. A ball member 35 is mounted in the trough 33 for free movement therein and is adapted to operate the clutch shifting member 23 through the lever member 28 for shifting the clutch 22 to reverse the direction of rotation of the wheel member 5 by engaging the clutch teeth carried by the hub extension of the pulley 16 or the pulley 17 as the case may be.

A flexible plunger element is indicated generally at 36 and is composed of a plurality of block members 37 having one end formed with a cone-shaped recess 38 while the other end is formed with a corresponding cone shaped projection 39 adapted to fit in the cone-shaped recess of an adjacent block 37, said blocks being secured together by a flexible cable member 40 so that a limited twisting movement of one block with respect to its adjacent block is permitted in order to allow the plunger member to conform to the periphery of the flanged wheel 5. The ends of the plunger member are adapted to be alternately lowered into pump casings 41 of tubular section and adapted to be closed at the bottom by check valves 42, the pump casings being mounted between the frame bars 3 and provided at their upper ends with lugs 43 for directing water pumped therethrough outwardly from the casing. The plunger member is provided at predetermined points adjacent the end portions thereof with projecting studs 44 which are adapted to cooperate with the projections 34 of the trough member 32 for raising the same to draw the ball member 35 from one end of the trough to the other end of the trough for operating the clutch shifting member.

It will be seen therefore, from the above description, that when the pump casings 41 have the lower ends submerged in a body of water such as a well or the like, and power applied to the power shaft 11 through the belt connection 14, for rotating the same, the plunger element 36 will be alternately lowered into each of the pump casings 41 and will displace the water therein forcing it upwardly and out of the spout 43 to be received in any desired containers or conveyed by other means to a desired point. The flanged wheel 5 will be reciprocated from the continuously operating power shaft 11 through the operation of the projecting stud 44 alternately engaging the lower ends of the trough member 32 and raising it for permitting the ball 35 to roll to the opposite end of the trough which will swing the depending lever 31 first in one direction and then the other for alternately shifting the clutch 22 into engagement with the teeth on the hub portion of the pulley 16 and subsequently the pulley 17 and thereby alternately transmit a reverse motion to the operating shaft 9 and thru the gear connection 8 with the flanged wheel will produce a reciprocating motion of the plungers 36 carried thereby.

It will therefore be observed that a simple, efficient and novel water pumping means has been provided for pumping water from a pair of pump casings by opposite ends of a single plunger element from a continuously rotating source of power.

What is claimed is:

1. A water pump comprising a frame, a pair of spaced pump casings mounted in the frame and extending below the frame into a body of water, a flanged wheel member rotatably mounted on said frame, a flexible plunger element having the intermediate portion thereof carried by the flanged wheel member and adapted to have the opposite ends alternately lowered into said pump casing for placing the water therein, a continuously rotating power element mounted on the frame, an operating shaft rotatably mounted on the frame having a connection with the flanged wheel for rotating the same, means for connecting the power element with the operating shaft for alternately reversing the rotation of said operating shaft, and means carried by the plunger element for controlling the operation of the means for controlling the rotation of the operating shaft.

2. A water pump including a frame member, a wheel supporting member removably mounted on said frame member, a flanged wheel rotatably mounted in said wheel supporting member, said flanges forming a groove in the periphery of the wheel, a flexible plunger element fitted in the groove portion of the flanged wheel, a pair of pump

casings mounted in said frame in spaced relation and extending below the frame for submergence in a body of water, the ends of said plunger element being adapted to be alternately lowered within the pump casing for displacing the water therein and forcing it out of the upper end thereof, an operating shaft having a connection with the flanged wheel for rotating said wheel in the rotation of said shaft, a pair of pulley members rotatably mounted on the operating shaft in spaced relation, a clutch element adapted for connection with either of said pulley members, a trough member mounted for swinging movement on the wheel supporting member, means carried by the plunger element for alternately raising opposite ends of the trough member, a ball freely mounted for freely rolling movement in said trough member, and connections between said trough member and shiftable clutch collar, means for continuously rotating said spaced pulleys in opposite directions, whereby said trough member will alternately shift the clutch collar into engagement with one of said pulley members and subsequently with the other for producing a reciprocating movement of the plunger element for alternately displacing the water in said pump casing.

In testimony whereof I affix my signature.

RALPH B. STRONG.