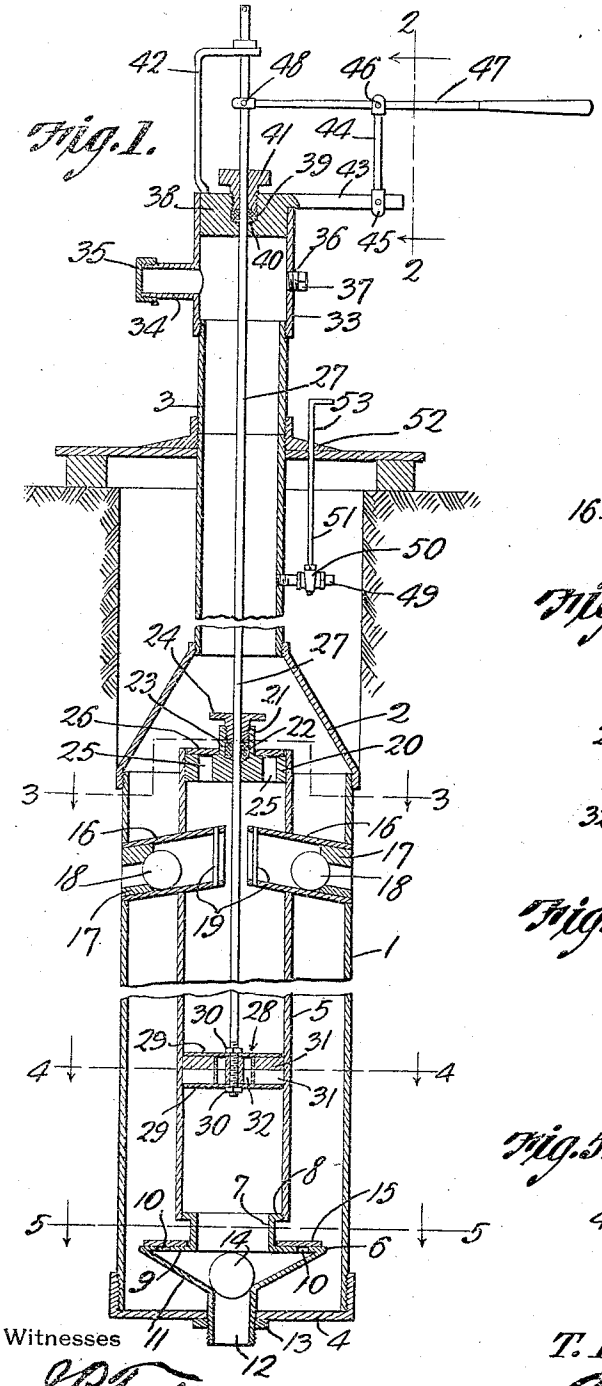
T. B. MARTIN.

PUMP.

APPLICATION FILED SEPT. 17, 1915.

1,200,746. Patented Oct. 10, 1916.

Fig. 1.



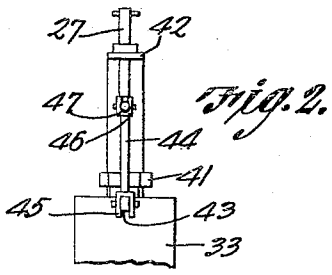


Fig. 2.

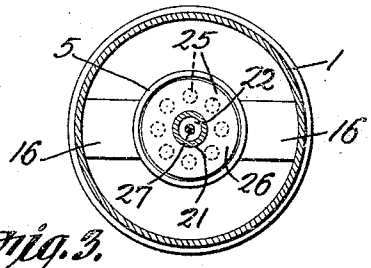


Fig. 3.

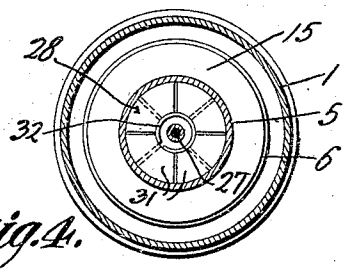


Fig. 4.

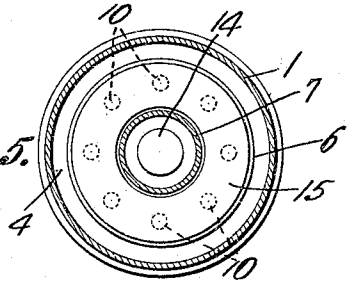


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

THOMAS B. MARTIN, OF DALLAS, TEXAS.

PUMP.

1,200,746. Specification of Letters Patent. Patented Oct. 10, 1916.

Application filed September 17, 1915. Serial No. 51,236.

To all whom it may concern:

Be it known that I, THOMAS B. MARTIN, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented a new and useful Pump, of which the following is a specification.

The present invention appertains to pumps, and relates more particularly to double acting well pumps.

It is the object of the invention to provide a double acting pump having novel and improved details of construction, to enhance the utility and efficiency thereof, the pump also being comparatively simple and inexpensive in construction.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a vertical section of the improved pump, portions being broken away and portions being illustrated in elevation. Figs. 2, 3, 4 and 5 are sectional views taken on the respective section lines 2—2, 3—3, 4—4 and 5—5 of Fig. 1.

In carrying out the invention, there is provided a vertical cylindrical barrel adapted to be submerged in the water within a well, and the upper end of the barrel 1 is connected by a reducer 2 to the lower end of a vertical pipe 3 extending upwardly out of the well to conduct the water upwardly. A cap 4 is threaded or otherwise engaged onto the lower end of the barrel 1 and provides the bottom of the barrel, and a vertical cylinder 5 is disposed concentrically within the barrel, the cylinder being of smaller diameter than the barrel. The lower end of the cylinder 5 is connected to the bottom 4 of the barrel 1 by means of a hollow coupling member 6 having an upstanding neck 7 provided with an outturned flange 8 threadedly or otherwise engaged within the lower end of the cylinder 5, and having a shoulder 9 surrounding the neck 7. The member 6 has a funnel shaped portion projecting downwardly from the periphery of the annular shoulder 9 and embodying a flared or frusto-conical portion 11 integral with the shoulder, and a spout or tubular portion 12 projecting downwardly from the portion 11 through the bottom 4 of the barrel. A nut 13 is threaded upon the spout portion 12 and bears against the bottom of the barrel for holding the member 6 in place. The shoulder 9 is provided with an annular series of apertures 10, and an annular flat valve 15 is slidable vertically upon the neck 7 to seat upon the shoulder 9 for ordinarily closing the apertures 10. A ball valve 14 is disposed within the member 6 and seatable upon the valve seat formed by the portion 11 to close the passage through the spout 12. The member 6 establishes communication from the lower end of the cylinder through the bottom of the barrel, and the valves 14 and 15 provide check valves operable as will hereinafter more fully appear.

Attached to the sides of the barrel 1 adjacent the upper end of the barrel are a plurality of inwardly projecting inclined tubes or nozzles 16 which project through suitable apertures provided in the sides of the cylinder 5, and apertured valve seats 17 are provided within the outer ends of the nozzles 16. Ball valves 18 are disposed within the nozzles or tubular members 16 to normally roll down against the seats 17 for closing the apertures or openings thereof. Pins 19 are secured to the inner ends of the nozzles 16 for preventing the valves 18 from being sucked into the cylinder.

A plug 20 is engaged within the upper end of the cylinder and is provided with an upstanding neck 21 having a stuffing box 22 holding a packing 23, a gland 24 being threaded into the stuffing box for compressing the packing. The plug 20 has an annular series of apertures 25 surrounding the neck 21, and an annular flat check valve 26 is slidable upon the neck 21 to seat upon the plug 20 for closing the apertures 25.

A vertical pump rod 27 is slidable through the gland 24 and plug 20 and projects axially within the cylinder 5 and upwardly through the pipe 3, and a piston 28 is attached to the lower end of the pump rod 27 to work snugly within the cylinder 5. This piston embodies a pair of spaced disks 29 slipped upon the rod 27, a pair of nuts 30 being threaded upon the rod for forcing the disks toward one another and to prevent

them from separating. Superposed sets of packing segments 31 are disposed between the disks 29 and have their joints spaced to prevent leakage past the piston. The segments 31 are separated, so as to snugly engage the walls of the cylinder, by means of expansion springs 32 disposed within the respective sets of packing segments. The packing carried by the piston is thus held snugly against the walls of the cylinder to prevent leakage and to take up wear.

Secured upon the upper end of the pipe 3 is a tubular head 33 provided at one side with a spout or nozzle 34 that may be closed by means of a screw cap 35, and the opposite side of the head 33 is provided with an outlet aperture 36 of smaller diameter than the nozzle 34. The said aperture 36 may be closed by a screw plug 37. A plug 38 is fitted tightly within the upper end of the head 33 and is provided with an upper stuffing box 39 holding a packing 40, a gland 41 being threaded into the stuffing box for compressing the packing. The pump rod 27 is slidable through the plug 38 and gland 41, and also slides through the upper end of a standard 42 carried by the plug 38. The plug 38 is provided with an arm or bracket 43 projecting horizontally to one side, and an oscillating standard or link 44 is provided with a fork 45 at its lower end straddling and pivoted to the arm 43. The upper end of the standard 44 has a fork 46 in which a hand lever 47 is fulcrumed, one arm of said lever being pivoted to the pump rod 27, between the plug 37 and upper end of the standard 42, as at 48.

Attached to one side of the pipe 3 below the level of the soil, is an outlet pipe 49 having a controlling valve 50 provided with an upstanding stem 51 projecting through a base 52, the upper end of the stem 51 having a handle 53 above the base, whereby the valve 50 may be opened conveniently. The base 52 embraces and is secured to the pipe 3, and is supported above the soil over the mouth of the well, for supporting the pump. The pipe 3 is divided within the base 52.

The pump is operated by oscillating the lever 47 which causes the pump rod 27 to be reciprocated. When the piston 28 is raised with the rod 27, the check valve 14 will be unseated by the suction created, and water will be sucked upwardly through the member 6 into the cylinder below the piston, and the water within the cylinder above the piston will be forced upwardly through the apertures 25, the valve 26 being unseated by the pressure of the water. The pressure of the water within the barrel 1 will seat the valve 15, and the pressure of the water within the cylinder above the piston will seat the valves 18 during the upward movement of the piston. The water discharged through the apertures 25 will be raised within the pipe 3. During the downward movement of the piston, the valves 26 and 14 are seated by the pressure of the water, and the valves 18 are unseated due to the suction created, to allow water to be drawn into the upper portion of the cylinder above the piston. The water within the lower portion of the cylinder is forced out through the apertures 10 and into the barrel, and thence will pass upwardly into the pipe 3. It will therefore be manifest that when the pump rod is reciprocated, a practically continuous upward flow of water is provided. When the cap 35 is removed, the water is discharged through the spout or nozzle 34 into the bucket or other receptacle provided for that purpose, and when the water is to be forced any distance, it is preferable to attach the pipe to the head 32 within the aperture 36 which is of smaller diameter than the nozzle 34, whereby the water can be forced with sufficient pressure to the point of discharge, the spout or nozzle 34 being closed by the cap 35.

To prevent the bursting of the pump stand above the base 52 during cold weather, the head of the column of water may be drained back into the well by opening the valve 50, so that the head of water passes through the pipe or nozzle 49 back into the well. This empties the pump stand, and prevents the bursting thereof by the freezing of the water. The water within the lower portion of the pump being below the frost line is not liable to be frozen.

Having thus described the invention, what is claimed as new is:

In a pump, a vertical barrel having a bottom, a vertical cylinder within the barrel, a hollow member having a neck attached to the lower end of the cylinder, an annular apertured shoulder surrounding the neck, a funnel-shaped portion below the shoulder providing a valve seat and engaged through the bottom of the barrel, an annular valve upon said neck and seatable upon said shoulder for closing the apertures thereof, and a ball valve within said member and seatable upon the funnel-shaped portion.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

THOMAS B. MARTIN.

Witnesses:
C. E. BIRTHRIGHT,
JACK LESLIE.