

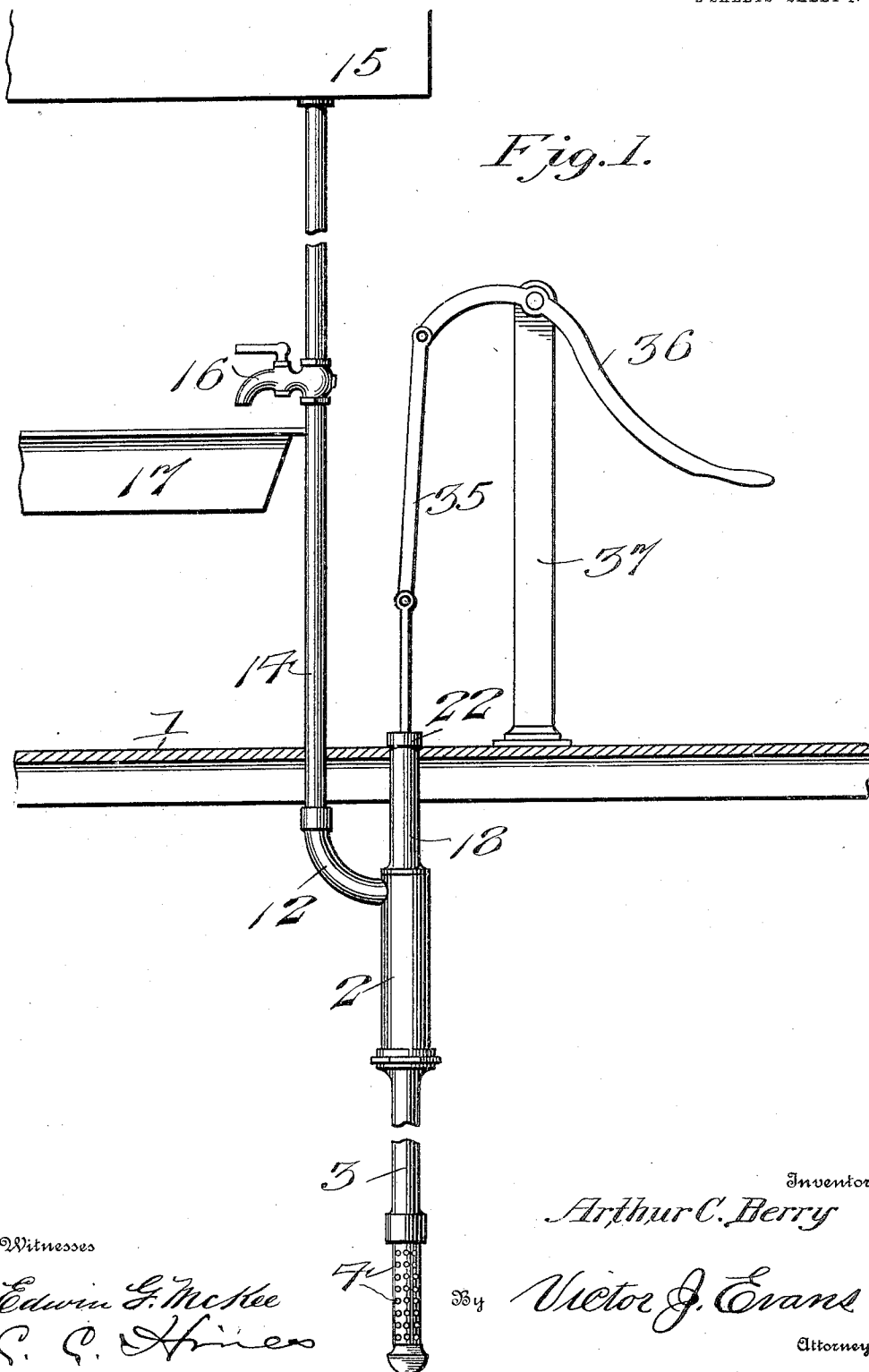
No. 822,178.

PATENTED MAY 29, 1906.

A. C. BERRY.
PUMP.

APPLICATION FILED MAR. 25, 1905.

2 SHEETS—SHEET 1.



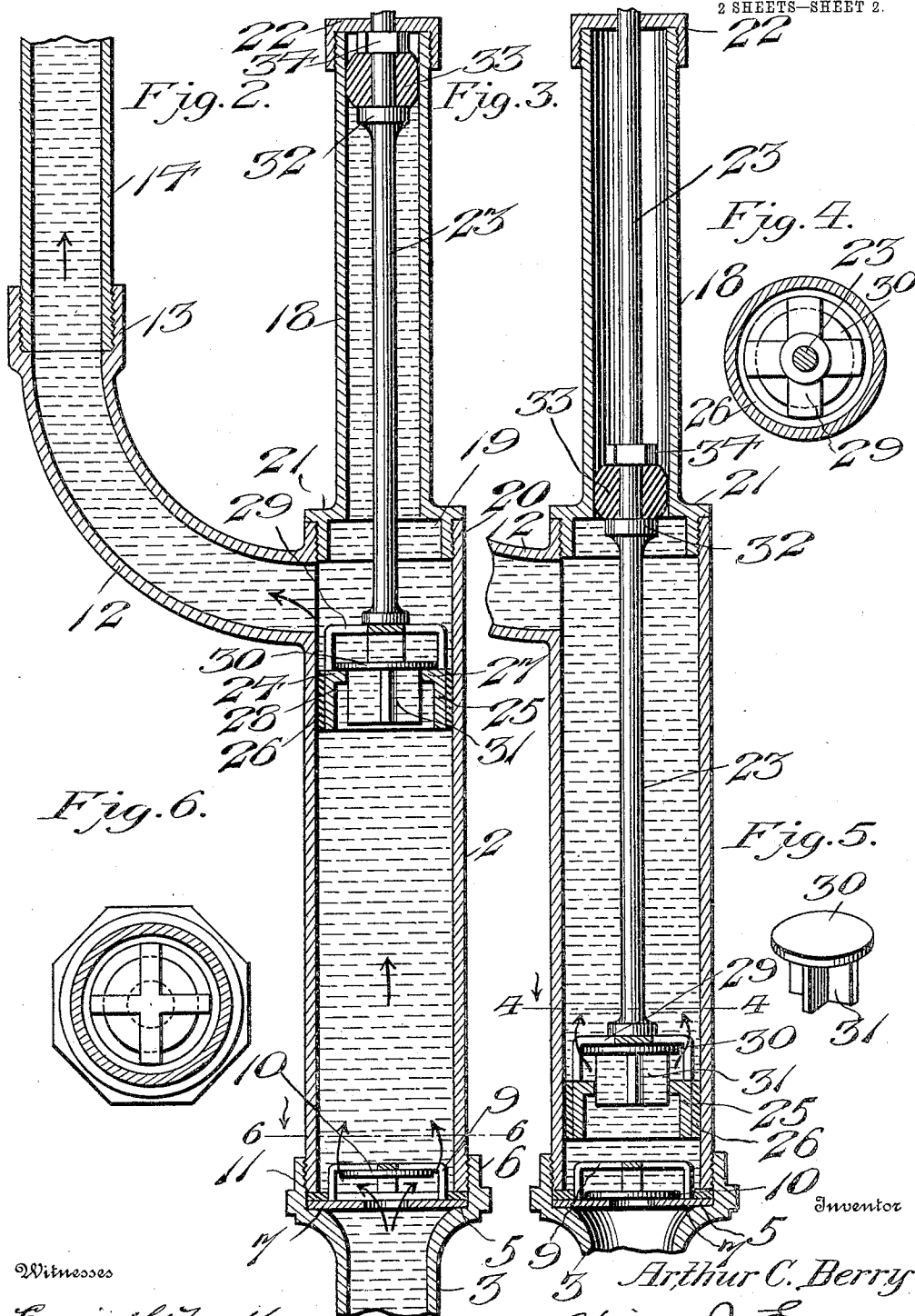
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Witnesses

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PUMP.

No. 822,178.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed March 25, 1905. Serial No. 252,041.

To all whom it may concern:

Be it known that I, ARTHUR C. BERRY, a citizen of the United States, residing at Hyannis, in the county of Barnstable and State of Massachusetts, have invented new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps designed for household use for raising water from a well to a tank or receptacle, from which the water may be drawn for consumption as desired.

The object of the invention is to provide a double-acting pump which is simple of construction and efficient in use and is designed to be arranged wholly in the well bore or casing to prevent freezing of its contents in cold weather and one which obviates the use of expensive exterior mountings and packing-boxes.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view through the floor of a well, showing the pump and its connections in elevation. Fig. 2 is a vertical longitudinal section through the main elements of the pump, showing the pump-piston at the limit of its upward movement. Fig. 3 is a similar view showing the pump-piston at the limit of its downward movement. Fig. 4 is a sectional plan view taken on the line 4 4 of Fig. 3. Fig. 5 is a detail view of the piston-valve, and Fig. 6 is a sectional plan view taken on the line 6 6 of Fig. 2.

Referring now more particularly to the drawings, the numeral 1 designates the floor or top closure of a well-casing, below which is disposed the pump stock or cylinder 2, which is connected at its lower end to a suction-pipe 3, which is in turn connected at its lower end to the usual strainer attachment 4, through which the water from the well flows into the suction-pipe. As shown, the upper end of the suction-pipe is swelled or enlarged and provided with an interior seat or shoulder 5 and a flange or union 6, interiorly threaded for connection with the lower threaded end of the cylinder 2. Resting against the shoulder or seat 5 is a disk or head 7, which is provided with an inlet-port 8 and from which rises a four-armed cage 9, in which is disposed a disk valve 10, which controls the port 8. A packing-ring 11 is disposed be-

tween the valve body or plate 7 and the lower end of the cylinder 2 to form a water-tight joint between the same.

The cylinder 2 is provided near its upper end with an integral lateral outlet-pipe 12, which is curved upwardly and outwardly and provided with an enlarged interiorly-threaded outlet end 13, receiving the lower threaded end of a delivery-pipe 14, which extends upwardly through the flooring 1 and communicates at its upper end with a tank or receptacle 15, disposed at a suitable point in the house or apartment. Below the tank 15 the pipe 14 is provided with a discharge-faucet 16, whereby water may be drawn from the tank 15 for consumption. If desired, a sink or other suitable receptacle 17 may be supported below the faucet to receive the waste therefrom and to be used for various household operations.

The upper end of the cylinder 2 is internally threaded to receive the lower end of a barrel or supplementary cylinder 18, which lower end of said barrel or supplemental cylinder is enlarged to form a chamber 19 and an externally-threaded union 20 and is formed with a flange 21 to rest upon the upper edge of the cylinder. The upper end of this barrel or supplementary cylinder extends upwardly through the flooring 1 and is externally threaded to receive a suitable closing-cap 22.

The cap 22 is apertured for the passage of the pump rod or plunger 23, which is connected at its lower end to the pump-piston 24, which latter operates in the cylinder 2 and comprises a hollow body 25, provided with suitable packing 26 and having at its upper end an annular flange 27, forming a restricted port 28 for the upward flow of water from the lower portion of the cylinder. From the flange 27 rises a four-armed cage 29, to which the rod 23 is suitably attached and in which a disk valve 30 is mounted and controls the port 28, the said valve being provided with a winged guiding portion 31, which is movable within the body of the valve.

Above the piston the rod 23 is provided with a collar or head 32, above which is arranged a spherical packing-head and supplementary piston 33, composed of rubber or some other suitable material which will snugly fit the interior of the supplementary

cylinder 18 and prevent the passage of water above the same. This packing-head and supplementary piston is clamped in position against the collar 32 by a nut 34, which may be tightened when occasion requires to extend said head to compensate for any wear thereof, so that a water-tight connection between the same may always be secured. The head 33 is so arranged upon the piston-rod relatively to the piston that it will be at the lower end of the supplementary cylinder 18 when the piston is at the limit of its downstroke, as shown in Fig. 3, and so that it (the head) will be at the upper end of the supplementary cylinder when the piston is at the limit of its upstroke, as shown in Fig. 2. The upper end of the piston-rod is jointed by a link or connecting-rod 35 to an operating hand-lever 36, fulcrumed upon a post or standard 37 supported upon the flooring 1.

When the lever 36 is operated, the rod 23 will be reciprocated in the usual manner, thus transferring motion to the piston 24, which upon its up stroke will draw water from the section pipe 3 into the lower end of the cylinder 2 and force the water above it from said cylinder into the outlet 12, from which it passes to the storage-tank 15. It will, of course, be understood that on such upward movement of the piston the valve 30 closes under the pressure from the head of the water above to prevent the superposed column of water from flowing backward through the port 28 and force it from the cylinder into the outlet 12 and that on the downward movement of the piston the valve 30 will open to allow the water to pass through the port 28 to the upper portion of the cylinder above the piston. The upward movement of the piston not only forces water into the outlet 12, but also into the supplementary cylinder 18, this action being supplemented by the action of the head 33, which on its upward movement draws water from the upper portion of the cylinder 2 into said supplementary cylinder 18, and when the piston is forced downwardly the water previously taken into said supplementary cylinder 18 will be forced outward therefrom and pass through the outlet 12 to the delivery-pipe 14 and thence to the storage-tank. Hence it will be seen that the head 33 will not only act as a packing, but will serve the function of a supplementary piston, thus making the pump to all intents and effect a double-acting pump.

As a result of the provision of the head 33

the necessity of employing packing-boxes to effect a water-tight connection at the upper end of the cylinder is obviated, and by disposing the portions of the pump proper below the flooring 1 the water-containing members of the pump are disposed wholly within the well-casing and protected from freezing in cold weather. This disposition of the main elements of the pump further obviates the necessity of employing a cased or ornamental stock, as is required in pumps in which the stock is disposed above the well-floor, so that it is simply necessary to pivotally mount the operating-handle upon a simple form of standard or support. The cost of constructing the pump is therefore reduced to a considerable extent and the cost of maintenance also reduced.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation is apparent without a further description of the invention.

Changes in the form, proportions, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

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

In a pump, the combination of a pump-cylinder, a suction-pipe connected with the inlet end of the pump-cylinder, said suction-pipe being provided with a shoulder or seat, an inlet-valve comprising a ported body engaging said seat and held in contact therewith by the end of the cylinder and a valve member controlling the port therein, a supplementary cylinder detachably connected to the opposite end of the pump-cylinder, and closed at its outer end by a head, an outlet-pipe leading from the pump-cylinder adjacent to the lower end of said supplementary cylinder, a rod operating in said cylinders, a valved piston operating in the pump-cylinder connected to said rod, a spherical packing-head and supplementary piston connected to the rod and operating in said supplementary cylinder, and means for extending said spherical head, substantially as described.

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

ARTHUR C. BERRY.

Witnesses:

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