G. ST. PETERS.

DOUBLE ACTING PUMP.

APPLICATION FILED MAR. 13, 1911. RENEWED APR. 15, 1912.

1,029,476. Patented June 11, 1912.

Fig. 1.

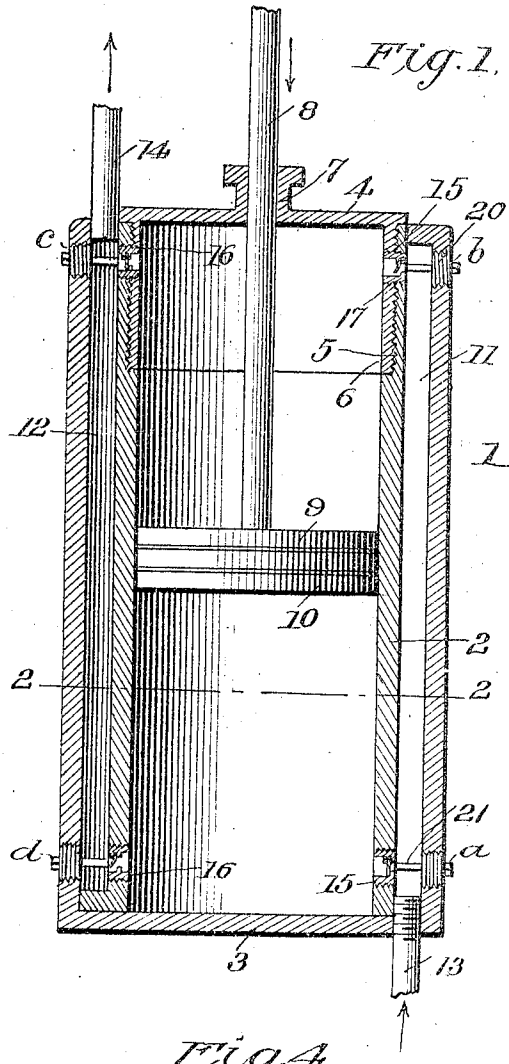


Fig. 2.

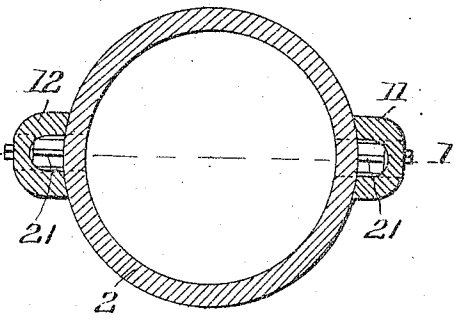


Fig. 3.

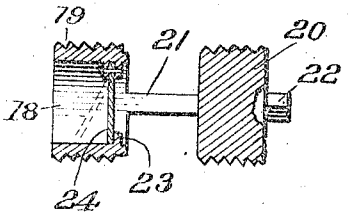
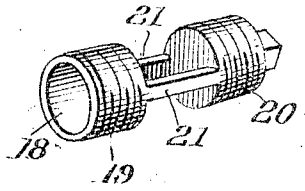


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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DOUBLE-ACTING PUMP.

1,029,476. Specification of Letters Patent. Patented June 11, 1912.

Application filed Mar. h 13, 1911, Serial No. 614,119. Renewed April 15, 1912. Serial No. 691,005.

To all whom it may concern:

Be it known that I, GEORGE ST. PETERS, a citizen of the United States, residing at Mattoon, in the county of Shawano and State of Wisconsin, have invented certain new and useful Improvements in Double-Acting Pumps, of which the following is a specification.

My invention relates to pumps operating on a double acting principle wherein a continuous stream of water is forced from the pump upon a reciprocation of the piston, the pump drawing in water and ejecting water upon a down stroke and doing the like upon the up stroke of the piston.

The primary object of my invention is the provision of a very simple, durable and efficient pump of this character which shall work with great smoothness and ease, which shall be cheap to manufacture and easy of repair, and particularly in which the valves are so constructed and arranged that any one of them may be removed from the pump barrel without removing any of the other valves, and without disarranging or otherwise disturbing the body of the pump.

In ordinary pumps it is difficult to remove the valves thereof for repair or replacement, and this inconvenience has been entirely obviated in my improved pump.

An embodiment of my invention is illustrated in the accompanying drawings wherein: Figure 1 is a vertical section on the line 1—1 of Fig. 2 of my improved pump. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is a detail longitudinal section of one of the valves of the pump removed from the casing. Fig. 4 is a detached perspective view of the valve.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to these figures, it will be seen that the body of the pump consists of the barrel 2 which is closed at one end as at 3, and which at the other end is closed by a removable cap 4. The interior of the barrel 2, adjacent its open end, is recessed as at 5, the face of the recess being screw threaded, and the cap 4 is provided with an annular flange 6 disposed inward of the periphery of the cap, this flange 6 having a thickness equal to the depth of the cutaway portion or recessed portion 5. The flange is exteriorly screw threaded so as to engage with the screw threads of the recess. The cap 4 is provided with a stuffing box 7 through which the piston rod 8 passes. Attached to the piston rod is the piston head 9 provided with the usual packing rings 10. It will be seen that constructed in this manner the interior of the pump barrel or cylinder 2 is flush from one end to the other and offers no obstruction to the reciprocation of the piston head, while at the same time the head 4 may be removed from the barrel to permit the removal of the piston or the cleaning out or repair of any portion of the barrel.

Preferably formed integral with the pump barrel are the oppositely disposed, longitudinally arranged chambers 11 and 12. The chamber 11 at one end carries an induction pipe 13, while the chamber 12 at the end opposite to the inlet end of the barrel carries the discharge pipe 14. The pipe 13 and the pipe 14 form continuations of the chambers 11 and 12 respectively. The ends of the chambers 11 and 12 opposite to the pipes 13 and 14 respectively are closed.

The chamber 11 is formed at opposite ends with screw threaded openings 15 for the reception of valves to be later described, and opposite these openings 15 the wall of the barrel 2 is also provided with screw threaded openings 16. The opposite chamber 12 is also provided with screw threaded openings 15 at its opposite ends and the adjacent wall of the barrel 2 is provided with the same threaded openings 16 registering with the openings 15. The flange 6 of the head 4 is provided with an opening 17 which registers with the openings 16 and 15.

The valves for controlling the inlet and discharge of water are all constructed alike, as illustrated in the detail view Fig. 3. Each valve comprises a tubular body portion 18, screw threaded on its exterior as at 19 and cut away at its middle as at 20 so as to leave oppositely disposed connecting webs 21. The outer end of the valve is solid and provided with a projecting many sided head 22 permitting the application of a wrench to the valve. The interior of the body portion 18 of the valve is formed with a seat 23, and mounted in any suitable manner within the valve casing or body 18 is the valve proper 24. I have shown this valve as being a swing check valve pivotally mounted upon the interior of the body 18, but it will be understood that any form of check valve might be used for this purpose.

The body of the valve being exteriorly screw threaded, is adapted to be inserted and screwed into the interiorly screw threaded walls of the openings 15, 16 and 17 and to be unscrewed therefrom. There are four valves of the type described, these being indicated respectively by the letters *a*, *b*, *c*, and *d*. The valves *a* and *b* are induction valves and open inward from the chamber 11 into the barrel. The valves *c* and *d* are discharge valves and open outward from the barrel into the chamber 12.

The operation of my invention will be obvious from the above description. As the piston 9 moves upward the suction in the lower portion of the barrel will close the valve *d* and open the valve *a*, permitting water to flow from the chamber 11 into the lower portion of the pump barrel above the piston. The pressure of water above the piston will open the valve *b* and will open the valve *c* and the water will flow into the discharge chamber 12 and from thence through the discharge pipe 14. Upon a downward movement of the piston, the valve *b* will open to permit the entrance of water to the upper portion of the barrel while the valve *c* will close. The valve *a* will close while the valve *d* will open, permitting the passage of water from the lower portion of the pump barrel into the discharge pipe 14. It will thus be seen that a reciprocation of the piston will cause a constant discharge of water. It is likewise pointed out that my pump is extremely simple in construction and exclusive of the piston and valves is made of but two pieces. The valve casings are made alike and have an identical construction save for the setting of the valve proper 24. These valve disks 24 must be set on one or the other side of the seat 23, depending upon whether the valve is to be used as an induction valve or an eduction valve.

Any one of the valve casings may be independently removed to permit the adjustment or replacement of the valve therein without in any way affecting the other valves, and without necessitating the dismembering of the pump. The valve casings and valves are very simple, require no expert workman to put them in place, can be cheaply made and repaired and I have found them entirely effective for the purpose designed.

While I have shown what I believe to be the most effective and simplest embodiment of my invention, it is to be understood that various minor changes might be made without departing from the spirit of the invention.

What I claim is:

1. In a pump, a barrel having chambers at opposite sides thereof and extending longitudinally of the same, the walls of said chambers having threaded apertures near their ends and said barrel having other threaded apertures in alinement respectively with the threaded apertures of the chambers, a threaded sleeve and a threaded plug for each alined pair of said apertures and united by a plurality of bars spaced apart, said plugs adapted to engage respectively in the apertures of the chambers and said threaded sleeves adapted to engage respectively in the threaded apertures of the barrel, a valve in each of said sleeves, and a plunger operating in said barrel.

2. In a pump, a barrel open at one end and internally threaded at the open end and having chambers at opposite sides thereof and extending longitudinally of the same, the walls of said chambers having threaded apertures near their ends and said barrel having other threaded apertures in alinement respectively with the apertures of the chambers, a closure for the open end of the barrel and provided with a threaded annular flange engaging the threaded portion of the barrel, said flange having threaded apertures registering with the adjacent threaded apertures of the barrel, a threaded sleeve and a threaded plug for each alined pair of said apertures and united by a plurality of bars spaced apart, said plugs adapted to engage respectively in the threaded apertures of the chambers and said threaded sleeves adapted to engage respectively in the threaded apertures of the barrel and to likewise extend through the threaded apertures of the flange, a valve in each of said sleeves, and a plunger operating in said barrel.

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

GEORGE ST. PETERS. [L. S.]

Witnesses:

ANTON ST. PETERS,

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