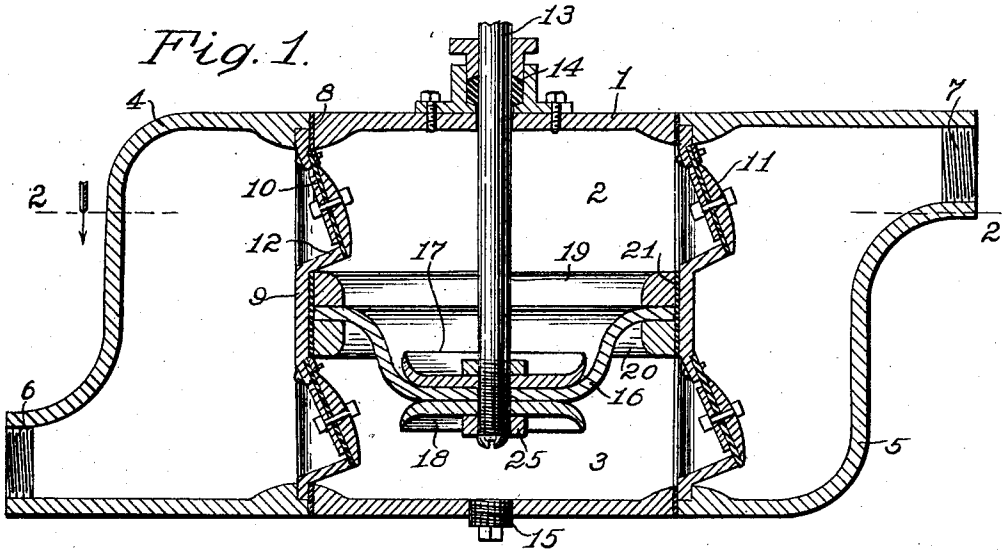
June 23, 1931. E. N. OVE 1,811,557

DOUBLE ACTING PUMP

Filed May 26, 1930

Fig. 1.



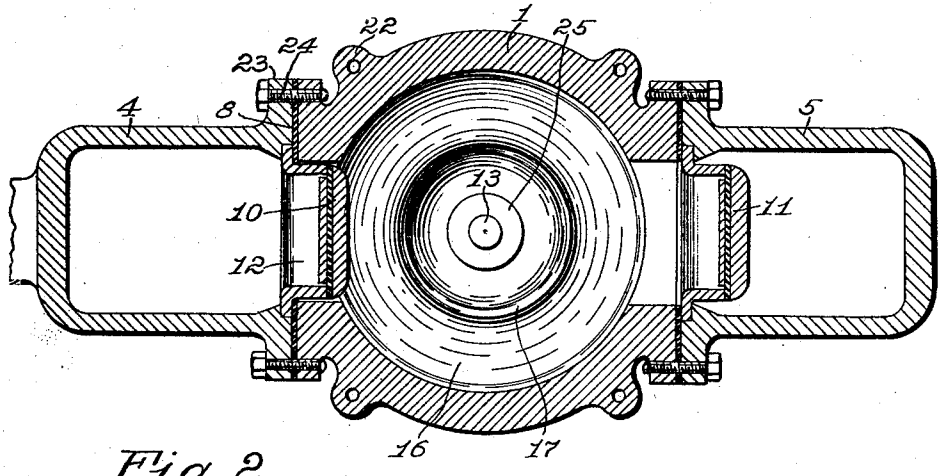


Fig. 2.

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UNITED STATES PATENT OFFICE

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DOUBLE-ACTING PUMP

Application filed May 26, 1930. Serial No. 455,620.

My invention relates to improvements in double acting pumps, and the object of my improvement is to provide an inexpensive simple construction therefor, adapted to discharge a continuous stream of fluid.

Another object is to construct the pump casing in sections, of which certain ones are reversible and interchangeable and therefore may be not only easily assembled or disassembled, but may have such parts quickly replaced when broken, or for repairs.

I have accomplished these objects by the means which are hereinafter described and claimed, and which are illustrated in the accompanying drawings, in which Fig. 1 is a vertical longitudinal medial section of my duplex pump, and Fig. 2 is a horizontal section thereof taken on the broken line 2—2 of said Fig. 1.

Various modifications may be effected in this device without departing from this invention or the protection of the claim.

The numeral 1 denotes the pump barrel having at the top a stuffing-box bearing 14 seating a reciprocating stem 13 of a cupped flexible or elastic piston member or medial horizontal diaphragm 16, whose margin is clamped between the clamping rings 19 and 20 mounted in said chamber engaging in interposed cylindrical gasket 21. The piston or plunger member 16 is centrally apertured to receive the stem 13 therethrough, the cupped and reversed cupped and rigid disks 17 and 18 being mounted on a threaded part of said stem to clamp the diaphragm between them tightly and imperviously, and held by threaded nuts 25 also seated on said stem. The disks are cupped reversely to give clearance to the interposed part of the diaphragm in moving back and forth in the barrel or chamber 1, without injury to the diaphragm. A plug 15 is threaded into a hole in the bottom of said barrel and is removable to permit flushing thereof.

The barrel 1 has removable end walls or members 9 seated against gaskets 8, and terminal chambers 4 and 5, of the same shape but reversed, are clamped against the walls 9, by lug and screw connections 22, 23 and 24 shown in Fig. 2, making impervious joints. The inlet and outlet ports 6 and 7 respectively of said terminal chambers are diminished extensions of the chambers and positioned respectively in longitudinal alinement with pairs of like flap valves above and below the diaphragm 16, as shown at 10 and 11 at the top, with the like below. These valves are suspended to close the ports 12 in said walls 9, to swing open in one direction only, that is, in the direction that fluid moves through the barrel and said chambers toward the discharge port 7. By this arrangement, as the piston-diaphragm with the stem 13 are moved up and down, and the cupped part of the diaphragm enters either chamber, 2 or 3, a suction is induced in the other chamber, the inlet valve 10 of which opens and the fluid or liquid in the inlet chamber 4 and its port 6 caused to enter the barrel and push open the appropriate outlet valve 11 to fill the terminal chamber 5 and discharge the latter by way of its outlet port 7.

The action of the pump, by alternate reciprocation of the stem 13 and the flexible diaphragm piston 16, in moving to and from, pumps at each movement, and any pulsations induced in the delivered stream entering the terminal or outlet chamber 5 are suppressed there to cause the delivery of a steady or unpulsating stream through the port 7.

As the terminal chambers 4 and 5 are alike in shape, they may be interchanged when reversed, and the end walls 9 of the barrel 1 likewise changed or alternated without changing their valve functions. The construction of the device, is therefore simple, and consequently inexpensive, and easy to assemble and keep in repair, or for substitutions or cleansing.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

A duplex pump, comprising in combination, a pump barrel having open opposite ends, and having a top bearing aperture, closure plates for said open ends, a pair of medial clamping rings mounted in said barrel, a flexible piston member partitioning said barrel and having its margin clamped between said rings, a pump rod seated to re-

ciprocate in said barrel bearing aperture and having a termination traversing said piston member centrally, clamping disks contacting opposite faces of the piston member and removably secured upon said rod, said closure plates having above and below said piston member valve ports, valves for said ports opening in one direction only, and like but reversed outer chambers secured to said pump barrel and clamping between them said closure plates removably, said chambers having respectively like ports reversed in position, of which one port is a receiving port and the other port is a discharge port, the said closure plates, and said chambers being interchangeable each for the other respectively.

In testimony whereof I affix my signature.

EDWARD N. OVE.