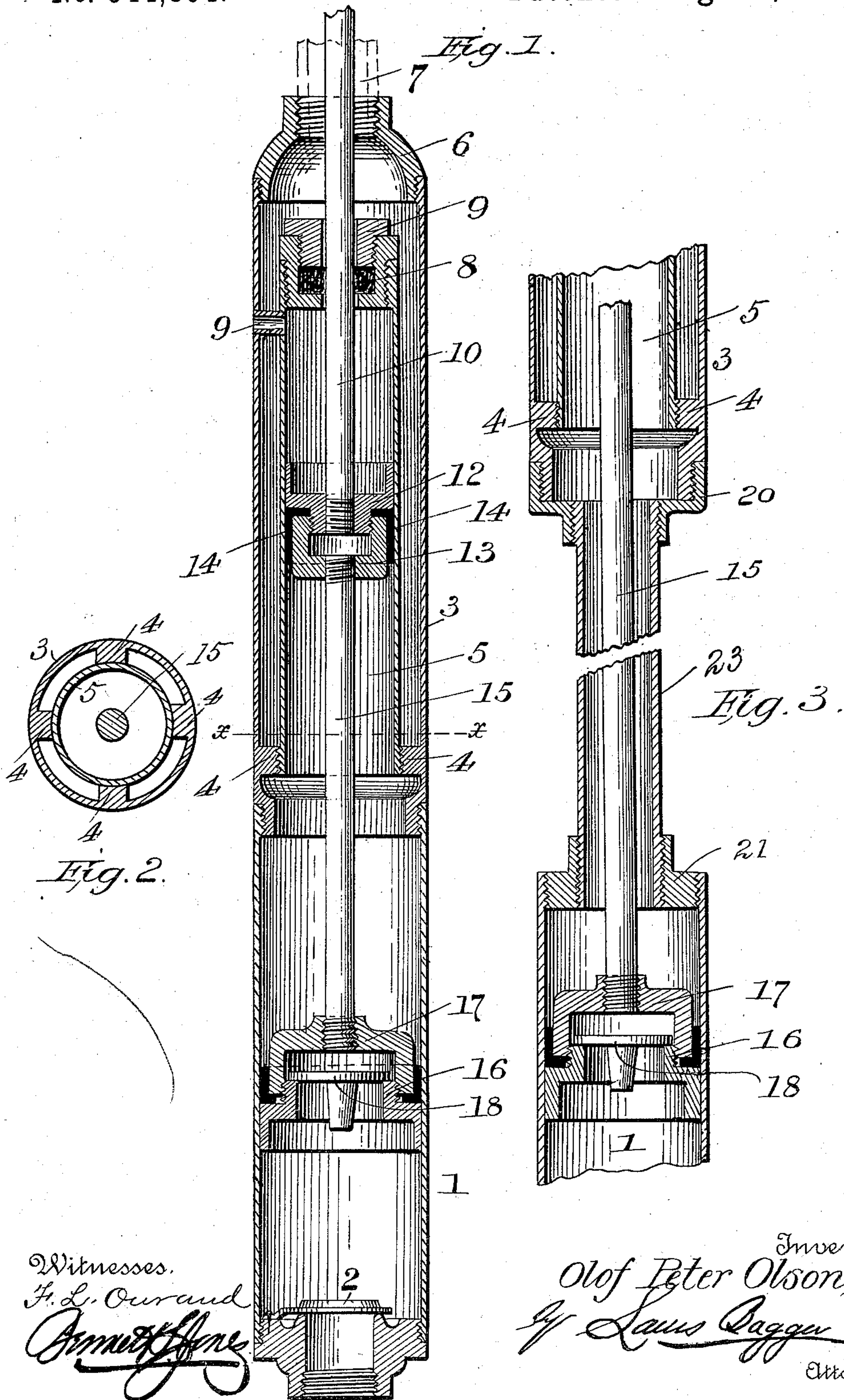


(No Model.)

O. P. OLSON.  
DOUBLE ACTING FORCE PUMP.

No. 544,864.

Patented Aug. 20, 1895.



Witnesses.

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# UNITED STATES PATENT OFFICE.

OLOF PETER OLSON, OF OSHKOSH, WISCONSIN.

## DOUBLE-ACTING FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 544,864, dated August 20, 1895.

Application filed February 2, 1895. Serial No. 537,095. (No model.)

*To all whom it may concern:*

Be it known that I, OLOF PETER OLSON, a citizen of the United States, and a resident of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Double-Acting Force-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to double-acting force-pumps; and its object is to provide an improved construction of the same whereby I secure important advantages with respect to efficiency in operation.

The invention consists in the novel construction and combination of parts herein-after fully described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal section of a pump constructed in accordance with my invention. Fig. 2 is a horizontal section on the line  $xx$ , Fig. 1. Fig. 3 is a horizontal sectional view of a modified construction.

In the said drawings, the reference-numeral 1 designates a cylinder adapted to be set in a well and provided with an upwardly-opening valve 2. At its upper end this cylinder is screw-threaded internally to receive the correspondingly-threaded end of a similar cylinder 3, thus forming a two-part cylinder. Near the lower end on its inner side the said cylinder 3 is formed with a series of inwardly-extending screw-threaded lugs 4, with which engages the threaded end of a cylinder 5, located within and concentric with the cylinder 3. By means of these lugs the cylinder 5 is held in place. The upper end of cylinder 3 is provided with a screw-cap 6, with which is connected a discharge-pipe 7. The upper end of cylinder 5 is closed by a stuffing-box 8, having a gland 9, through which passes a piston or plunger rod 10. To the lower end of this rod is secured a piston 12, the lower end of which is provided with a nut 13. Between this nut and piston is clamped a leather or other packing 14. Screwing into the nut 13 is a piston-rod 15, provided at its lower end with a piston 16, connected with the rod 15

by a screw-nut 17. This piston is provided with an upwardly-working valve 18, so constructed that it will open on the downstroke of the piston and admit water to the cylinder 1 above the latter.

The numeral 19 designates an air-pipe passing through cylinders 3 and 5 and communicating with the latter, so as to overcome the vacuum which would otherwise be formed in cylinder 5 on the downstroke of piston 12.

The operation is as follows: On the upstroke of the pistons water will be drawn into the lower end of cylinder 1 through the valve in the lower end of the same. On the downstroke of the pistons valve 18 will open, allowing the water to enter cylinder 1 above the piston 16. On the next upstroke of the pistons half of the water in said cylinder 1 will be forced out between the lugs 4 into the water-space between cylinders 3 and 5, while the other half of the water will enter the lower end of cylinder 5. Upon the next downstroke this water will be forced by piston 12 out into the water-space or away, and from thence into the discharge-pipe. It will thus be seen that the pump is double-acting, the water being alternately forced outward and upward between cylinders 3 and 5 by means of the two pistons.

In the modification shown in Fig. 3 the pump is intended as a deep-well pump, the cylinders 3 and 1 being disconnected from each other and closed, respectively, by screw-caps 20 and 21, connected together by a pipe 23. In this case the cylinders 3 and 5 may be located just below the ground, while the cylinder 1 may be set at any depth desired.

The invention will be found especially applicable for use in connection with oil-wells, as the cylinders can be made very small, so as to fit the diameter of the well.

Having thus fully described my invention, what I claim is—

1. In a double-acting pump the combination with the lower cylinder and the upper cylinder removably connected therewith having screw-threaded lugs at its lower end, of the cylinder located within and concentric with said upper cylinder, and screw-threaded at its lower end to engage with said lugs, the piston rod and piston located and working in said inner cylinder, the piston rod connected

therewith, the piston secured thereto having an upwardly opening valve and the valve in the lower end of the lower cylinder, substantially as described.

- 5 2. In a double acting pump, the combination with the lower cylinder provided with an upwardly opening valve, and the upper cylinder rearwardly connected therewith having screw-threaded lugs near its lower end, of the  
10 cylinder located within said upper cylinder with its lower end engaging with said lugs, the air pipe extending through said upper inner and outer cylinders, the stuffing box at

the upper end of said cylinder, the piston rod, the piston connected therewith working in 15 said inner cylinder, and the piston-rod connected with said piston, having an upwardly opening valve; and working within the lower cylinder, substantially as described.

In testimony that I claim the foregoing as 20 my own I have hereunto affixed my signature in presence of two witnesses.

OLOF PETER OLSON.

Witnesses:

BERTHA EBERNAU,  
CHARLES H. FORWARD.