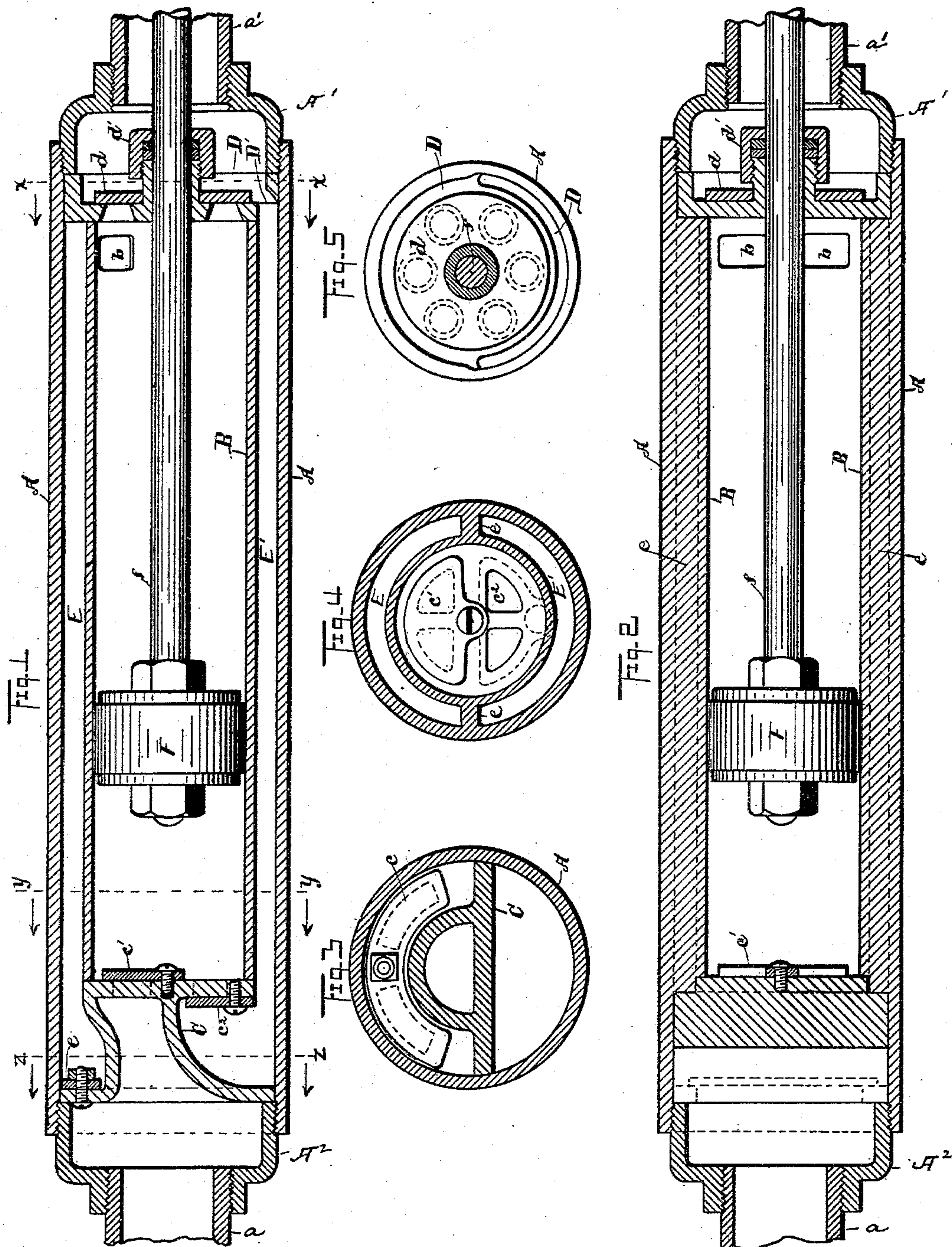


(No Model.)

C. HARWICK.
DOUBLE ACTING PUMP.

No. 411,810.

Patented Oct. 1, 1889.



Wilneßes.

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UNITED STATES PATENT OFFICE.

CASPER HARWICK, OF CANAL FULTON, OHIO.

DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 411,810, dated October 1, 1889.

Application filed June 3, 1889. Serial No. 313,016. (No model.)

To all whom it may concern:

Be it known that I, CASPER HARWICK, of Canal Fulton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Double-Acting Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in double-acting pumps, the object being to provide a light, durable, and effective pump reduced to a small compass, adapted to operate, for instance, in bored wells. With these objects in view my invention consists in certain features of construction, and in combination of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figures 1 and 2 are elevations in section, taken at right angles to each other. Figs. 3, 4, and 5 are plans in section, taken, respectively, on lines $x x$, $y y$, and $z z$, Fig. 1.

A is a tube constituting the outer casing of the pump, this tube being screw-threaded internally at the ends for receiving the reducing caps or couplings A' and A^2 , these caps in turn connecting, respectively, with suction-pipes a and discharge-pipes a' .

B is the inner tube or pump-barrel, and abutting the ends thereof are heads C and D, serving as valve-seats, the two heads being pressed upon the ends of pump-barrel by the engagement of the caps in screwing the latter home.

The annular space between tubes A and B is divided into two compartments E and E' by means of wings or ribs $e e$. If the inner tube were of cast metal, these wings could be cast integral therewith and turned off to fit the bore of the outer tube. It is, however, desirable to construct both tubes of wrought metal, in which case small bars of metal constituting these wings could be soldered, brazed, or otherwise secured, for instance, to the inner tube before the parts were assembled. I do not wish, however, to limit myself to particular means of securing these wings, as it can be done in so many different ways.

Compartment E serves as an induction passage-way for the upper end of the pump-barrel, and compartment E' serves as an induction passage-way for the lower end of

the pump-barrel. The lower head C has a valve c , opening upward, for admitting water from the suction into compartment E, a hole b , near the upper end of tube B, admitting water from compartment E to the pump-barrel above the plunger G. Head C has also a valve c' opening upward for admitting water from the suction into the lower end of the pump-barrel, and this head has also a valve c^2 opening downward for discharging water from the lower end of the pump-barrel into compartment E'. The water from this latter compartment escapes through opening D' of head D. The upper head has a series of openings closed by valves d , the latter opening upward, through which the water escapes from the upper end of the pump-barrel. Head D is also provided with stuffing-box d' , around the piston-rod f , the latter extending up through the discharging-pipe a' .

It will be seen that the parts are light and strong and for a double-acting pump are reduced to a very small compass. By unscrewing the caps the internal mechanism may be removed for cleaning, repairs, or other purposes.

What I claim is—

A double-acting pump comprising outer and inner tubes, partitions dividing the annular space between the tubes into compartments respectively for induction and education purposes, heads fitting the bore of the outer tube and abutting the ends of the inner tube, one of said heads having a valve opening upwardly for the admission of water to the induction-compartment, a valve opening downwardly for the discharge of water into the education-compartment, and a valve for the admission of water to the pump-barrel, the other head having valves for the discharge of water from the pump-barrel above the piston, screw-caps engaging the outer tube and abutting such heads, and the caps connecting respectively with the suction and discharge pipes of the pump, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 26th day of April, 1889.

CASPER HARWICK.

Witnesses:

A. H. MCCADDEN,
THOS. J. PORTER.