

J. E. Wilson,

Lift Pump.

No. 102458,

Patented Apr. 26. 1870.

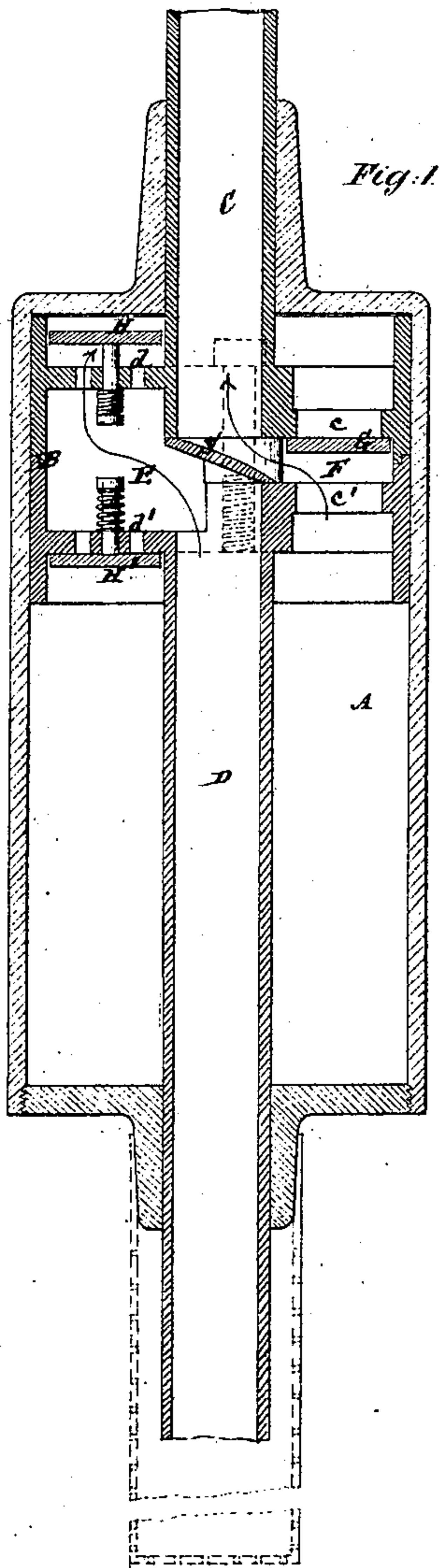


Fig. 1.

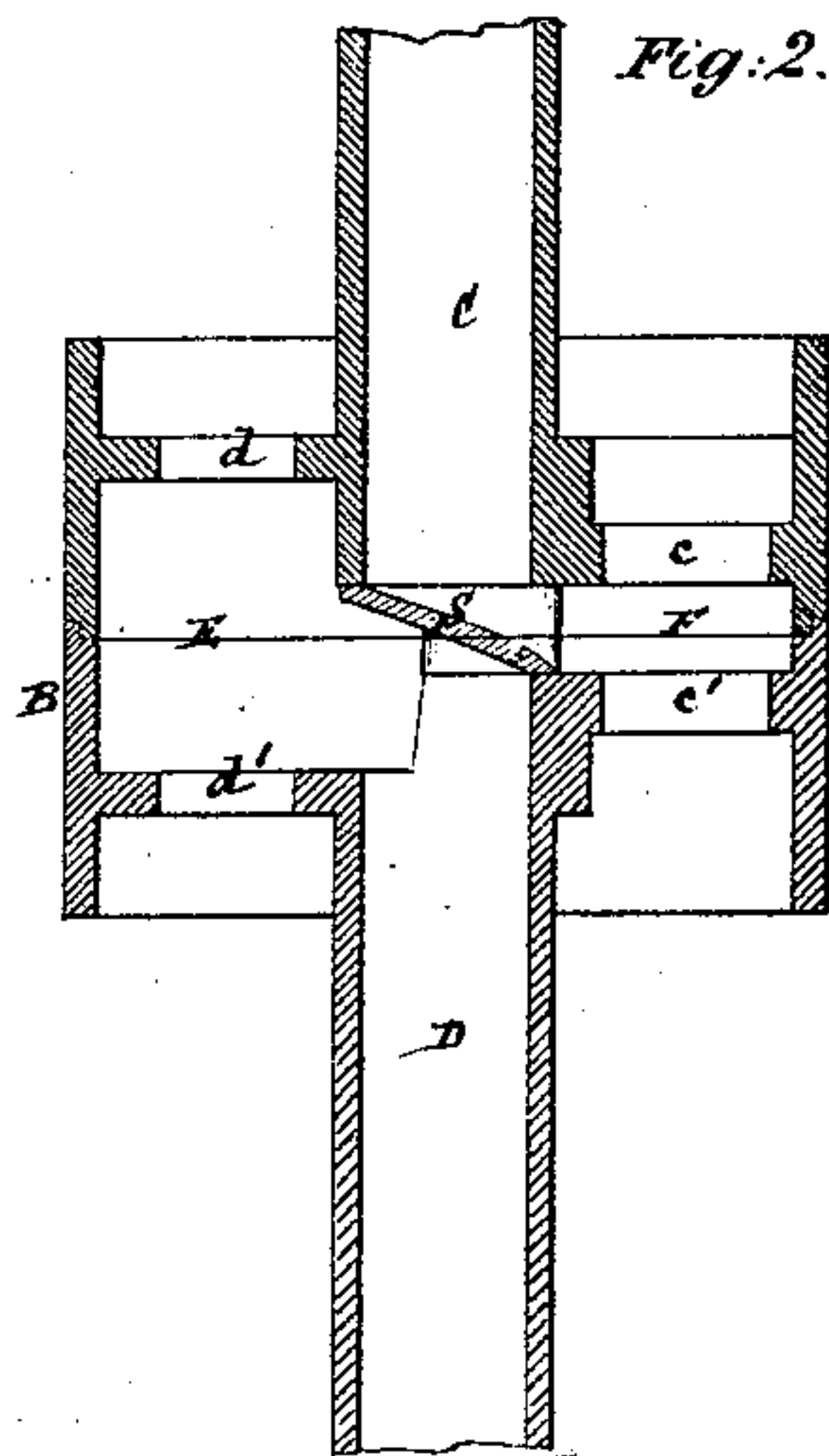


Fig. 2.

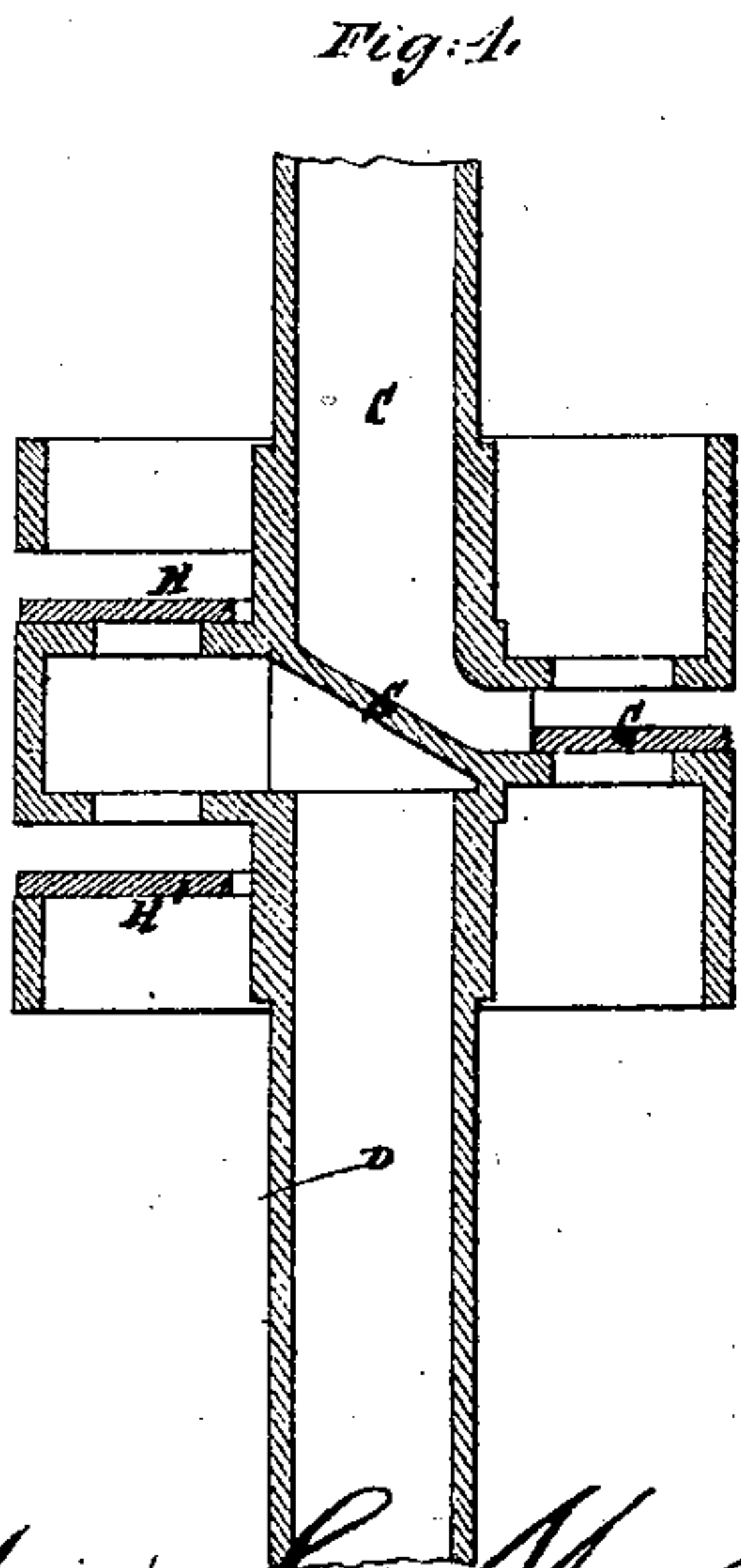


Fig. 4.

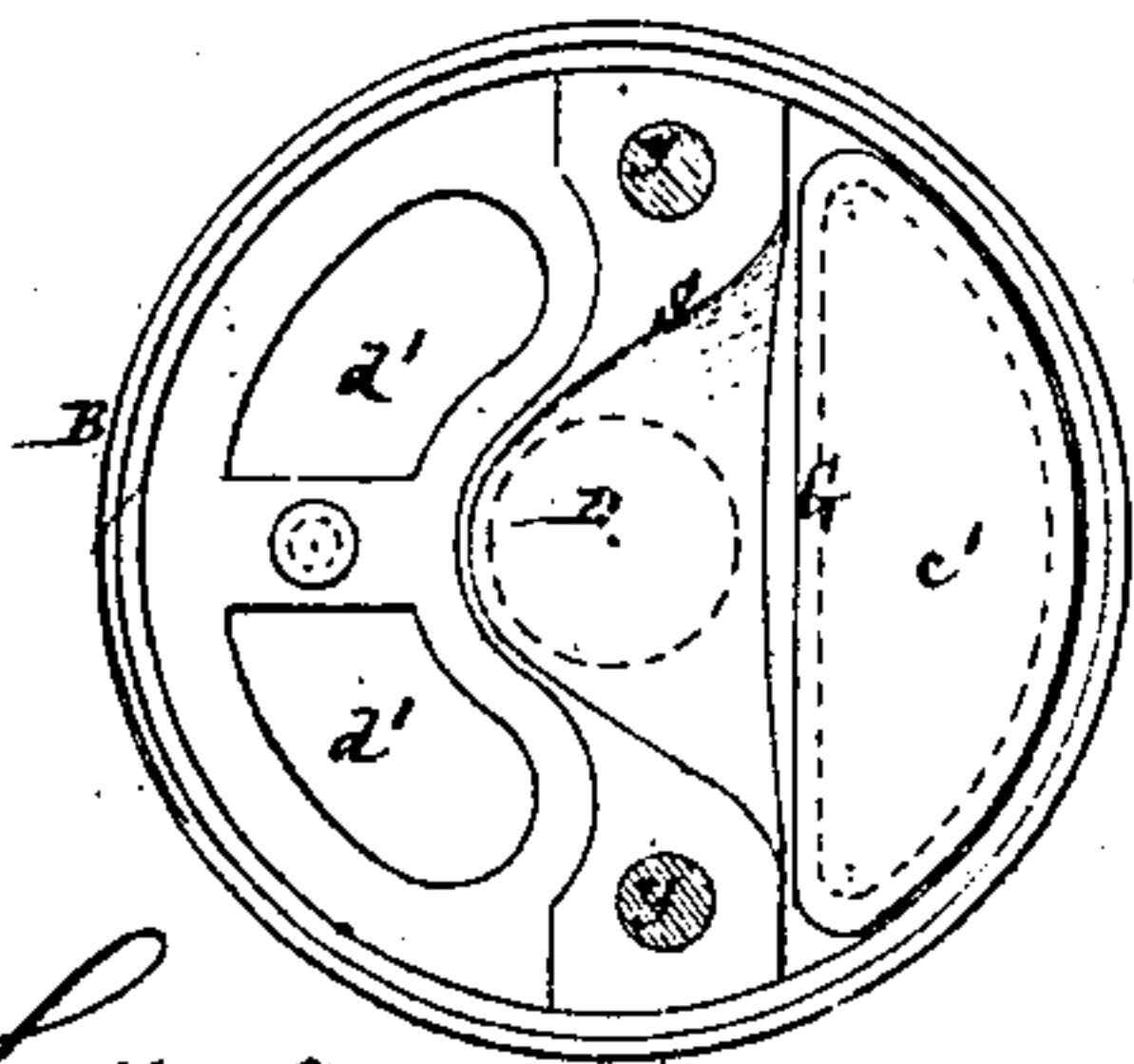


Fig. 3.

Witnesses:

Fred. Haynes
R. E. Raben

Jas. E. Wilson.
per J. W. Combs & Co.
Attorneys

United States Patent Office.

JAMES EDWARD WILSON, OF BRIDGEPORT, CONNECTICUT.

Letters Patent No. 102,458, dated April 26, 1870.

IMPROVEMENT IN PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES EDWARD WILSON, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Double-acting Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings forming part of this specification.

My invention relates to an improvement in double-acting pumps, whereby the water or other fluid enters through an induction-pipe connected with the piston, and is discharged through an eduction-pipe, also connected with the piston, it being unnecessary to provide the pump-cylinder with any valves or ports whatever, or with any side-passage; and

My invention consists in the combination, with a valveless or portless cylinder, of a piston, provided with a tubular stem or rod, forming induction and eduction-passages and valves, so constructed, arranged, and operating, that the pumps will be kept supplied, above and below the piston, with the liquid drawn through the said induction-pipe, and discharged through the said eduction-pipe, the valves in the piston doing the entire work of lifting and discharging the liquid under pressure, whereby I provide a very efficient double-acting pump, of a simple construction, that can be worked either in a vertical, horizontal, or other position, by simply reciprocating either the cylinder, or the piston and pipes.

In the accompanying drawing—

Figure 1 is a vertical central section of a pump constructed according to my improvement.

Figure 2 is a vertical central section of the piston thereof.

Figure 3 is a transverse central section of the said piston.

Figure 4 is a vertical central section of a pump-piston, showing a modification of the arrangement of the valves.

Similar letters of reference indicate corresponding parts.

A designates a pump-cylinder or barrel, which is constructed without any valve-openings or valves whatever. It is, however, provided at each end with an opening, through which openings pass, at the one end, an induction or suction-pipe, D, and at the other end an eduction or discharge-pipe, C, the said induction and eduction-pipes being connected to opposite ends of a hollow piston, B.

There is no direct communication between the pipe D and pipe C, the same being prevented, in the present instance, by a partition, S.

The piston B, upon one side, carries two outwardly-opening valves, H H', by means of which liquid is supplied to the pump-cylinder above and below the piston as it moves up and down.

In the present instance, the side of the piston just referred to, is provided with a chamber, E, and the top and bottom walls of this chamber are provided with openings or ports, *d* and *d'*, respectively, and the outer faces of these walls constitute seats for the valves H H', and these valves, H and H', are shown as provided with stems, which pass through said walls, and as furnished with springs to assist them in immediately closing their respective ports, after being forced therefrom by the pressure of the water.

But I will here remark, that the precise arrangement of these valves, H and H', may be considerably varied, and may be used without stems and without springs; if without stems, a lug or projection upon the piston-pall or pipe, or both, would control the extent of their motion, and pins or screws, as at *y y*, fig. 3, would keep the valves from moving laterally out of place.

The other side of the piston B is provided with a valve, G, which, alternately, as the piston rises or descends, opens or closes a port, *c'*, or *c*, and thereby permits the discharge of the liquid contained in the cylinder above or below the piston, as the case may be, through one and the same discharge-pipe, C.

A modification in the manner of arranging the valves H H', and G, is shown in fig. 4. In this instance, the said valves are inserted in side-openings in the piston, and they are controlled and kept in place by the walls of the openings and by the inner surface of the pump-cylinder; but the method of introducing valves at the side of a piston, I do not claim.

The piston in figs. 1 and 2 is shown as made in two parts, held together by screws, or otherwise, and the partition S as a separate piece, held in a similar manner; but in fig. 4, the piston is shown as cast in one piece, the partition S being cast with it, in a manner well known to those skilled in the art.

The operation of the pump may be briefly stated to be as follows, (refer to fig. 1.)

Upon the downward stroke of the piston, the water causes the valve G to close the port *c'*, and, passing through the port *c'*, is discharged through the pipe C. In the meantime, the water in the cylinder keeps the valve H' closed tightly against the port *d'*, and a vacuum being created above the piston, causing the water to rush up through the pipe D, opens the valve H, and, passing through the port *d*, fills the space behind the piston. The reverse of this takes place upon the upward stroke of the piston.

When muddy water or liquid containing foreign substances is to be discharged, a strainer or perforated pipe may be employed, as shown in fig. 1 in dotted lines.

My invention provides a double-acting continuous stream, lift, and force-pump, of a simple construction,

and very efficient in operation, and one that may be used out of or submerged in liquid, and may be operated either by moving the cylinder back and forth upon the pipes C and D, (the said pipes being stationary, or by reciprocating said pipes in the cylinder A, (the latter, in such case, being stationary,) and the cylinder A may be in either a vertical, horizontal, or other position. My pump will be found admirably adapted for use in artesian-wells, as, in such case, the pump-cylinder, with its piston complete, may be passed down the bore of such wells. It is also well adapted for pumping beer or other effervescent liquors; in such cases, when the liquor is in such state that it will discharge itself without being pumped up, as, for instance, like new beer, the said liquor will raise the valve H, pass through the port *d*, and through pipe C, all the working-parts, in such case, being at rest; and when the liquor ceases to flow of its own volition, the pump is ready for operation.

The pump, when used in an oil-well, provides, by reason of the construction of its valves, a ready escape of gases, in the same manner as described with reference to beer.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the pipes C and D and piston B, of the valves H H', and G, substantially as herein specified.

2. A pump-piston, constructed with ports *d d* and *c c'*, and partition S, substantially as herein specified.

3. The combination of the valveless cylinder A, piston B, pipes C and D, valves H H', and G, and partition S, substantially as herein specified.

JAMES EDWARD WILSON.

Witnesses:

JAMES WILSON,

GEORGE S. MORRIS.