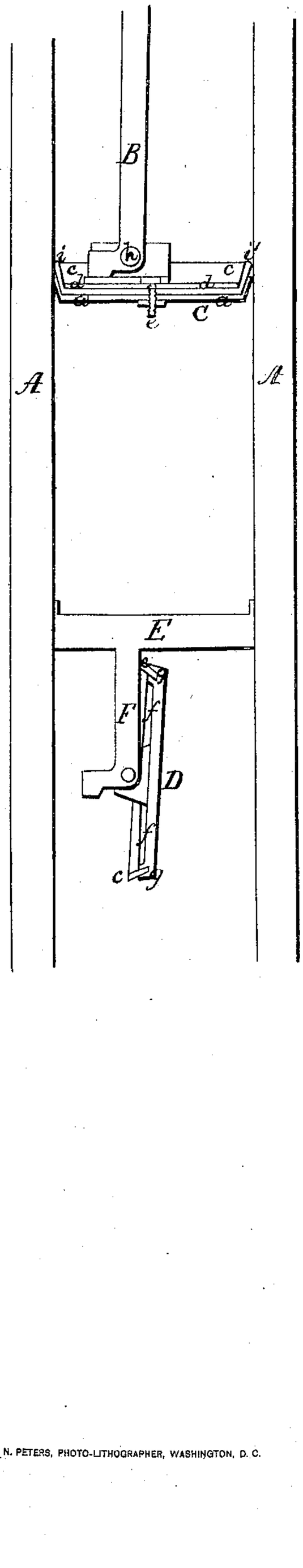
J. Clark,

Pump Piston.

No. 2,317. Patented Oct. 11, 1841.



UNITED STATES PATENT OFFICE.

JOHN CLARK, OF PORTSMOUTH, VIRGINIA.

CONSTRUCTION OF THE VALVES AND PISTONS OF PUMPS.

Specfication of Letters Patent No. 2,317, dated October 11, 1841.

To all whom it may concern:

Be it known that I, JOHN CLARK, of Portsmouth, in the county of Norfolk and State of Virginia, have invented an Improvement in the Manner of Constructing the Valves and Pistons of Pumps for Raising Water and other Fluids; and I do hereby declare that the following is a full and exact description thereof.

In my improved manner of constructing the valves and pistons of pumps, the piston is made to perform the double office of a piston and a valve; and the lower valve, or box, is formed in the same manner with the piston, the only difference between the two being that said lower box operates as a valve only, retaining its proper situation in the barrel.

In the accompanying drawing, I have given a vertical section of a part of a pump, showing the upper and lower boxes.

A, A, is the pump-tree, or body of the pump. B, is the piston rod, and C, the piston.

D, is the lower box.

The piston C, is represented as formed by making a metal dish *a*, *a*, of nearly the diameter of the box of the pump, and placing within this a piece of leather *c*, *c*, which is confined within the dish *a*, *a*, by means of a disk of metal *d*, *d*, through which, and through the leather and the dish, passes a small screw bolt *e*. The leather *c*, *c*, rises above the edge of the dish *a*, *a*, and constitutes the packing of the piston.

The box, or valve, D, may be made in the same manner, but it is represented as formed of a single piece of metal *f*, *f*, cast in the form of a dish, and having a groove cut in its edge at *g*, *g*, for the insertion of the leather *c*, *c*, which may be held in place by the closing of the metal upon it; the former modes of leathering, or packing, as shown at C, I prefer, as being most easily repaired.

The piston rod is attached to the piston by a joint pin at *h*, which joint pin is not in the center of the piston, being nearer to the side *i*, than to the side *i'*; the consequence of which will be that as the piston descends, the side *i'*, will be raised above the side *i*, and allow a water way proportioned to the resistance with which it meets. When at rest, the piston will again become horizontal by its own gravity, and will, in ascending, perform its proper office as such.

E, is a bar which supports the lower box D, said bar extending across, and being fastened to, the body of the pump; to a rod, or bar, F, making a part of the bar E, the valve D, is attached by a joint pin, in the same manner in which the piston C, is attached to the piston rod; and its operation will, of course, be similar. The valve, or box, D, is represented in the drawing as opened to its fullest extent, which would happen when the piston was being raised rapidly, and in this case nearly the whole capacity of the barrel will become water way. When the piston is worked less rapidly, the valve would be opened to a smaller distance; the valve and piston thus become self-adapting in this particular, and admit of a more free passage of water than can be obtained by valves as ordinarily constructed.

Valves and pistons made upon this principle are applicable, equally, to pumps of a large or of a small size; they may be employed in pumps for ships, or in those used to pump liquids from a hogshead, or barrel. They may be applied to forcing, as well as to lifting, pumps. When applied to the former, the piston rod may work through a stuffing-box in the top of the pump barrel, and the opening into the rising main be above the piston.

Having thus fully described the nature of my improvements in the valves and pistons of pumps, and shown the operation thereof; what I claim as new therein, and desire to secure by Letters Patent, is—

The attaching of the said pistons and valves, the former to the piston-rod, and the latter to a rod, or bar, of metal, by a joint pin, out of their centers, by which they will be enabled to tilt, and allow the passage of water upward, and will resume their horizontal position when the water, or other liquid, is not ascending within the pump; the said valve being made so as to occupy the whole section of the barrel of the pump, and the arrangement and operation of the respective parts being substantially such as are herein described and made known.

JOHN CLARK.

Witnesses:
THOS. P. JONES,
M. E. JONES.