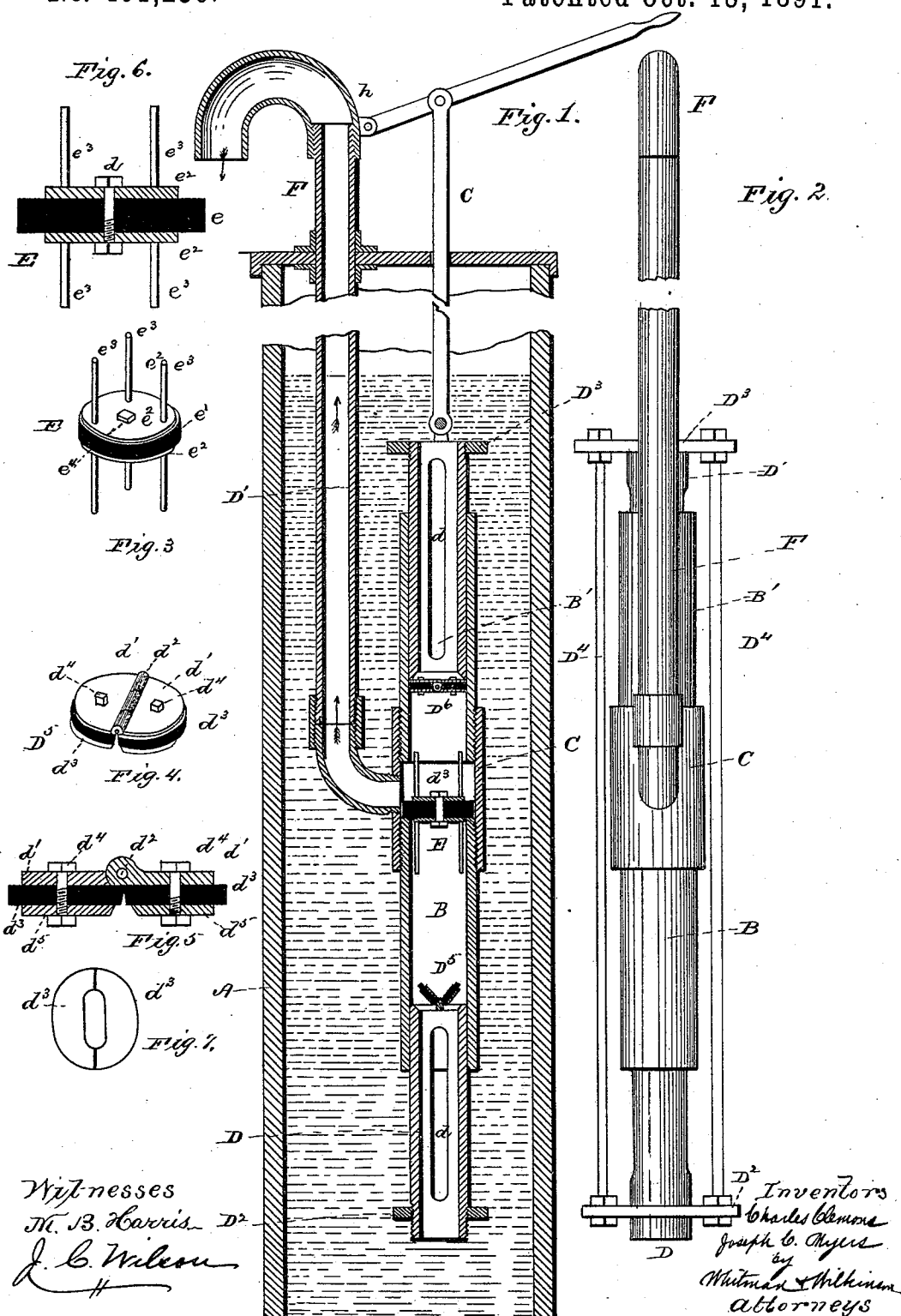


(No Model.)

C. CLEMONS & J. C. MYERS.
DOUBLE ACTING FORCE PUMP.

No. 461,236.

Patented Oct. 13, 1891.



UNITED STATES PATENT OFFICE.

CHARLES CLEMONS AND JOSEPH C. MYERS, OF CLINTON, ILLINOIS.

DOUBLE-ACTING FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 461,236, dated October 13, 1891.

Application filed July 2, 1891. Serial No. 398,300. (No model.)

To all whom it may concern:

Be it known that we, CHARLES CLEMONS and JOSEPH C. MYERS, citizens of the United States, residing at Clinton, in the county of De Witt and State of Illinois, have invented certain new and useful Improvements in Double-Acting Force-Pumps; and we 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 appertains to make and use the same.

Our invention relates to double-acting force-pumps; and it consists of certain novel parts and combinations of parts, herein described and claimed.

Reference is had to the accompanying drawings, wherein the same parts are indicated by the same letters.

Figure 1 represents a central sectional elevation of our improved pump. Fig. 2 represents a side view of the pump, looking to the right, as shown in Fig. 1. Fig. 3 represents a perspective view of the central double-acting valve. Fig. 4 represents a perspective view of the valves in the double piston. Fig. 5 represents a cross-section of one of these valves. Fig. 6 represents the leather or rubber pieces used in said valves. Fig. 7 represents a plan view of the rubber or leather pieces in the valves D⁵ and D⁶.

A represents the reservoir of water, in which the pump-barrel should be wholly submerged.

B and B' are the two sections of pipe, which are screwed into the sleeve C. These three cylindrical sections B, B', and C constitute the barrel of the pump.

In the enlarged chamber C the valve E is situated. This valve consists of a central disk *e*, of rubber or leather, held between two metal plates *e*² by means of the nut *e*⁴. This disk is larger than the two metal plates, in order to give a leather bearing for the valve on the inner ends of the pipes B and B'. The guide-rods *e*³ are attached to one of these plates and pass through holes in the central disk and in the other plate. By having several of these guide-rods, preferably three, the valve E is well steadied and kept from tilting to one side. The discharge-pipe F opens into the center of the chamber C. In the sections B and B' are the pistons D and D', connected

together by means of the cross-heads D² and D³ and yoke-rods D⁴. The upper cross-head D³ is connected at the outer ends to the pump-handle H, pivoted at *h* to the discharge-pipe F. These pistons are open at the outer ends, and have one or more slots *d* for the entrance of water from the sides as well as from the ends. At the inner ends of the said piston the valves D⁵ and D⁶ are attached. These valves consist of two semicircular metal plates hinged together and held by the pin *d*², which is secured across the end of the piston. Outside of these hinged plates the rubber or leather pieces *d*³, shaped as shown in Fig. 6, are secured between the said hinged plates and the outer plates *d*⁵ by means of the bolts *d*⁴. The two pieces of rubber or leather *d*³ should preferably be cut out at the center *d*⁶ to diminish the friction. The said leather or rubber should lap over the outer plates enough to give a leather bearing to the valve on the valve-seat.

The operation of our device is as follows: On the downstroke the valve D⁶ closes, the valve E falls to its lower seat, as shown in Fig. 1, and the water is forced from the upper side of the chamber C through the delivery-pipe F, while at the same time the valve D⁵ is open and the pipe B is filling with water. On the upstroke the valve D⁵ is closed, the valve E lifted to its upper seat, and the water is forced from the lower side of the chamber C into the pipe F, while the pipe B' is filling ready for the downstroke. Thus it will be seen that the pump is double-acting. The pump also acts as a "self-bleeder," which is particularly desirable, for if water remain in the pipe F in summer it is liable to become tepid and in winter to be frozen. This self-bleeding action of the pump is as follows: Stop the pump-handle at the end of the downstroke. The inertia of the water above the valve D⁶, supplemented by the weight of the valve and the suction created by the moving column of water in F, which does not instantly come to a standstill, forces the valve D⁶ open, and the water, soon beginning to run back from F, passes upward in the chamber C at such an angle as to keep one side of the valve D⁶ open, when the water in F⁶ will soon find the level of the reservoir.

We are aware that a patent, No. 372,953, has been issued to Beeson for a submerged double-acting force-pump somewhat similar to mine; but his pump is not a self-bleeder, and in many important details, notably the construction of the valves, is essentially different from the pump herein described and claimed.

It will be seen that all the parts of the herein-described pump may be readily made or repaired at any gas-fitter's shop, while the facility with which the leather packing may be removed and adjusted makes the only repairs ordinarily required simple in the extreme.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In a submerged double-piston double-acting force-pump, the combination, with the two systems, substantially as described, of the cylinders B and B', the sleeve C, connecting the same, the discharge-pipe F, opening into the center of the said sleeve, and the

valve E, having two metal disks e^2 , connected together by the bolt e^4 and inclosing the disk e^1 , of rubber or leather, the latter disk having a greater diameter than the said metal disks, with the guide-rods e^3 , substantially as described.

2. In a double-acting double-piston submerged force-pump of the character described, a valve E, having two metal disks e^2 , smaller in diameter than the interior of the cylinders for the pistons, inclosing a leather disk larger in diameter than the interior of the said cylinders, with a bolt for holding said disks together, and a guide rod entering said piston-cylinders, as and for the purposes described.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES CLEMONS.
JOSEPH C. MYERS.

Witnesses:

WILBUR M. CARTER,
H. C. HILL.