

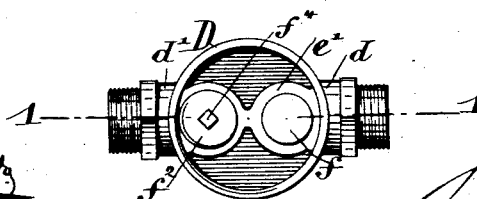
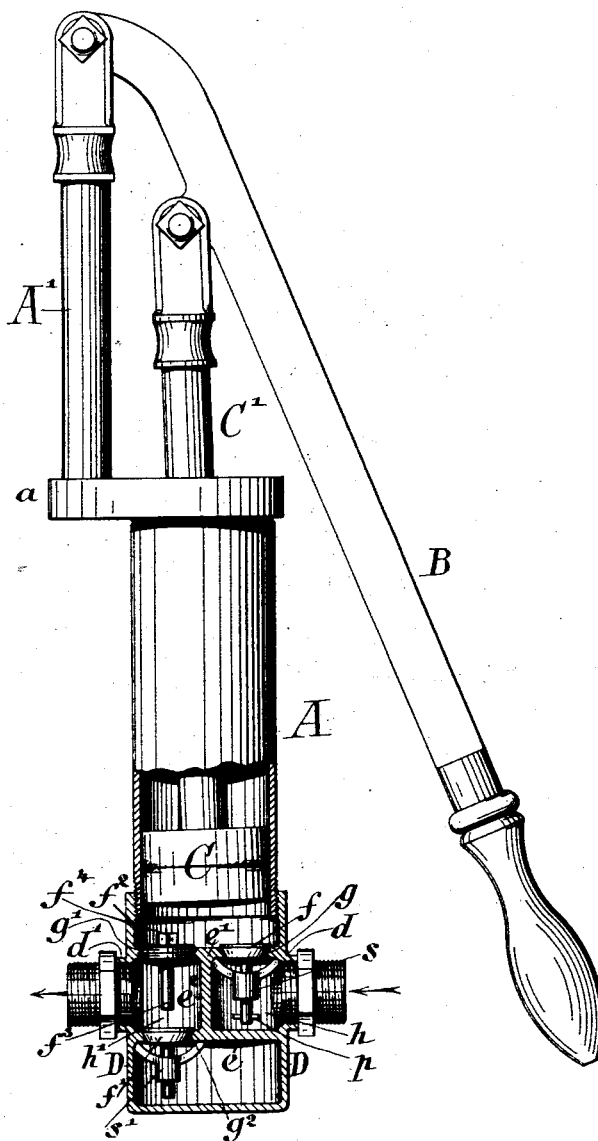
(No Model.)

J. H. LAWLESS.  
PLUMBER'S SUCTION AND FORCE PUMP.

No. 525,556.

Patented Sept. 4, 1894.

*Fig. 1.*



WITNESSES:  
*S. P. P. Talbot*  
*Geo. S. Whitlock*

*Fig. 2.*

INVENTOR  
*John H. Lawless*  
BY  
*George C. Paege*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

JOHN H. LAWLESS, OF JERSEY CITY, NEW JERSEY.

## PLUMBER'S SUCTION AND FORCE PUMP.

SPECIFICATION forming part of Letters Patent No. 525,556, dated September 4, 1894.

Application filed April 7, 1894. Serial No. 506,700. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. LAWLESS, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Plumbers' Suction and Force Pumps, of which the following is a specification.

This invention relates to an improved suction and force pump, which is mainly intended for the use of plumbers in pumping out and cleaning basins, and which is also adapted for other purposes in a which a compact, durable and effective hand-pump is required; and the invention consists of a suction and force pump, which comprises a pump-cylinder, a piston within the same, and a base-portion or shoe which is provided with inlet and outlet-ports at diametrically opposite points, horizontal webs extending diametrically above and below the said ports, connecting webs between the upper and lower webs, openings in the upper web respectively for the inlet-valve and the removable screw-plug, and an opening in the lower web for the outlet-valve, said screw-plug being provided with a center-pin for limiting the motion of the outlet-valve, and with a square head for permitting the insertion and removal of the screw-plug. The invention consists further in the construction of the shoe, with its diametrical webs, the upper web being provided with two openings respectively for the inlet-valve and the detachable screw-plug, and the lower web being provided with an opening for the outlet-valve below the opening for the plug in the upper web, as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings,—Figure 1 represents a side-elevation of my improved suction and force pump, partly in vertical section on line 1, 1, Fig. 2, and Fig. 2 is a plan-view of the base-portion or shoe of the pump, shown as detached from the cylinder.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the cylinder of my improved suction and force pump, to the upper end of which is attached an open head  $\alpha$  which projects at one side beyond the cylinder, said head supporting a post

A', to the upper end of which a hand-lever B is pivoted. The hand-lever B is further pivoted to the upper end of the piston-rod C', to the lower end of which the piston C is applied. The piston is formed of suitable yielding cup-leathers, so as to fit snugly and yet movably within the cylinder and "give" sufficiently to the oscillations of the piston-rod in following the up and down strokes of the handle B the head  $\alpha$  being of course sufficiently open to that end.

To the exteriorly-threaded end of the cylinder A is screwed the base-portion or shoe D of the pump, which is made in one casting and is provided with an interior screw-thread at its upper end, it being further provided, at diametrically opposite points, with inlet and outlet-ports  $d$   $d'$ , into which the screw-couplings for the inlet and outlet-hose are screwed.

At the interior of the shoe D are arranged two transverse or horizontal webs  $e$   $e'$ , which are made of the shape of the figure 8, said webs extending diametrically, respectively above and below the inlet and outlet ports  $d$   $d'$ , across the shoe, and being connected by curved webs  $e^2$  that correspond to the outlines of the webs  $e$   $e'$ , and form thereby two cylindrical chambers  $h$ ,  $h'$ , of which chamber  $h$  communicates with the inlet-port  $d$  and the other chamber  $h'$  with the outlet-port  $d'$ , while the space at both sides of the chambers forms the communication between the cylinder A and the lower part of the shoe D. The upper web  $e'$  is provided with two openings  $g$  and  $g'$ , the former for the inlet-valve  $f$  and the latter for a screw-plug  $f^2$ , which is screwed into the opening  $g'$  and provided with a fixed downwardly-extending center-pin  $f^3$  having a square head  $f^4$  above the plug, for permitting the ready insertion or removal of the plug  $f^2$ . The pin  $f^3$  serves for limiting the motion of the outlet-valve  $f'$ , which is arranged in the bottom opening  $g^2$  of the compartment corresponding with the outlet-port  $d'$ . The stems of both the inlet and outlet-valves  $f$ ,  $f'$ , are guided in sleeves  $s$ ,  $s'$  arranged below the seats of the valves, the stem of the inlet-valve being provided at the lower end with a transverse pin or key  $p$ , which limits the play of the valve. As the inlet-valve  $f$  is arranged in the upper web  $e'$  and the outlet-valve  $f'$  in

the lower web *e*, they are located at different levels to each other, one above the inlet-port *d* and the other below the outlet-port *d'*.

When the piston is operated, the water or other liquid to be pumped is drawn through the inlet-port into the chamber *h* below the inlet-valve *f*, from the same into the cylinder A, and is then forced by the downward stroke of the piston to the lower part of the shoe D, whence it is forced through the outlet-valve into the chamber *h'* between the outlet-valve and the plug *f*<sup>2</sup>, to the discharge-hose. The inlet and outlet-valves are thus arranged closely together in the shoe, are fully protected by the same, and respond in an effective manner to the strokes of the pump-piston. The inlet-valve *f* is dropped from the top into the inlet-chamber and then the transverse pin *p* passed through the lower end of its stem. The outlet-valve *f'* is dropped into position through the opening in the upper web, after the screw-plug *f*<sup>2</sup> is removed, its motion being limited by the stop-end of the plug after the latter is screwed in position. On removing the shoe from the cylinder, and removing the plug and the screw-couplings, ready access is given to the valves and the interior chambers of the shoe, so as to readily clean or repair the same in case it should be necessary.

My improved suction and force pump can be manufactured at a low price, and forms a very durable and effective hand-pump, which is especially adapted for plumbers' use, as the same can be readily taken from place to place and is adapted in a high degree to the special requirements of the plumber's trade. The base-portion or shoe may be used by those familiar with the art of plumbing as a valve-box in connection with the water-tanks, air-chambers, &c.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a pump-cylinder and piston, of a base-portion or shoe attached to the cylinder, said shoe being provided with inlet and outlet ports at diametrically opposite points, horizontal webs respectively above and below said ports, connecting walls between said webs, forming an inlet and an outlet chamber, an inlet-valve arranged in the upper web, an outlet-valve arranged in the lower web, and a screw-plug having a center-pin screwed into an opening of the upper web in line with the opening for the outlet-valve, so as to permit the dropping in of the latter and limit the motion of the same, substantially as set forth.

2. A base-portion or shoe for a suction and force pump, provided with inlet and outlet-ports at diametrically opposite points, horizontal webs extending diametrically respectively above and below said ports, and connecting walls between said webs, the upper web being provided with two openings, one for the inlet-valve and the other for a screw-plug, and the lower web with an opening for the outlet-valve below the screw-plug, substantially as set forth.

3. The combination, with a pump-cylinder and piston, of a base-portion or shoe attached to the cylinder, said shoe being provided with inlet and outlet ports at diametrically opposite points, horizontal webs respectively above and below said ports, connecting walls between said webs forming an inlet and an outlet chamber, and valves arranged in said webs and controlling the passage of fluid from and into said chambers, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOHN H. LAWLESS.

Witnesses:

PAUL GOEPEL,  
K. R. BRENNAN.