

(No Model.)

J. H. LAWLESS.
SUCTION AND FORCE PUMP.

No. 510,180.

Patented Dec. 5, 1893.

Fig. 1.

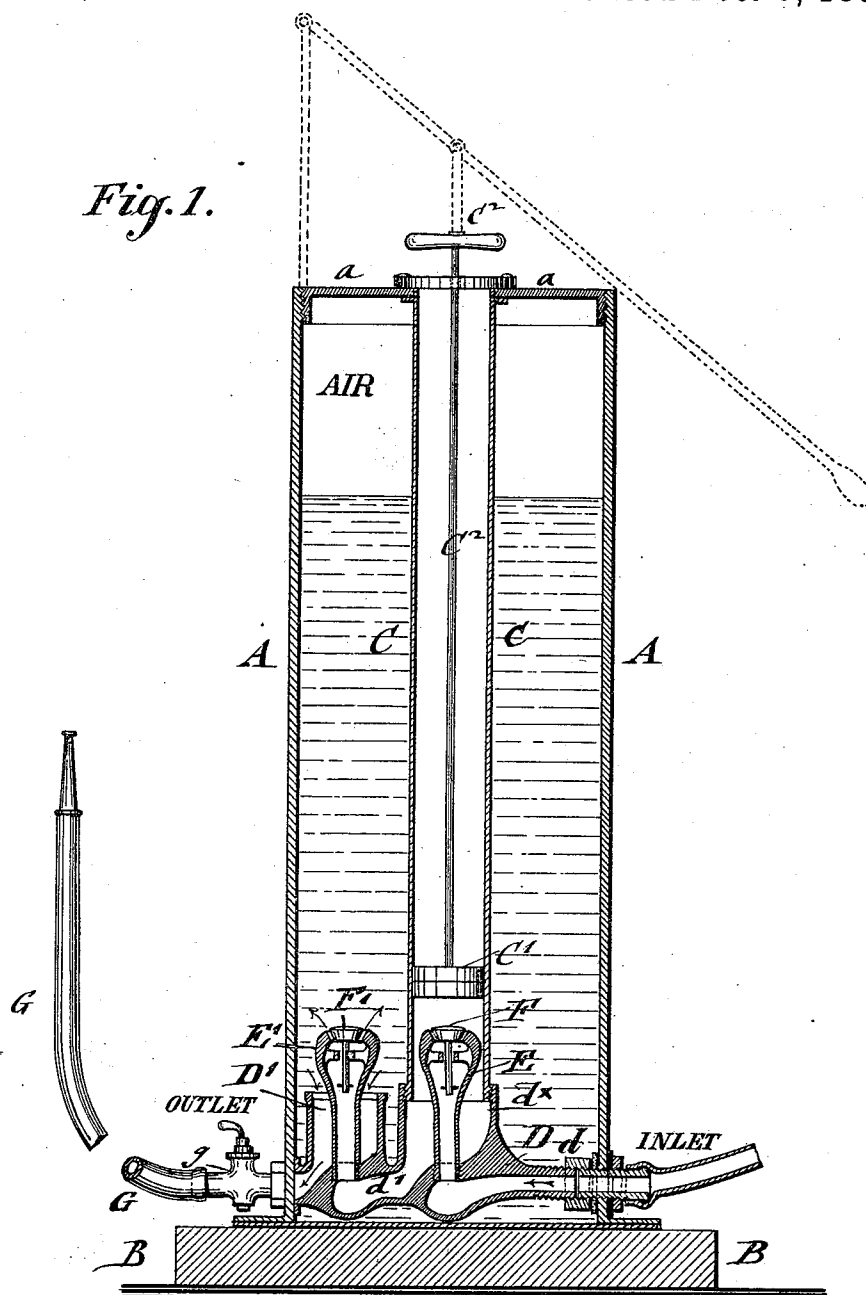
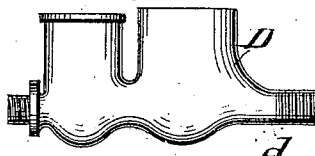


Fig. 2.

WITNESSES:
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SUCTION AND FORCE PUMP.

SPECIFICATION forming part of Letters Patent No. 510,180, dated December 5, 1893.

Application filed March 14, 1893. Serial No. 465,932. (No model.)

To all whom it may concern:

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

This invention relates to an improved suction and force-pump, which is intended to be used for sprinkling purposes, raising water, for extinguishing fire and for other purposes around the house; and the invention consists of a suction and force pump which comprises a closed receptacle, a closed cylinder in said receptacle, a shoe to which the cylinder is secured, a piston in said cylinder, means for operating the said piston, a valved-induction pipe extending from the shoe into the lower part of the cylinder, a second valved induction pipe communicating with the outlet-channel of the shoe, and an upwardly projecting open cylinder extending into the receptacle and surrounding the second induction-pipe and being connected by an outlet-channel with the discharge-pipe of the pump, as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1, represents a vertical longitudinal section of my improved suction and force-pump, and Fig. 2, is a detailed section of the base or shoe which forms the support of the valved induction pipes and the cylinder of the pump.

Similar letters of reference indicate corresponding parts.

Referring to the drawings A represents a cylindrical vessel or receiver, which is attached by means of a bottom flange or ears to a base-block B. The upper end of the receiver A is closed by a tightly-fitting cover *a*, into the central opening of which a pump-cylinder C is inserted, the lower end of the cylinder being secured into the interiorly-threaded middle-portion *d* of a shoe D that is attached to the lower part of the receiver A. The piston C' is provided with a piston-rod C² that is passed through the top of the cylinder to the outside of the same, said piston-rod being provided with a handle, operating lever or other suitable device at the upper end, so as to be reciprocated in the cylinder C. The shoe D is provided with an inlet

channel *d*, which corresponds with a suitable hose or pipe and with a second open cylindrical portion D' which communicates with the middle-portion to which the cylinder C is secured by an intermediate channel *d'*. Within suitable openings the substantially horizontal webs of the cylindrical portion *d* and D' are secured two induction-pipes E E' which are both provided with valves F F' the stems of which are guided in suitable sleeves in the interior of said pipes and retained by the means of stoppers. The induction-pipe E extends into the lower part of the cylinder C and is arranged in line with the axis of the same, while the second induction-pipe E' extends through the cylindrical portion D' into the receiver. The discharge pipe G is provided with a valve or stop-cock *f* so that the discharge of the water can be interrupted or turned on. The shoe D with its cylindrical portions *d* and D' is preferably cast in one piece and secured by suitable screw-nuts at diametrically-opposite points to the lower part of the receiver A, as shown clearly in Fig. 1.

By constructing the shoe with a cylindrical portion D' that will project sufficiently upward into the vessel or receiver A, a guard is formed which causes the retention of the sediment or deposit in said vessel which might otherwise be forced into and clog up the discharge-pipe G, and which, when the reservoir is stored with water for use for drinking purposes, would render the water less pure.

The operation of my improved suction and force-pump is as follows: By operating the piston, the water is drawn through the valved induction-pipe E into the lower part of the cylinder, and from the same through the intermediate channel *d'* and the second induction-pipe E' into the receiver, the stop-cock of the discharge-pipe being placed into direct position during the preparatory working of the pump. The reciprocating motion of the piston is continued until the body of air in the upper part of the receiver is compressed to such a degree that no more water can be pumped into the receiver. The stop-cock *g* is then opened and the liquid in the receiver is discharged automatically by the action of the compressed air in the upper part of the receiver on the water in the same. When the air has sufficiently expanded so as to exert

no pressure on the water in the receiver, the stop-cock is closed again, the piston again reciprocated and a new charge of water pumped into the receiver, which is then again discharged by the expanding of the compressed air in the upper part of the receiver, and so on alternately. When the action of the pump is to be continuous, instead of intermittent as before described, the motion of the piston is continued after the receiver is filled, so that a continuous stream is discharged owing to the joint action of the compressed air in the upper part of the receiver and the intermittent supply of water to the receiver which replaces the water forced out from the same. As the base or shoe of the pump is made in one casting, my improved pump can be manufactured at a comparatively low price and thus be placed within the reach of all who desire an effective pump for domestic uses, either for extinguishing fires, sprinkling water, lifting water and other purposes.

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

1. The combination of a closed receiver, a pump-cylinder in said receiver, a reciprocating piston in said pump-cylinder, a shoe attached to the lower end of said cylinder and arranged within the lower end of the receiver, a valved induction-pipe extending from the inlet channel of the shoe into the lower part

of the pump-cylinder, a second cylinder or cylindrical portion projecting upwardly from the shoe and opening upwardly into the receiver and communicating with the pump-cylinder, a valved induction-pipe located in the second cylinder, an intermediate channel connecting the pump-cylinder with the second induction-pipe, and a discharge-pipe having a stop-cock connected with the outlet-channel of the shoe, substantially as set forth.

2. In a suction and force-pump, a closed reservoir, a pump-cylinder located therein and provided with a piston, and a base or shoe, comprising two cylindrical-portions, substantially horizontal webs formed in said portions, an inlet-channel at one end located below the web of and communicating with the first cylindrical portion, which latter is connected with the pump-cylinder, an intermediate channel between the said cylindrical-portions, and an outlet-channel above the web of and communicating with the second cylindrical-portion, which latter opens upwardly into the receiver, 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:

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