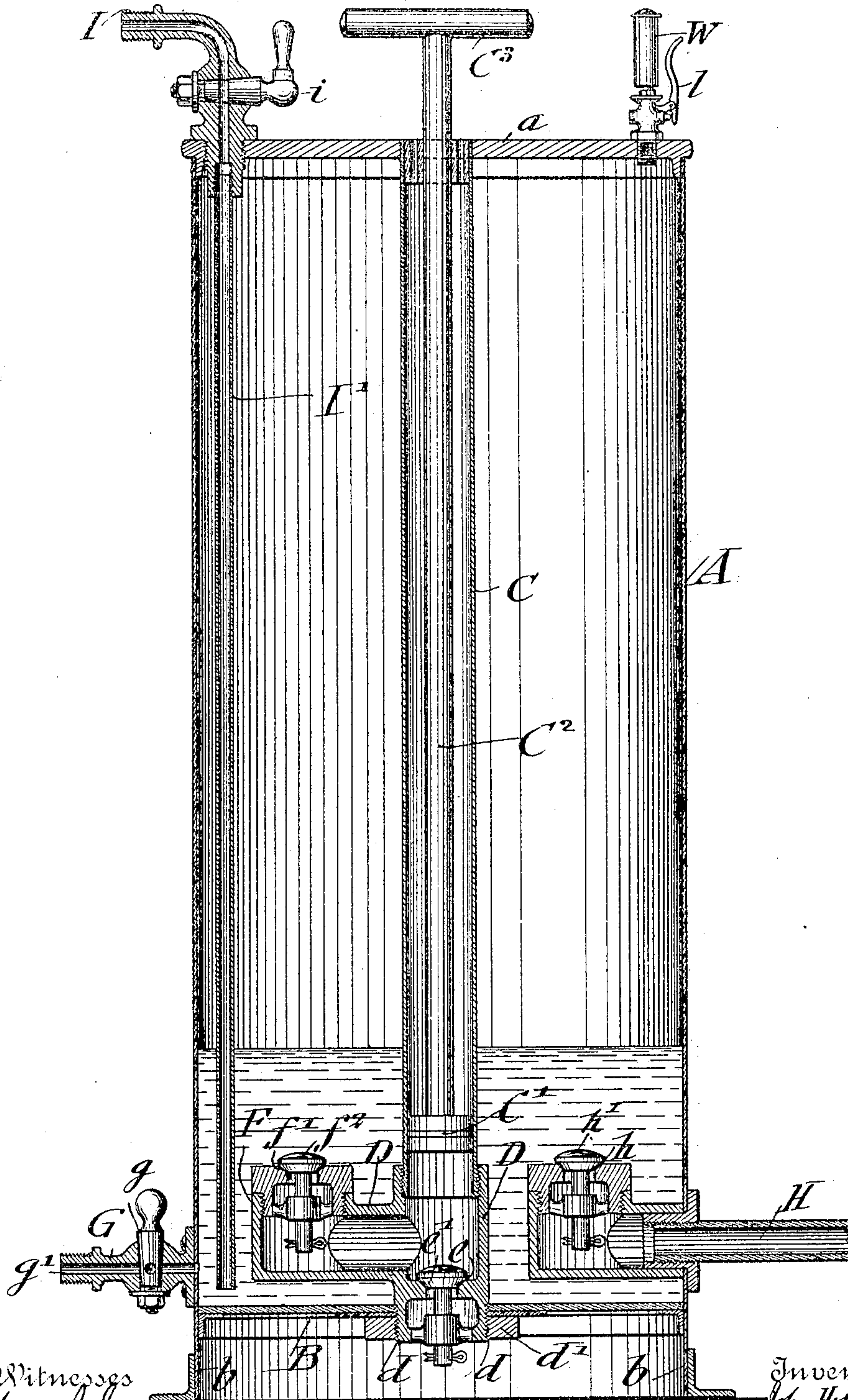


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J. H. LAWLESS.
PLUMBER'S FORCE PUMP.
APPLICATION FILED MAY 28, 1904.

NO MODEL.



Witnesses
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PLUMBER'S FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 775,065, dated November 15, 1904.

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To all whom it may concern:

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

This invention relates to an improved plumber's force-pump which is intended for testing water, gas, and waste pipes, for cleaning them of sediments, removing obstacles, &c., and which can also be used for spraying water for window-cleaning purposes, sprinkling, extinguishing incipient fires, and for other purposes; and the invention consists of a plumber's force-pump which comprises a receiver, a cylinder in said receiver, a piston in said cylinder, a shoe for the lower end of said receiver provided with an air-inlet valve, a valved induction-pipe connected with a lateral channel of the cylinder-supporting shoe, and a valved air-outlet pipe at the upper part of the cylinder.

The invention consists, further, of certain additional details of construction and combination of parts, which will be fully described hereinafter and finally pointed out in the claim.

The drawing represents a vertical longitudinal section of my improved plumber's force-pump.

Referring to the drawing, A represents a cylindrical vessel or receiver, and B the bottom of the same, the receiver being either supported on a rim *b*, extending below the bottom, or on a suitable base-block of wood attached to said rim. The upper end of the receiver A is closed by a cover *a*, which is riveted, screwed, or otherwise attached to the upper end of the receiver. The cover *a* is provided with a central opening, into which a pump-cylinder C is inserted, the lower end of which is secured into an interiorly-threaded shoe D, that is attached by screw-threads *d* and jam-nut *d'* into a central opening of the bottom B. The shoe D is provided at its lower part with a valve-seat *e* and an air-inlet valve *e'*. In the cylinder C is reciprocated a piston C', the piston-rod C² of which passes through the

open upper end of the cylinder to the outside of the same and which is provided with a handle C³ at its upper end. The shoe D is connected, by a lateral channel *f*, with a cylindrical casing F, which is provided with a valve-seat *f'* and an induction-valve *f''*, the latter being guided in the usual manner in the cylindrical casing F. Near the bottom B of the receiver A is arranged a discharge-pipe G for the water in the receiver, said discharge-pipe being provided with a stop-cock *g* and with a discharge bore and nozzle *g'*. Diametrically opposite to the water-discharge pipe G is arranged a water-inlet pipe H, having a valve-seat *h* and valve *h'* at its inner end, the outer end being connected with a faucet or other supply of water under pressure, so as to deliver water from the supply-faucet to the receiver whenever required.

On the cover *a* is arranged an air-discharge pipe I, having a stop-cock *i*. The discharge-pipe I is screwed into the cover *a*, its threaded portion or shank being extended below the cover and provided with an interior screw-thread, into which is screwed the upper threaded end of a detachable water-discharge pipe I', which extends through the receiver to a point near the bottom thereof, as shown clearly in the drawing. This pipe I' is screwed into the air-discharge pipe I after the same is removed from the cover *a* and then inserted into the receiver A by rescrewing the other discharge-pipe I into position in the cover whenever it is desired to force the water through the discharge-pipe I and the hose coupled to the same—as, for instance, when the entire pump is to be placed into a pail of water for the extra supply of water, in which case the lower water-discharge pipe G cannot be used conveniently. When the pump is to be used as an air-pump, the discharge-pipe I is first removed, the pipe I' unscrewed from the same, and the air-discharge pipe I screwed back into position in the cover.

An alarm-whistle W, which is operated by the compressed air in the upper part of the receiver A, is also arranged on the cover and connected with the interior of the receiver. The whistle W is provided with a lever *z*, that is operated whenever an alarm is to be

given. When the compressed air in the receiver is to be used for testing purposes, a hose is applied to the air-discharge pipe I and connected with the waste-pipe or gas-pipe to be tested.

The operation of my improved plumber's force-pump is as follows: The lower part of the receiver is first supplied with a quantity of water sufficient to cover up the valved inner ends of the air and water induction pipes. This water is admitted into the receiver by removing the piston from the cylinder and supplying the water through the open upper end of the cylinder, the water closing the air-inlet valve in the shoe of the cylinder and opening the air-induction valve in the valve-casing connected with the same. The piston is then replaced in the cylinder and operated so as to draw in a sufficient quantity of air into the receiver until a certain pressure in the space above the water-level is established. The water-supply pipe H is then connected with a house-faucet and water under pressure of the main supplied to the interior of the receiver until an equilibrium of pressure between the water and the compressed air in the upper part of the receiver is produced. The operation of the piston is then continued, so that air is sucked in with each up-stroke and forced with each downstroke through the air-induction valve f^2 and the water above the same into the air-space of the receiver. The water-discharge pipe G is then opened and the water forced into the waste, gas, or other pipe to be tested, or it can be used for spraying or sprinkling purposes, until the contents of the receiver are exhausted. As soon as the pressure of the air in the air-space of the receiver is reduced below the pressure of the water supplied from the faucet water is again supplied to the receiver until an equilibrium of pressure is again reestablished between the body of water and the compressed air above the same, after which the pumping action of the piston is repeated, an additional quantity of air sucked in, and the water forced by the pressure of the air through the discharge-pipe G and the hose connected thereto. The same operation takes place when the pipe I' and the discharge-pipe I are used for ejecting air. The pipe I' is removed from the receiver when the pump is to be used as an air force-pump. In this case the supply of water to the valved water-inlet pipe is discontinued and air pumped into the

receiver by the operation of the plunger until a high pressure is established in the air-space of the receiver above the water-level in the same. Inasmuch as a certain quantity of water is always retained in the receiver for covering the valves e and h , a higher pressure can be established in the receiver owing to the water seal formed over the air-induction valve, which water seal not only assists in the tight closing of the valve, but also in the lubricating and tight fitting of the piston. When the required high pressure is established in the receiver, the air-discharge pipe I is connected with the pipe to be tested, the stop-cock i opened, and the air under pressure permitted to enter into the pipe to be tested, the pumping of air being kept up by the attendant so as to force a sufficient quantity of air from the receiver into the pipe, so as to establish the required testing pressure in the same. When it is desired to give signals—as, for instance, for calling the helper at the other end of the pipe to be tested or for calling assistance in case of fire or for other purposes—the lever of the whistle is operated so that piercing signals are given by the same.

As the pump can be used for testing pipes, cleaning them from sediments, removing obstructions, &c., either by the pressure of water forced into the pipes or by compressed air forced into the same, it forms a combination-pump of great usefulness for plumbers, which also can be used for spraying water for cleaning store-windows, for sprinkling water, for extinguishing incipient fires, and for other purposes.

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

A force-pump, comprising a receiver, a cylinder in said receiver, a piston in said cylinder, a shoe supported on the bottom of the receiver and connecting said cylinder with said receiver, an air-inlet valve in said shoe, an air-induction valve in said shoe, a water-supply pipe, a water-supply valve in said supply-pipe within the receiver, and a valved water-discharge pipe for said receiver.

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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