

No. 894,798.

PATENTED JULY 28, 1908.

W. P. LOCKE.  
SIPHON.

APPLICATION FILED OCT. 10, 1907.

Fig. 1.

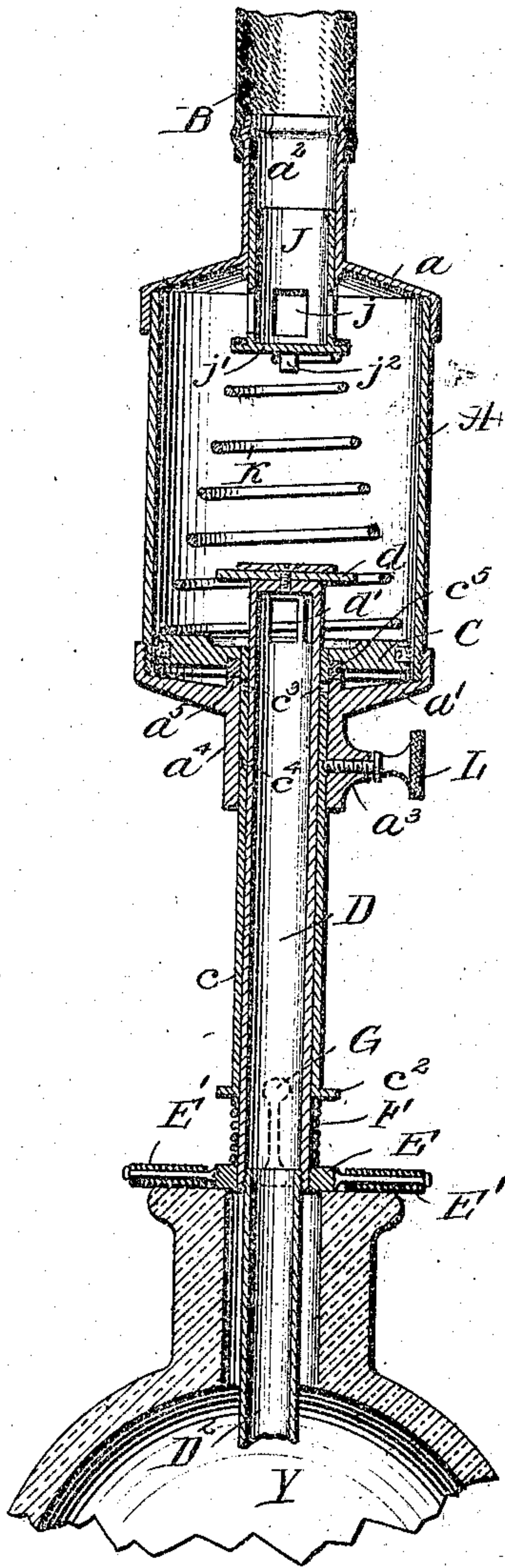


Fig. 2.

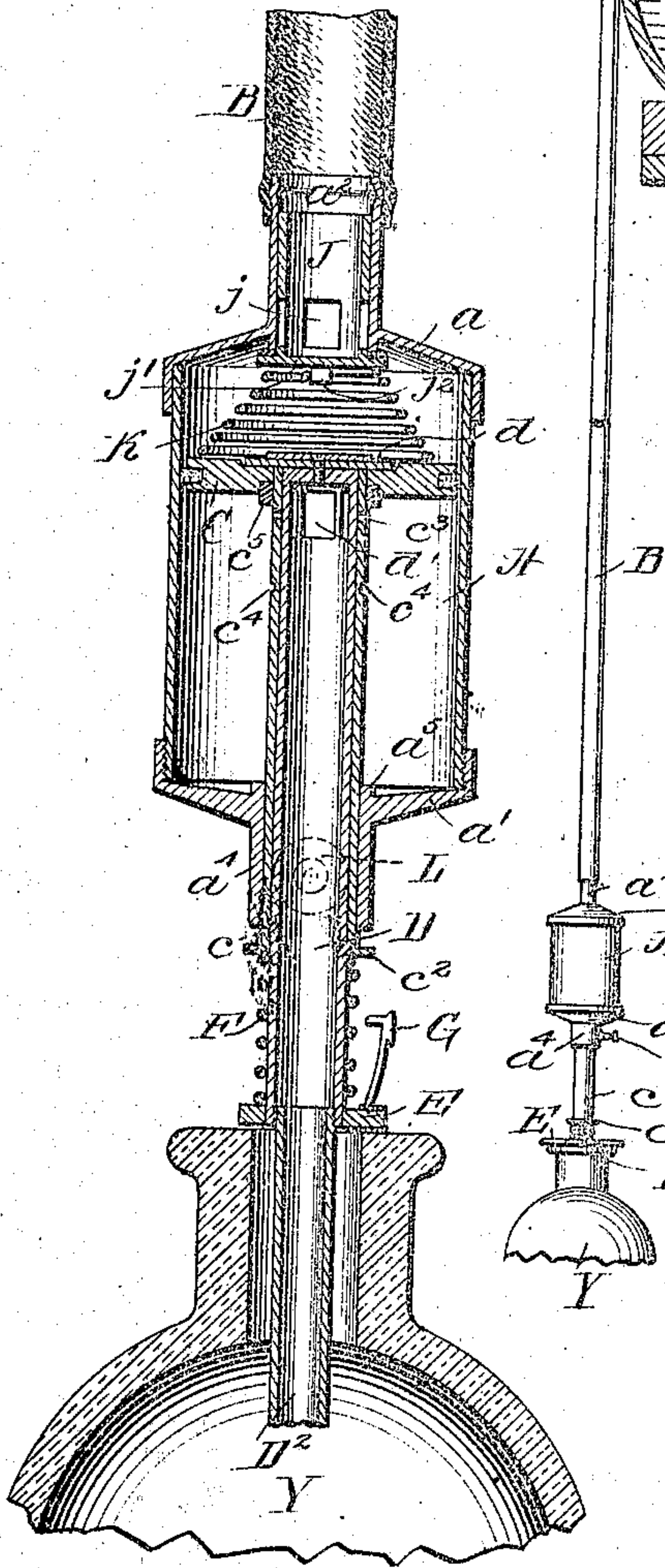


Fig. 3.

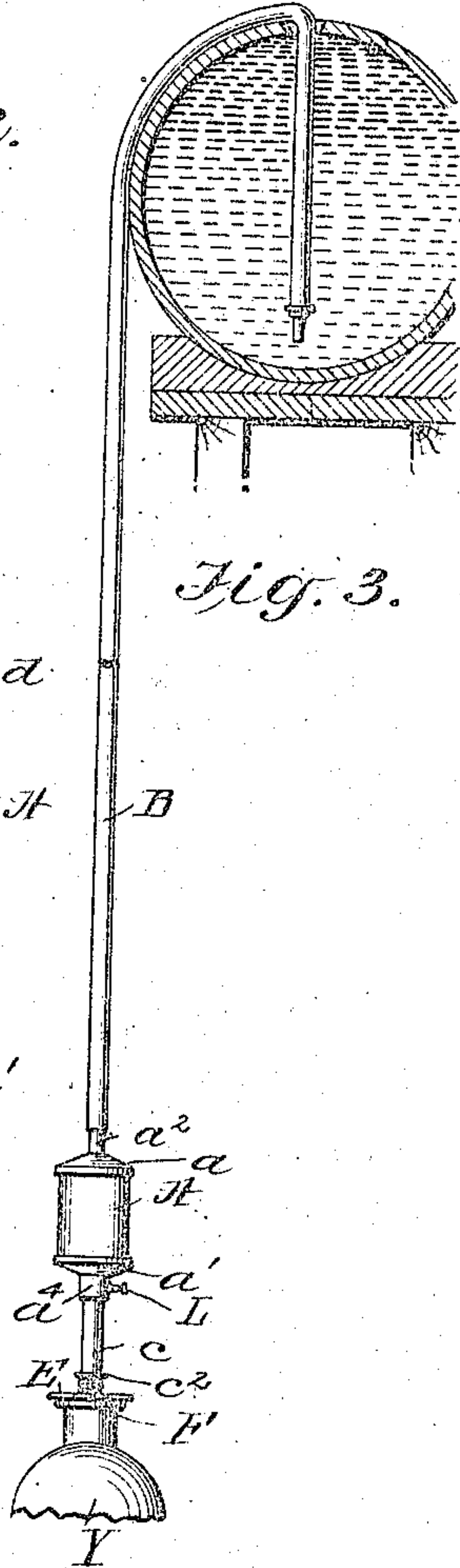


Fig. 4.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## SIPHON.

No. 894,798.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed October 10, 1907. Serial No. 396,759.

*To all whom it may concern:*

Be it known that I, WILLIAM P. LOCKE, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Improvement in Siphons, of which the following is a specification.

This invention relates particularly to starting devices for siphons which act by exhausting the air from the siphon, and is intended as an improvement on the siphon shown in Patent No. 773,511 granted to myself and H. D. Minnick, on October 25, 1904.

The present invention is provided with improved means for exhausting the air, a piston and cylinder being used instead of the collapsible bulb shown in said patent.

Other changes and improvements will appear from the following description and the drawings.

In the drawings—Figure 1 is a central longitudinal section of the device, in one position. Fig. 2 is a similar view in another position. Fig. 3 is a view showing the practical use of the siphon. Fig. 4 is a detail of a small tube used with small necked bottles.

Referring specifically to the drawings, A indicates the liquid receiving and air pump chamber in the siphon; B the tube leading thereto from the barrel or other liquid containing vessel; D an outlet tube from said chamber; and Y the bottle or liquid receiving vessel. The chamber A has at the top an inlet tube  $a^2$ , an extension of the cap  $a$ , and connected to the tube B, and movable up and down in the tube  $a^2$  is a tube valve J provided with holes  $j$  in the side and a disk  $j'$  at the lower end connected to the upper end of a cone shaped spiral spring K by means of a lug  $j^2$ .

The lower cap  $a'$  of the cylinder A is provided with a depending tubular extension  $a^4$  and a slight inner extension  $a^5$  projecting upwardly. The extension  $a^4$  has a boss  $a^3$  near its lower end, through which the thumb screw L is threaded.

Within the cylinder A is a piston C with packing making a snug fit to the cylinder. Attached to the piston and extending downwardly through the tube  $a^4$  is a tube  $c$  provided with a flange  $c^2$  at its lower end, a number of small openings  $c^3$  in its side near the base of the piston, and a shallow circumferential groove  $c^4$  in which the point of the

screw L may be engaged. A washer  $c^5$  extends around the tube  $c$  at the base of the piston and is held in a groove formed in the underside of the piston and seats against the extension  $a^5$  on the lower cap of the cylinder.

The outlet tube D is slidably mounted within the tube  $c$  and at the top it has a washer  $d$  which seats in a depression in the top of the piston. Outlet openings  $d'$  are formed in the sides of said tube near the top thereof and normally open into the cylinder above the piston. At the lower end the tube D has a cross piece E, adapted to rest on the top of the bottle, and also has an extension tube  $D^2$  which screws into the end of said tube D. This allows extension tubes of various sizes to be used to accommodate the size of the bottle neck. Thus, in Fig. 4, a smaller tube is illustrated, having a threaded head to screw into the main tube. The cross piece E has elastic tubing  $E'$  over its arms to cushion the pressure on the neck of the bottle. Also a spring catch G is attached to the middle portion of the cross piece and is adapted to engage over the flange  $c^2$  at the lower end of the tube  $c$ , and a spring F is coiled around the tube, between the flange  $c^2$  and the cross piece.

The operation is as follows: The end of the hose B having been immersed in the liquid in the usual manner, the outlet tube  $D^2$  is thrust into the neck of the bottle or other receptacle to be filled, with the cross piece E resting on mouth of same and held firmly in position with the fingers of one hand. With the other hand the cylinder or body of the device is grasped and a downward pressure exerted on same. This forces the tube D upwards, allowing the openings  $d'$  to rise above the top of piston, as shown in Fig. 1. In this position the coils of the spring F are contracted between the spider E and the flange  $c^2$ . By continuing the pressure the tube  $c$  is forced upward, causing the piston C to travel toward the upper end of chamber A. The upward movement of the piston causes a corresponding upward movement of the tube J through the medium of the spring K, bringing the openings in the said tube J within the inclosing tube  $a^2$ , the flange  $j'$  bearing against the end of said tube. It is obvious that the air within the chamber A cannot escape through the inlet tube  $a^2$ , but must pass out through the outlet tube D.



Having reached the end of its stroke the piston is now returned to its original position by an upward pressure on the chamber.

This first brings the washer *d* to its seat on the piston, closing the openings *d'* of tube D, and as the piston continues its downward travel it forms a partial vacuum in the upper end of chamber which causes the tube J to be drawn downward against the decreasing resistance of the spring K, bringing the openings into a position to allow the air in hose B to enter the chamber. In order to avoid a compression of air below the piston the openings *c'* are provided in the tube *c*, some of which are in alinement with the openings *d'* of the tube D when same is in the closed position, consequently allowing the air to pass out through same. This pumping operation is continued until the air has been drawn from the chamber and hose to a sufficient extent to cause the liquid to flow, and the liquid fills the chamber, when the piston is left at the bottom of chamber and secured against displacement by the thumb-screw L. A slight downward pressure now causes the liquid to flow out through the tube D and it will continue to do so until the pressure is released. By releasing the catch G the valve *d* closes and the flow is stopped.

The flow of liquid through the siphon, tends to keep the valve J open, and this action is supplemented by the tension of the spring K.

I claim—

1. A starter for a siphon, comprising a liquid receiving chamber having a valved inlet in one end and a valved outlet in the other, a piston movable in the chamber between the inlet and the outlet, a spring arranged between the piston and the inlet valve to close the same when the piston is forced toward the same, and means for holding each of the valves in open position after the siphon is started.

2. A starter for a siphon, comprising a cylinder having an inlet at the top and an outlet tube at the bottom, a piston within the cylinder, a valve controlling the inlet, a spring between the piston and the inlet valve arranged to close the inlet valve when the piston is raised and to open said valve when it is lowered, and a valve controlling the outlet and opening through the piston and arranged to close when the piston is lowered and to open when it is raised, and means exterior to the cylinder to hold the outlet valve in open position after the siphon is started.

3. A starter for a siphon, comprising a cylinder having an inlet at the top provided

with a downwardly opening valve, a piston within the cylinder, a coiled spring connecting said valve and the piston and acting to close the valve when the piston is raised in the cylinder, an outlet tube extending through the bottom of the cylinder and the piston, a valve at the top of said tube and adapted to open when the piston is raised and to close when it is lowered, and means exterior to the cylinder to hold said valve in open position when desired.

4. A starter for a siphon, comprising a cylinder having an inlet at the top with a downwardly opening valve, a piston in the cylinder having a depending outer tube extending through the bottom of the cylinder, an inner outlet tube extending through said outer tube and the piston and movable up and down therein to a limited extent and having valve openings at the top which are opened above the piston when said tube is moved up, a cross piece at the lower end of said inner tube, a spring between said cross piece and the lower end of the outer tube and adapted to normally lower said inner tube and close the openings, and means to hold said inner tube in raised position when the siphon is started.

5. A starter for a siphon, comprising a pump cylinder having an inlet valve at the top, a piston in the cylinder having a depending outer tube extending through the bottom of the cylinder, and also having openings in the side thereof below said piston, an inner outlet tube movable up and down in said outer tube and through the piston and having outlet openings at the top which open above said piston when the inner tube is raised and which register when it is lowered with the said openings in the outer tube, and a spring between the tubes, tending to lower the inner tube and close said outlet openings.

6. A starter for a siphon, comprising a pump cylinder having a valved inlet at the top, a piston working within the cylinder and having a tube forming a piston rod and extending through the bottom of the cylinder, means for locking said piston in lower position, an outlet tube slidable in said tube and having a yielding connection therewith to operate the same, and having openings adapted to open above the piston when the same is depressed to full extent, and a catch between the tubes to hold the same in such open position.

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Witnesses:

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