

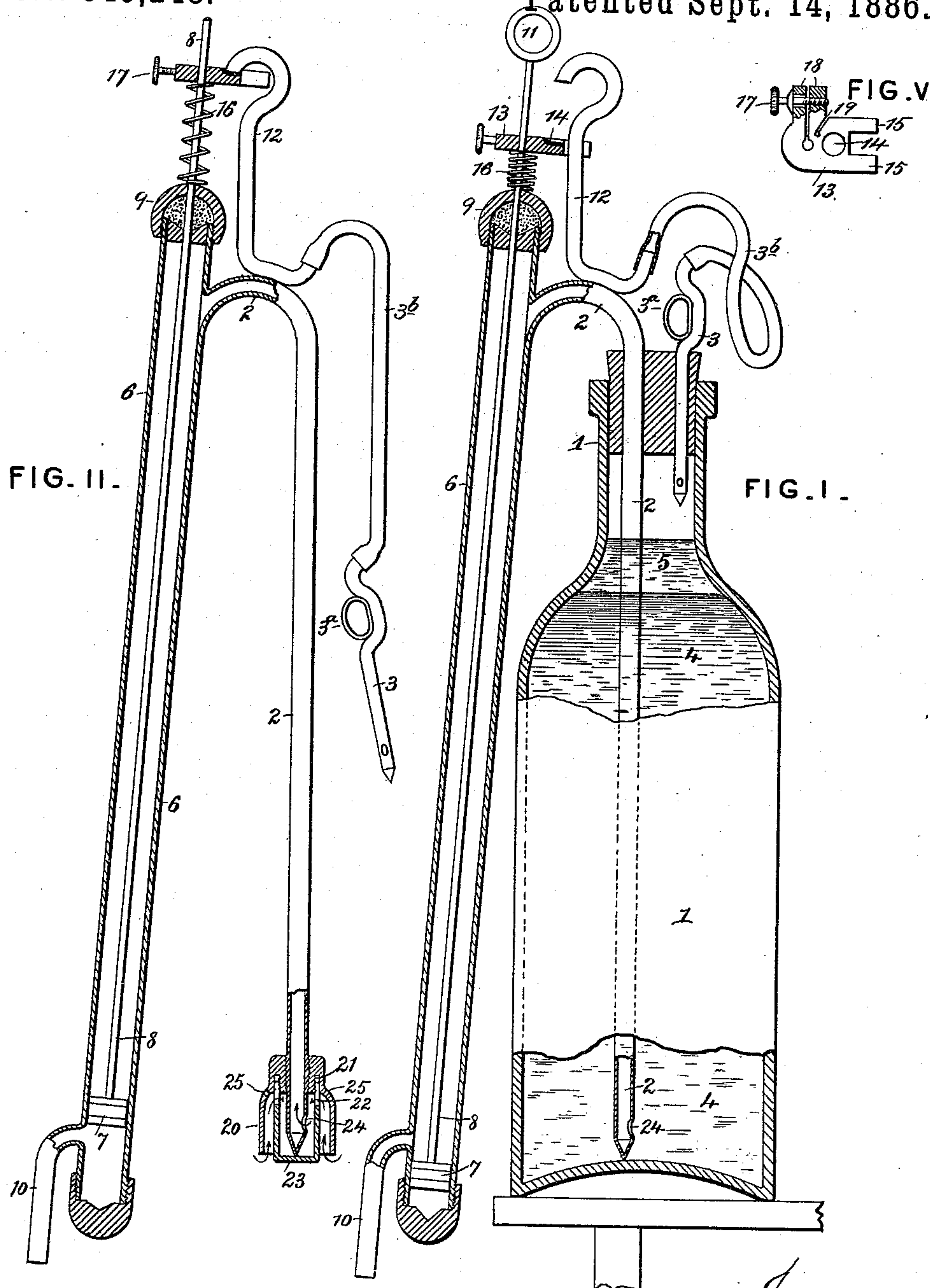
(No Model.)

L. C. BRICKENSTEIN & C. A. BABENDREIER.

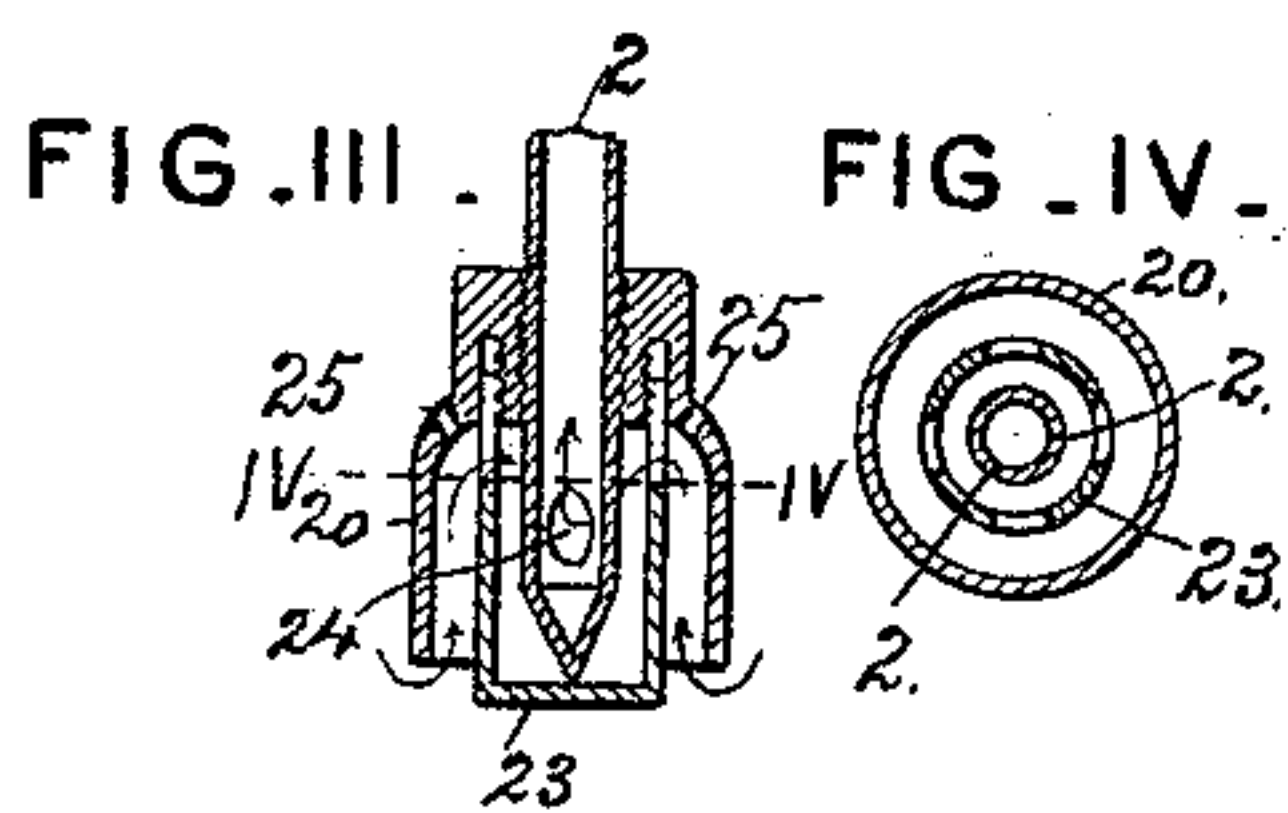
DEVICE FOR DECANTING LIQUIDS.

No. 349,248.

Patented Sept. 14, 1886.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR DECANTING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 349,248, dated September 14, 1886.

Application filed December 16, 1885. Serial No. 185,863. (No model.)

To all whom it may concern:

Be it known that we, LAURENCE C. BRICKENSTEIN and C. ALBERT BABENDREIER, citizens of the United States, residing in Baltimore, in the State of Maryland, have made certain new and useful Improvements in Devices for Decanting Liquids, of which the following is a specification.

Our improvements particularly relate to a decanting device or siphon, which may be used in vessels wherein liquid to be decanted is protected by an upper layer of oil or other material lighter than itself for the exclusion of air.

The object of the invention is to permit the ready drawing off of the liquid, having especially in view the prevention of its intermingling with the protecting material above it.

To these ends our invention consists, first, in a decanting device of siphon form in which the discharge-tube is provided with a piston which acts by first forcing out the air above it in its upward movement, and subsequently creating a vacuum in the discharge-tube, which will be filled by the immediate flow of liquid from the containing-vessel on the downward descent of said piston. The discharge-aperture is placed somewhat above the bottom of the outer tube of the siphon, so that when the piston is pressed down it will pass below said discharge-aperture and permit the liquid which it has drawn after it to flow out. By raising the piston at any time it may be made to cover the discharge-aperture, and so prevent the further flow of the liquid. An air-pipe controlled automatically by the movement of the piston is made to supply air to the containing-vessel when necessary, to allow an even flow.

To prevent the protecting-liquid in the containing-vessel from entering the inner end or supply-tube of the siphon, we provide such inner end with a guard of peculiar form surrounding the inlet-aperture. The guard consists of an inner cup, which is surrounded by an outer inverted cup in such manner that the liquid, in order to enter the inlet-aperture of the siphon, will have to pass up between the two cups. By suitably adjusting this guard the flow is automatically stopped whenever the liquid in the containing-vessel has reached such a level that the protecting-liquid alone

remains. In order to perfect the action of the guard by affording a pressure within which shall counterbalance the action of the siphon whenever the liquid has reached its proper level, we provide in the top of the outer cup of the guard one or more small holes, which will sufficiently permit the passage of air, while not enabling any considerable quantity of liquid to enter. It is apparent that a guard thus constructed is capable of a variety of applications, and while specially adapted for use with our improved siphon is not limited to such use.

In order that the invention may be better understood, we will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a side elevation, partly in section, showing our improved siphon applied to a bottle, the piston being in its lowermost position and the guard being removed. Fig. II is a vertical sectional view of the same, the guard being applied and the piston being in a position to arrest the flow of the liquid through the siphon. Fig. III is a vertical sectional view of the lower end of the supply-tube of the siphon with the guard applied, the plane of section being at right angles to that shown in Fig. II. Fig. IV is a transverse section on the line IV IV, Fig. III. Fig. V is a plan view of the valve for regulating the admission of air.

The siphon may be applied to a bottle, 1, as shown in Fig. I, by passing its supply-tube 2 and air-tube 3 through the cork of said bottle, or to any other vessel containing liquid to be decanted. Preferably the liquid 4 to be decanted is protected by a superincumbent layer, 5, of oil or other substance, to exclude air, the siphon being especially adapted to the drawing off of the lower liquid without contamination with the protecting substance above it. The outer member, 6, of the siphon is made of greater diameter than the inner and of cylindrical form, to receive a piston, 7, the rod 8 of which works in a stuffing-box, 9, in the top of the tube 6. The supply-tube 2 enters the tube 6 near the top, and the liquid is discharged near the bottom through the tube 10. A handle, 11, at top enables the operation of the pis-

ton. It will be seen that by drawing up the piston from the position shown in Fig. I the air will be expelled through the supply-tube 2, and pass up through the liquid in the containing-vessel, thus increasing the pressure in the vessel and assisting the decanting of the liquid when the flow has commenced. When it is desired to draw off the liquid from the vessel 4, the piston is elevated until it passes above the connection of tubes 2 and 6, whereupon any air which has been compressed in the tube 2 will expand into the tube 6, and on the redescend of the piston the liquid will follow it until the piston descends below the exit-tube 10, through which tube the liquid will escape. To cause the flow at any moment to cease, it is merely necessary to draw up the piston 7 opposite to or above the exit-tube 10. To entirely expel the liquid from the tube 6, and force it back into the receptacle 4, the piston is again elevated until it passes the mouth of the tube 2. During this movement of the piston, which expels the liquid from the tube 6, the mouth of the air-tube 12 is permitted to remain open, to allow the liquid to come to the same level in the tube 2 and the vessel by reason of the pressure of the air in the tube 6. The mouth of the air-tube 12 is then closed, so as to prevent the admission of air to the vessel, and the piston is forced down. In its descent it will form a partial vacuum in the vessel and pipes 2 and 6, thereby causing the liquid to rise to some extent within the latter. After it passes the mouth of the outlet 10 the air will be admitted and restore the contents of the vessel to equilibrium. The piston is then permitted to be elevated by the spring 16 until it cuts off the outlet 10, and the valve 13 elevated until it closes the mouth of the air-tube 12. This is important in case the packing of the piston 7 should be imperfect and permit leakage, the very fact that the piston does leak aiding materially in bringing the parts into the described positions, as the air escaping past it will prevent to a greater or less extent the formation of vacuum within the tubes 6 and 2.

To insure the steady flow of liquid through the siphon, we provide the air-tube 3, which is connected by flexible tube 11 with the bent air-inlet 12, the last-mentioned part being firmly fixed to the bend of the supply-tube 2 of the siphon. A handle, 3^a, fixed to the tube 3, enables it to be forcibly applied to or removed from the cork of a bottle. The mouth of the bent air-inlet 12 lies in a horizontal plane, so as to be closed by the valve 13, when necessary.

14 is a rubber or other elastic button on the valve 13, for covering the mouth of the inlet-pipe 12 in such a manner as to prevent the passage of air. The valve 13 is provided with arms 15, which guide it in a vertical path by embracing the vertical air-inlet pipe 12.

16 is a spiral spring for pressing the valve 13 against the mouth of the pipe 12 automatically when said valve is released by the removal of the hand from the handle 11 of the piston. The spring 16 is thus adapted not only

to close the air-inlet passage, but, by raising the piston 7 above the discharge-tube 10 to the position shown in Fig. II, to cut off the flow of the liquid. A set-screw, 17, in connection with the spring-clamp 18 on the valve 13, enables the fixing of said valve to the piston, whatever the latter's position. A vertical hole, 19, or series of such holes, by weakening one member of the clamp 18, enables this clamp to grasp the piston-rod with less rigidity. The lower end of the supply-tube 2 is screw-threaded to receive an inverted cup, 20, and said cup is also screw-threaded, as shown at 21, to receive upwardly-projecting screw-threaded arms 22 on a cup, 23, which surrounds the bottom of the inlet-tube and prevents the direct admission of liquid from the containing-vessel to the inlet-aperture 24 of said tube. The arms 22 afford between them passages for the liquid being decanted, which, in order to escape from the vessel, must therefore pass up between the cups 20 23 and down between the cup 23 and tube 2 before it can be discharged. The result is that when the decanting is completed there will always remain in the containing-vessel an amount of liquid which will rise to the bottom of the passages through cup 23. The amount of protecting-liquid in the vessel and the height of the cups 23 and 20 are so regulated that the protecting-liquid and dregs will entirely and alone remain in the containing-vessel. In order to prevent the siphoning of these objectionable matters, we provide an air-balance within the guard, which shall come into action when the liquid in the containing-vessel has reached the proper level. For this purpose we employ one or more minute apertures, 25, passing vertically through the top of the cup 20. It will be seen that so long as the current of liquid is passing up between the two guard-cups any considerable amount of liquid will be prevented from entering through the holes 25; but as soon as the liquid in the containing-vessel sinks below the top of said holes air will enter therethrough, and, affording a balancing-pressure within the guard, prevent the further siphoning of the liquid.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. In combination with a vessel containing liquid covered with a suitable preservative material, a siphon having supply-pipe projecting into said vessel below the protecting material, a guard for preventing the flow of a certain proportion of the liquid contained in the vessel, and a discharge-pipe of greater length than said supply-pipe, substantially as set forth.

2. In a siphon, in combination with supply and exit tubes, a discharge tube or cylinder connecting the same and projecting at each end beyond its connections with said supply and exit tubes and a piston and operating rod working in said discharge tube or cylinder, substantially as set forth.

3. In a siphon, in combination with supply

and discharge tubes and a piston and rod operating in said discharge-tube, an air-inlet pipe secured to said piston-rod, and a spring for moving said rod, piston, and valve simultaneously, and a valve or stopper for said pipe, substantially as set forth.

4. In a siphon, in combination with supply and discharge tubes and a piston and rod operating in said discharge-tube, an air-inlet pipe fixed to the supply-tube and a stopper or valve for said air-inlet tube, adapted to be fixed to the piston-rod to operate substantially as set forth.

5. In combination with a siphon, an air-inlet tube fixed thereto having a rigid portion at one extremity for insertion into the neck of the bottle, a rigid portion at the other extremity for closure by a suitable stopper, and a flexible connecting-tube between these two portions, substantially as set forth.

6. In combination with a siphon having supply and discharge tubes and a piston and rod operating in said discharge-tube, an air-inlet pipe having downwardly-turned upper end, as shown, a stopper or valve, jaws and set-screw on said stopper for clamping it to said piston-rod, and a spring bearing upwardly on said stopper, substantially as and for the purpose set forth.

7. In combination with a siphon having supply and discharge tubes, as shown, a guard surrounding the inlet-aperture of the supply-tube of said siphon, and consisting of an inner upright and an outer reversed cup, the inner cup having suitable passages at top to permit the flow of liquid, substantially as set forth.

8. A guard for preventing the flow of a certain proportion of liquid in a containing-vessel, consisting of an outer and an inner cup arranged in reversed positions, having a passage to permit the flow of liquid between the sides of the cups, and the inner cup having passages through its sides, substantially as set forth.

9. A guard for preventing the flow of a certain proportion of liquid in a containing-vessel, consisting of an outer and an inner cup turned in reversed directions, having passage for permitting the flow of liquid between them, passages through the sides of the inner cup to permit the liquid to enter the latter, and air-inlet passages through the top of the outer cup, substantially as set forth.

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Witnesses:

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