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This figure block contains four sub-figures labeled Fig. 1, Fig. 2, Fig. 3, and Fig. 4. Fig. 1 is a large, detailed cross-sectional view of a mechanical device, likely a pump or engine, showing a central vertical shaft (h) passing through a large, rounded, hatched container (c). The shaft is connected to a complex assembly of valves and pistons at the top. Various components are labeled with letters and numbers: n, m, k³, a, k², k¹, l, l², b, b⁶, c³, b³, b⁷, b⁴, b⁵, b⁸, b¹⁰, h³, h², h⁵, h⁴, g, d, b¹, c¹, c², t, f, j, j', t', t², s, r, r', o, p, e, a', u. Fig. 2 is a circular detail view of a component, possibly a valve or piston head, showing internal features and labels n, l, k², k³, k¹, t', k⁴. Fig. 3 is a detail view of a component, possibly a valve or piston head, showing a hatched section and labels u, t'. Fig. 4 is a detail view of a component, possibly a valve or piston head, showing a hatched section and labels u, t'.

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SIPHON FOR DISPENSING LIQUIDS.

943,421.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR KLEINFELDT, a citizen of the United States, residing in the city of Hoboken, in the State of New Jersey, have invented certain new and useful Improvements in Siphons for Dispensing Liquids, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention relates in general to portable apparatus for dispensing liquids under uniform gas pressure, in which the gas container is mounted directly upon the receptacle for the liquid, such as is shown in Patent No. 824,249, dated June 26, 1906.

The object of the invention is to meet certain difficulties which have manifested themselves in the use of such apparatus and generally to improve the construction thereof.

One special object is to accomplish more effectively the tight closing of the gas valve, so as to prevent leakage.

Another object is to provide a simple and effective device for regulating the flow of gas from the gas container to the liquid receptacle, with the special purpose of preventing excessive flow at any time.

A further object is to provide for the adjustment of the gas valve from the outside, so that it is unnecessary to remove any parts of the apparatus in order to permit such adjustment to be effected.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which it is illustrated and in which—

Figure 1 is a view, partly in side elevation and partly in vertical section, of the improved apparatus. Fig. 2 is a detail view in section on the plane indicated by the line 2—2 of Fig. 1, looking to the right. Figs. 3 and 4 are detail views of the device provided for permitting the filling of the liquid receptacle while the gas container is under pressure and in place on the liquid receptacle.

The gas container *a*, which is charged with gas under high pressure and is provided with a bail *a'*, by which the entire apparatus can be conveniently carried about, is mounted upon a neck *b* which is adapted to be secured to the neck of the liquid receptacle *c*. As shown, the lower portion *b'* of the neck is reduced in diameter and

threaded to engage the inner flange *b*² of a double flanged sleeve *b*³, the outer flange *b*⁴ of which is interiorly threaded to engage an exteriorly threaded split sleeve or nut *b*⁵, the latter being split so that it may be placed about the neck *c'* of the receptacle *c* and bear against the shoulder *c*² thereof. A gasket or packing *c*³ may be placed between the neck of the bail and the double flanged sleeve *b*³. For the purpose of preventing the unauthorized detachment of the gas container from the liquid receptacle or any tampering with the contents of the receptacle, there is provided on the neck *b* an eye *b*⁶, on the sleeve *b*³ an eye *b*⁷ and on the split nut *b*⁵ an eye *b*⁸, and through these eyes there may be passed a cord *b*⁹, the ends of which may be fastened together by a seal *b*¹⁰.

The neck *b* is provided, as usual, with a flanged outlet *d* which is adapted to have secured thereto a draw-off tap or valve *f* which communicates through a passage *g* with a tube *h* extending within the liquid receptacle *c* nearly to the bottom thereof. Herebefore, owing to the inevitable variations in the glass liquid receptacles, it has been necessary to fit each tube *h* to the liquid receptacle with which it is to be used, each tube being cut off according to the distance from the neck of the gas container to the bottom of the liquid receptacle. In order to obviate the necessity for such special fitting, there is provided in the present case a telescoping connection between the gas container *a* and the tube *h*. Such connection comprises a sleeve *h*¹ which may be threaded in its seat in the lower end of the neck *b*, a sleeve *h*² which is fitted closely upon the sleeve *h*¹, but is free to slide thereon, and a rubber sleeve *h*³ which forms a slightly flexible connection between the sleeve *h*² and the tube *h*. In assembling the parts of the apparatus the sleeve *h* is first connected to the gas container and the telescoping joint is drawn out to its full length. The container is then applied to the receptacle and is screwed home. As the foot of the tube *h* rests against the bottom of the receptacle the telescoping joint will then be pushed in as the container is screwed home, so that the lower end of the tube *h* rests always against the bottom of the receptacle. In order that a free flow of the liquid from the receptacle into the tube may

be permitted, the lower end of the tube is provided with a foot piece h^4 having points h^5 to bear against the bottom of the container, leaving openings between them through which the liquid may pass freely into the tube.

In the apparatus, as heretofore constructed, the valve which controlled the flow of gas from the container was closed by the pressure of the gas and was opened through the manipulation of the operating handle j of the draw-off tap, but it has been found preferable to cause the valve to be closed positively by manipulation of the operating handle and to permit it to be opened by the pressure of the gas when released by the operating handle, and to provide a device for regulating or preventing the excessive flow of the gas when the controlling valve is open. Accordingly, the plug k which is arranged in the side of the container a , adjacent to the draw-off tap, is formed with a passage l and is formed at its outer end with a flange k' against which the diaphragm m may be held by the cap n , and with a seat k^2 about the mouth of the passage l against which the diaphragm m may be pressed, by devices hereinafter mentioned, to prevent the passage of the gas. The recess k^3 between the flange k' and the seat k communicates with the top of the receptacle c through a passage l' and a tube l^2 . In the bottom of the recess k^3 is secured a spring flap valve k^4 , the free end of which overlies the mouth of the passage l' . Normally the end of the flap valve k^4 stands sufficiently free from the mouth of the passage l' to permit the flow of gas under moderate pressure, but if the gas pressure should be excessive the flap valve will close against the mouth of the passage l' , not tightly so as to absolutely prevent the passage of gas, but yet so far as to prevent the free flow of gas under great pressure. In this manner the flow of gas from the container to the receptacle is regulated and excessive flow is prevented.

Somewhat loosely mounted in the outer end of the cap, so that it may rotate therein, is a sleeve o within which is a plunger p adapted to bear against the diaphragm m and press the same against the seat k^2 to close the passage l . A lever r is mounted in the sleeve o and carries an adjusting screw r' which bears against the plunger p , its head being exposed, for adjustment, outside of the sleeve o . The lever r is bent or formed with a cam-like recess, as at r^3 , for coöperation with a shoulder j' on the operating lever j . The latter is acted upon by a strong spring s to be held thereby in its normal position, represented in Fig. 1, with the shoulder j' bearing against the lever r so as to press the plunger p inwardly against the diaphragm m and close the passage l . When the lever j is manipulated by the operator

the shoulder j' is moved into line with the recess r^3 to permit the lever r , plunger p and diaphragm m to be moved by the pressure of the gas against the diaphragm through the passage l . The passage g for the escape of the liquid from the receptacle is closed normally by a diaphragm t under the pressure of a spring pressed plunger t' , the upper end of which has a projecting pin t^2 , so that the plunger may be raised by the wedge shaped, forked implement u when it is desired to refill the receptacle without detaching the gas container, even though the latter be charged with gas.

It will now be understood that when the receptacle is filled with liquid and the gas container is charged with gas, pressure on the operating handle j opens the passage g for the discharge of the liquid and at the same time permits the controlling valve m to be opened by the pressure of the gas which passes through the channels provided therefor into the upper part of the receptacle c and supplies therein the pressure necessary to deliver the liquid. At the same time, through the provision of the regulating valve k^4 , the excessive flow of gas is prevented. Upon releasing the operating handle j the diaphragm t closes the passage g to stop the delivery of liquid and the shoulder j' of the operating handle j , acting under the influence of the spring s , upon the inclined or cam-like portion of the lever r , forces the plunger p against the diaphragm m to close the passage l and prevent the further flow of gas. Should it be desired to adjust the gas valve m so as to provide for an increased or a reduced flow of gas from the container this is readily effected by manipulation of the adjusting screw r' . It will be understood that the capacity of the sleeve o to rotate in the cap n permits the easy adjustment of the lever r with respect to the lever j without requiring special fitting of the parts.

I claim as my invention:

1. The combination of a liquid receptacle having an outlet, a gas container connected therewith, a valve to control the delivery of the liquid from the receptacle, a valve to control the passage of the gas from the container to the receptacle and opening outwardly under the pressure of the gas, an operating lever to control the valve for the delivery of liquid from the receptacle and operating connections between the gas valve and said lever whereby as the lever is moved to open the liquid valve, the gas valve is permitted to open and as the lever is moved to close the valve the gas valve is closed.

2. The combination of a liquid receptacle, a gas container, a valve to control the delivery of liquid from the receptacle, a valve to control the delivery of gas from the container to the receptacle and opening outward

under the pressure of the gas, an operating lever to control both of said valves simultaneously and a regulating valve to regulate the flow of gas from the container to the receptacle when the controlling valve is open.

3. The combination of a liquid receptacle, a gas container connected therewith, a gas valve to control the passage of gas from the container to the receptacle and opening outward under the pressure of the gas, means to control said valve and a regulating valve to regulate the passage of the gas from the container to the receptacle when the controlling valve is open.

4. The combination of a liquid receptacle, a gas container connected therewith, a plug arranged in the wall of the container and having a channel for the passage of the gas, a plunger coöperating with the outer end of said channel to close the same against the pressure of the gas, a lever to control said plunger, an adjusting screw mounted in said lever and bearing against the plunger with its head exposed externally, and a second lever coöperating with the first named lever to lock the same against movement.

5. The combination of a liquid receptacle, a gas container connected therewith, a plug arranged in the wall of the container and having a channel for the passage of gas, a diaphragm, a cap securing said diaphragm upon the plug, a sleeve mounted rotatably in the cap, a plunger in said sleeve and adapted to press the diaphragm against the gas channel, a lever mounted in the sleeve and an adjusting screw carried by the lever and bearing against the plunger.

6. The combination of a liquid receptacle, a gas container connected therewith, a valve to control the delivery of liquid from the receptacle, a valve to control the passage of gas from the container to the receptacle, an operating lever to control the liquid valve and having a shoulder, and a secondary lever to control the gas valve and having a cam arm for coöperation with the shoulder of the operating lever.

This specification signed and witnessed this 24th day of November, A. D., 1908.

ARTHUR KLEINFELDT.

Signed in the presence of—

W. B. GREELEY,
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