

(No Model.)

T. W. ALEXANDER.  
DISPENSING CAN.

No. 577,477.

Patented Feb. 23, 1897.

Fig. 1.

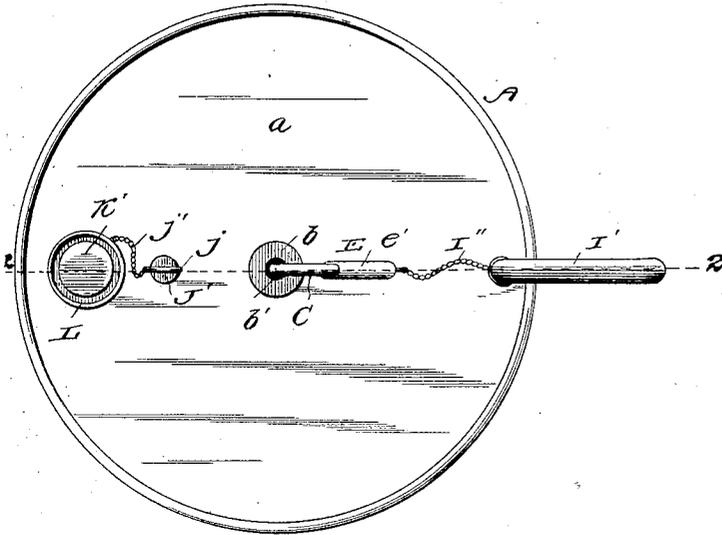


Fig. 2.

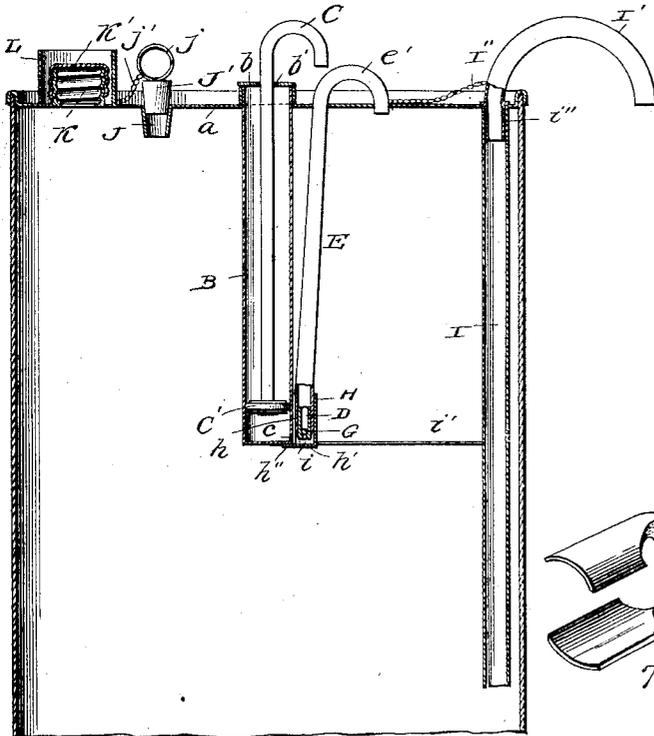
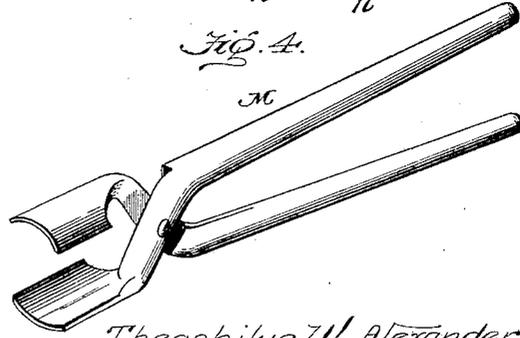


Fig. 3.



Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## DISPENSING-CAN.

SPECIFICATION forming part of Letters Patent No. 577,477, dated February 23, 1897.

Application filed October 13, 1896. Serial No. 608,770. (No model.)

*To all whom it may concern:*

Be it known that I, THEOPHILUS W. ALEXANDER, a citizen of the United States, residing at Burlington, in the county of Des Moines and State of Iowa, have invented certain new and useful Improvements in Dispensing-Cans; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in dispensing-cans of that class in which the liquid is designed to be forced out of the can by the pressure of air which is to be pumped into the liquid-chamber; and the object that I have in view is to provide a simple and inexpensive contrivance in which the liquid is at all times excluded from the piston-cylinder of the pump, even when the can is lying on its side or occupying an inverted position.

A further object of my invention is to provide an improved construction of the air-pressure pipe and its check-valve mechanism, in which the parts are so constructed as to provide for the use of a ball-valve in preference to a hinged check and to enable the ready assemblage and attachment of parts to the pump-cylinder in a way to effect air-tight joints between the several parts.

To the accomplishment of these objects my invention consists in the combination, with a can and a pump-cylinder therein, of an air-pressure tube or pipe having a curved spout or "gooseneck" which extends through the top of the can and reënters the same to deliver the air under pressure upon the liquid in the chamber of the can, a valve-tube fitted to the lower extremity of the air-pressure tube and having an interior ground valve-seat adapted to accommodate a ball-shaped check-valve, and a hood or sheath which is fitted to the valve-tube and the air-pressure tube and is joined with the piston-cylinder in a manner to secure communication of the valve-tube and air-pressure tube with the chamber of the piston-cylinder and to effect the hermetic sealing of said parts against the escape of air into or the ingress of liquid from the liquid-chamber of the dispensing-can.

The invention further consists in the combination of devices and construction and ar-

range of parts, as will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated a preferred embodiment of the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a dispensing-can embodying my invention. Fig. 2 is a vertical sectional elevation on the plane indicated by the dotted line 2 2 of Fig. 1. Fig. 3 is a detail view showing in detached positions the air-pressure tube or pipe, the valve-tube, and the hood. Fig. 4 represents a pair of pincers which may be used to effect the removal of the screw-cap from the filling-nozzle of the can.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates a dispensing-pan, and *a* is the head thereof. This can in its general construction may be similar to the well-known types of cans now used for the purpose of dispensing liquids, such as gasolene, lamp-oil, &c.

B is the piston-cylinder of an air-forcing mechanism which is applied to and forms an integral part of the dispensing-can. The upper end of this piston-cylinder is attached to the can-head *a* by a hermetically-sealed joint, as, for instance, by soldering the parts together, and said upper end of the cylinder is closed by a cap *b*, in the center of which is provided an aperture *b'* for the passage of the piston-rod C, the diameter of said rod being somewhat less than the diameter of the aperture *b'*, to provide for the ingress of air through the aperture into the piston-cylinder. The piston-head C' is attached to the lower end of this piston-rod C, and it consists of two metallic disks and a layer of leather or equivalent material clamped between the disks, the parts of the piston-head being arranged to force the air from the piston-cylinder on the downstroke of the plunger and to admit of the passage of air between the plunger and cylinder on the upstroke of the plunger, as will be understood by those skilled in the art.

The lower end of the piston-cylinder is securely closed and the escape of air is only permissible through an egress-port *c*, pro-

vided in the side of the piston-cylinder, said port *c* delivering the air to a valve-tube D, connected in a peculiar way to the air-pressure tube E. This valve-tube D is preferably 5 of less diameter than the air-pressure tube to enable it to be fitted into the lower end of the same, and said tube D is comparatively short, the length of the tube being just sufficient to provide a support for the valve G and enable 10 its attachment to the tube E. Said valve-tube is bored out at one end, thus forming a valve-chamber *f*, which terminates in a ledge or shoulder *f'*, and this shoulder is ground or otherwise treated to form the seat for the 15 ball-valve G, which is used in preference to a hinged or other type of check-valve. This ball-valve is adapted to seat itself automatically and tightly on the ground valve-seat *f''* to prevent the circulation of air from the liquid-chamber through the air-pressure tube and 20 consequent evaporation of the liquid contents of the can, and said valve G is light enough to be raised or lifted from its seat by the force of the current of air expelled from the piston-cylinder by the action of the piston therein. 25

The upper and lower ends of the valve-tube D are open to the passage of air through the tube, and the upper end of said tube is pressed inward at diametrically opposite 30 points to form the shoulders *f<sup>2</sup>*, that lie in the path of the ball-valve and serve as stops to arrest the upward movement of said valve G.

The hood H is the means which I have adopted for attaching the lower end of the air-pressure tube E to the piston-cylinder in a 35 manner to establish communication between said parts through the medium of the lateral port *c*. This hood is in the form of a tube slit longitudinally to form the slot *h* and provided with a head *h'* at the lower end thereof, the whole being cut or stamped from a piece of sheet metal of appropriate form and bent 40 up into the shape shown by Fig. 3.

In assembling the valve-tube and hood preparatory to attaching the air-pressure tube to the piston-cylinder the valve-tube D, with the ball-valve G therein, is first fitted in the lower end of the air-pressure tube and properly secured thereto, as by soldering the parts 50 together. The hood H is then slipped over the lower end of the valve-tube and the air-pressure tube, and it is arranged to leave a space or chamber *i* between the lower end of said valve-tube and the head *h'* of the hood, said hood being adjusted or turned to a position where its slot *h* is coincident with the 55 port *c* in the piston-cylinder and where the lip or flange *h''* of the head *h'* fits beneath the piston-cylinder. The hood is now united to 60 the piston-cylinder and the tubes D E by soldering the parts along the joints and to the end of the cylinder, thereby hermetically closing the slot *h* and all the exposed joints against the ingress of liquid from the can and the 65 escape of air from the piston-cylinder, care being taken in soldering the parts to have the port *c* open in order that air may pass from

the piston-cylinder through the port *c* into the space or chamber *i*, and thence through the valve-tube D and into the air-pressure tube E. 70

I prefer to make the tube E of zinc, although other materials may be used, and said tube passes through the head *a* of the can and its upper end is bent into the elbow or goose-neck *e'*, the end of which passes down through 75 an opening into the can-head *a*, so that the tube E reenters the can after passing upward through the head *a* and is thus made to form a trap against the passage of liquid through the tube E should the can be inverted 80 through accident or carelessness. This construction and arrangement of the air-pressure tube forms one of the leading features of my improvement, which is intended to prevent 85 the liquid contents of the can from having access to the piston-cylinder, and said tube is also adapted to discharge the air under pressure from the pump into the space or chamber of the can in order that the pressure of 90 air upon the liquid contents of the can may force the liquid out through the eduction-tube I in a continuous stream so long as the air-pressure is sufficient to displace the liquid.

The eduction-tube I is fixed to the can-head near one edge thereof, and it extends close to 95 the bottom of the can. The tube I is braced by a cross-bar *i'*, attached to the bottom end of the piston-cylinder and to said tube I, as shown by Fig. 2, and the upper end of the tube terminates in a flared mouth *i''*, which 100 opens through a can-head *a*. In this tube-mouth *i''* is adapted to fit the removable discharge-nozzle *I'*, which is attached by a chain *I''* or other flexible connection to the can-head *a* to prevent it from being lost or mislaid. 105

The can-head *a* has a vent-nozzle J, attached to the inside thereof, so as to open through the head, and this nozzle is adapted to be closed by means of a plug or stopper *J'*, having a suitable band-piece *j* and provided 110 with a short chain *j'*, which is attached to the can-head *a* to prevent the stopper from loss or misplacement. This vent-nozzle is designed to be closed securely by the stopper 115 under normal conditions and prevent the evaporation of the liquid contents of the can, but when the vessel, such as a lamp or stove, is nearly filled with liquid and it is desired to stop the flow of liquid from the can A the 120 plug or stopper *J'* is withdrawn and the air allowed to escape from the can A, thereby reducing the air-pressure upon the liquid and arresting the flow.

The filling-nozzle K for the can is preferably screw-threaded to receive the cap *K'*, and 125 this nozzle and cap are inclosed within a ring-like shield L, which is attached to the can-head to extend a suitable distance above the nozzle and cap and to leave a space between the shield and the parts inclosed thereby. As 130 access cannot be had easily to the cap to unscrew it from the nozzle because of the annular shield, a pair of pincers M (shown by Fig. 4) may be employed to unscrew and replace

the cap. The pincers have curved jaws, as shown, to properly grasp the cap.

It is thought that the operation and advantages of my invention will be readily understood and appreciated from the foregoing description, taken in connection with the drawings.

I am aware that changes in the form and proportion of parts and in the details of construction herein shown and described as the preferred embodiment of my invention may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications and alterations as fairly fall within the scope of my invention.

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

1. The combination with a dispensing-can, a liquid-eduction tube therein, and a piston-cylinder having a piston, of the air-pressure tube E coupled at its lower end to the piston-cylinder, extending through the can-head and provided with an external, elbow-shaped upper extremity *e'* which reënters the can-head and forms a trap, when the can is inverted, against the passage of liquid from the can-chamber to the piston-cylinder, as and for the purposes described.

2. The combination with a dispensing-can, a liquid-eduction tube, and a piston-cylinder and a piston, of an air-pressure tube E passing through the can-head and provided with an external elbow *e'* which reënters the can-head to discharge air to the can-chamber and form a trap, should the can be inverted,

against the passage of liquid to the piston-cylinder, a valve-tube D united by sealed joints to the lower end of the air-pressure tube and the piston-cylinder, and a ball-valve confined and seated within said valve-tube, as and for the purposes described.

3. The combination with a can, a piston-cylinder, a piston, and an air-pressure tube, substantially such as described, of the valve-tube D provided with a ground valve-seat, a ball-valve confined within said valve-tube and adapted to its seat, and a hood coupled by hermetic sealed joints to the air-pressure tube and to the piston-cylinder and having the valve-tube housed therein, whereby said hood joins all the parts to the piston-cylinder, as and for the purposes described.

4. The combination with a dispensing-can, a piston-cylinder having a lateral egress-port, and an air-pressure tube, of the valve-tube attached to said air-pressure tube and provided with an internal ground seat and with stops above said seat, a ball-valve confined within the valve-tube, and a slotted hood united hermetically to the air-pressure and valve tubes and to the piston-cylinder, said hood adjusted to bring its slot coincident with the egress-port in the cylinder and to form a space or chamber *i* between the valve-tube and the closed end of the hood, as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

THEOPHILUS W. ALEXANDER.

Witnesses:

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J. F. BARR.