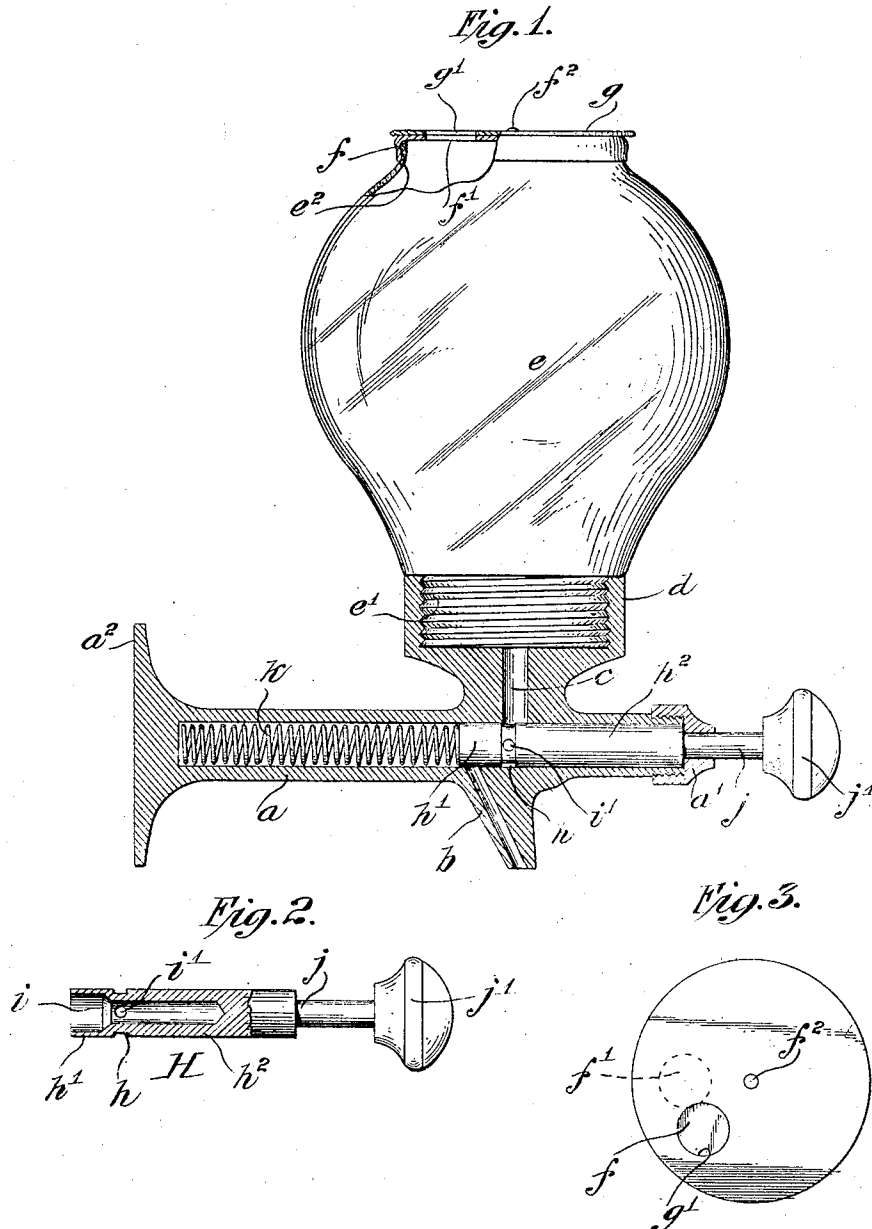


J. M. DABROWSKI.
LIQUID SOAP DISPENSER.
APPLICATION FILED SEPT. 9, 1919.

1,349,121.

Patented Aug. 10, 1920.



WITNESS
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UNITED STATES PATENT OFFICE.

JOSEPH M. DABROWSKI, OF BROOKLYN, NEW YORK, ASSIGNOR TO MOORE BROTHERS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

LIQUID-SOAP DISPENSER.

1,349,121.

Specification of Letters Patent.

Patented Aug. 10, 1920.

Application filed September 9, 1919. Serial No. 322,636.

To all whom it may concern:

Be it known that I, JOSEPH M. DABROWSKI, a citizen of the United States, residing at the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Liquid-Soap Dispensers, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to liquid soap dispensers, and more particularly to a structure of this character of the so-called "push-in" type wherein the delivery of the soap is effected through the action of a plunger valve which is arranged substantially horizontally and is acted upon by a spring so as to be ready for use at all times.

In dispensers of this type considerable difficulty has heretofore been encountered in securing a sufficiently rapid feed of the soap to the delivery mechanism, to permit the repeated operations of the plunger in rapid succession, while so limiting the quantity of soap delivered as to secure the desired economy in the use of the dispenser. To secure the desired result, the construction must be such that the discharge of the soap will be effected under air pressure developed by the inward movement of the valve plunger, this pressure being relieved during the short interval of delivery, so that the return movement of the plunger will create sufficient suction to insure instantaneous recharging of the delivery mechanism with the maximum quantity of liquid soap to be delivered upon the succeeding actuation of the plunger.

In addition to this characteristic, I so construct the plunger and its casing, that a limited quantity of soap will be stored in a small chamber between the pressure chamber and the outlet nozzle so as to be in the path of the air moving from said chamber toward said outlet, thus securing the three-fold effect of limiting the quantity of soap delivered to that contained in said storage chamber, securing a forceful ejection of such soap, and relieving the pressure in said chamber during that brief interval while the soap is being delivered, thus permitting the return movement of the plunger to develop sufficient suction to cause the liquid

soap to rapidly flow from the reservoir to said storage chamber, but avoid its flooding the valve casing.

The invention consists primarily in a liquid soap dispenser embodying therein a cylindrical casing having a discharge nozzle leading therefrom at a point intermediate the ends thereof, and an intake port in advance of said nozzle, a reservoir for liquid soap surmounting said casing and communicating therewith through said intake port, a reciprocatory piston mounted in said casing, having a peripheral groove adapted to receive a limited quantity of soap and dividing said piston into two valves, one operative in relation to said nozzle and the other operative in relation to said intake port, said piston also having an air passage opening into said casing and into said groove, a spring acting upon said piston and normally maintaining said peripheral groove in communication with said intake port and causing one of said valves to close said discharge nozzle, and a stem whereby said piston may be actuated; and in such other novel features of construction and combination of parts as are hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

Figure 1 is a side view of a dispenser embodying my invention, partly in section and partly in elevation;

Fig. 2 is a sectional view of the plunger valve, and

Fig. 3 is a plan view of the metallic top structure of the reservoir.

Like letters refer to like parts throughout the several views.

In the embodiment of my invention shown in the drawings, I employ a cylindrical valve casing *a* having a straight bore extending longitudinally thereof, said casing being provided with a discharge nozzle *b*, the opening of which extends at an angle, as shown, toward the outer end of the casing.

Communicating with the bore of said casing is an intake port *c* off-set with relation to said discharge nozzle *b* so that the delivery mechanism may be so constructed as to receive a charge of liquid soap and deliver same, alternately, thus limiting the quantity of soap delivered with each actu-

ation of said mechanism and preventing the leakage of soap when the device is not in use.

Surmounting the casing *a* is a reservoir consisting of a metallic cup *d* into which the intake port *c* opens. This cup has interior screw threads, as shown, which cooperate with screw threads upon the neck *e'* of the glass container *e*, suitable cement being used between said neck and said cup to insure a permanent, liquid-tight joint at this point. The cup *d* may be cast integrally with the casing *a*, or assembled in any desired manner therewith, this being merely a matter of mechanical expediency.

The container *e* has a reduced, open top having an external bead *e²* upon which is crimped a metallic closure plate *f* having a filling opening *f'* therethrough. Rotatably mounted upon the plate *f* by means of the central pivot *f²* is a cover plate *g* having a filling opening *g'* therethrough adapted to be brought into register with the opening *f'*, to permit the container to be filled, or out of register therewith to close the container after it has been filled.

The container *e*, for sanitary purposes is made of glass, transparent glass preferably being used so that the level of the soap therein may be observed at all times.

Mounted in the bore of the casing *a* is a reciprocatory plunger or piston *H* having a peripheral groove *h* in the length thereof which groove in addition to being adapted to receive a limited quantity of soap, divides said plunger or piston into two distinct valves *h'*—*h²*, the first of which is operative in relation to the opening of the nozzle *b* and the other of which is operative in relation to the intake port *c*, said groove being so positioned that it will alternately register with said intake port, and with said nozzle, but will never establish communication therebetween.

The plunger or piston has an air passage therein one end of which opens into said casing and the other end of which opens into said groove, said passage in the form of the invention shown comprising a longitudinally extending bore *i* which is in communication with the groove *h* through a small port *i'*.

Said plunger or piston has a stem *j* projecting through an opening in the screw cap *a'*, which latter closes the outer end of the casing *a*. The stem *j* has a suitable push button *j'* having a face of porcelain, or other material which may be readily cleansed.

Seated between the plunger or piston *H* and the end of the bore of the casing *a* is a spring *k* having a normal tendency to thrust said plunger or piston outwardly until stopped by the cap *a'*, and thus normally place the groove *h* in register with the port

c and cause the valve *h'* to normally close the opening in the discharge nozzle *b*.

The valve casing *a* is provided with a flange *a²* by means of which the device may be supported from a wall. Any other desired form of support may be used, however.

The operation of the herein described soap dispenser is substantially as follows:

In filling the container, or reservoir *e*, the plate *g* is turned until the opening *g'* registers with the opening *f'* in the plate *f*, the said plate *g* being again turned to close said opening *f'* after the container is filled, so as to exclude dust, dirt and moisture from said container. The method of filling the container, however, is immaterial to the invention.

Under normal conditions, the spring *k* will maintain the plunger or piston *H* in the position shown in Fig. 1, with the valve *h'* closing the opening of the nozzle *b* and the groove *h* in communication with the intake port *c*. When the parts are in this relation, the pressure within the casing *a* and the container *e* will be atmospheric so that the liquid soap will readily flow from the said container into and about the groove *h*, but being somewhat viscous, will not flow through the port *i'*. Hence, each time the plunger or piston *H* reaches this position, the quantity of soap withdrawn from said container will be represented by the capacity of the said groove *h*, none of the soap flowing to within the bore *i*.

When dispensing the soap, the plunger *H* is forced inwardly against the tension of the spring *k*, the first stage of this movement causing the valve *h²* to close the port *c*; the second stage slightly compressing the air within the casing *a* and the final stage bringing the groove *h* into register with the opening of the nozzle *b*. This permits the soap contained in the groove *h* to be discharged either in whole or in part through said nozzle, as the result of the expansion of the compressed air within the casing *a*, said air flowing from within said casing to within said groove, through the bore *i* and the port *i'*.

In this manner, each time the plunger or piston *H* is forced or pushed inwardly of the casing *a*, only a small quantity of soap will be delivered, the flow of soap from the container *e* being prevented by the valve *h²* while said groove *h* is in a position where soap may flow therefrom through the nozzle *b*.

In addition to soap being delivered in the manner described, the air pressure within the casing *a* will be relieved, so that upon the return movement of the plunger or piston, *H*, under the influence of the spring *k*, a suction is developed by said plunger or piston, but only after the valve *h'* has closed

the nozzle opening. Since the stroke of the plunger or piston is short, this suction will not be great, but it will be sufficient to cause the soap to flow rapidly into the groove *h* from the container *e* so that notwithstanding quickly repeated thrusts of said plunger or piston, soap in substantially the same quantity will always be delivered.

By the construction described, the groove *h* will be brought into register with the intake port *c* and with the discharge nozzle alternately, said intake port being closed by its valve while said groove is in register with said nozzle, and said nozzle being closed by its valve while said groove is in register with said intake port.

The valve will be lubricated and packed against the low pressure, by the soap, so that a sufficiently tight fit of the plunger may be secured to prevent leakage.

It is not my intention to limit the invention to the precise details of construction shown in the drawings, it being apparent that such may be varied without departing from the spirit and scope of the invention.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. A liquid soap dispenser embodying therein a cylindrical valve casing having a discharge nozzle leading therefrom at a point intermediate the ends thereof, and an intake port arranged in advance of said nozzle, a reservoir for liquid soap surmounting said casing and communicating therewith through said intake port, a reciprocating piston mounted in said casing and having a peripheral groove adapted to receive a limited quantity of soap and dividing said piston into two distinct valves, one operative in relation to said nozzle and the other

operative in relation to said intake port, said piston also having an air passage opening into said casing and into said groove, a spring acting upon said piston and normally maintaining said peripheral groove in communication with said intake port and causing one of said valves to close said discharge nozzle, and a stem whereby said piston may be actuated.

2. A liquid soap dispenser embodying therein a cylindrical valve casing having a discharge nozzle leading therefrom at a point intermediate the ends thereof, and an intake port arranged in advance of said nozzle, a reservoir for liquid soap surmounting said casing and communicating therewith through said intake port, a reciprocating piston mounted in said casing, having a peripheral groove adapted to receive a limited quantity of soap, and dividing said piston into two distinct valves, one operative in relation to said nozzle and the other operative in relation to said intake port, said piston having a longitudinally extending bore therein and a port leading from said bore and opening into said groove, a spring in said casing and acting against said piston to normally maintain said peripheral groove in communication with said intake port and to cause one of said valves to close said nozzle, and a stem whereby said piston may be actuated.

In witness whereof, I have hereunto affixed my signature, this 26th day of August, 1919, in the presence of two subscribing witnesses.

JOSEPH M. DABROWSKI.

Witnesses:

F. T. WENTWORTH,
E. BRADFORD.