E. M. FRANK & J. H. VENNERS.

LIQUID SOAP DISPENSING APPARATUS.

APPLICATION FILED NOV. 16, 1907.

925,629.

Patented June 22, 1909.

Fig. 1.

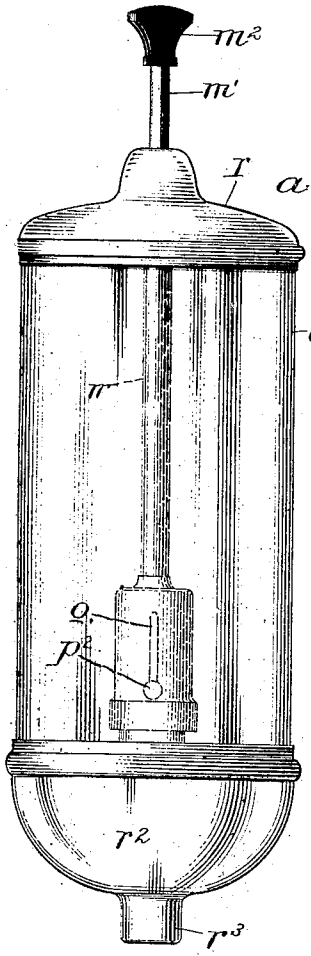


Fig. 2.

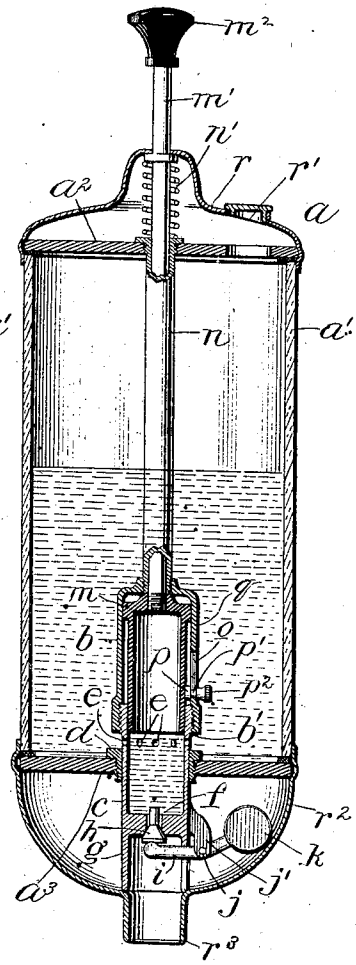


Fig. 3.

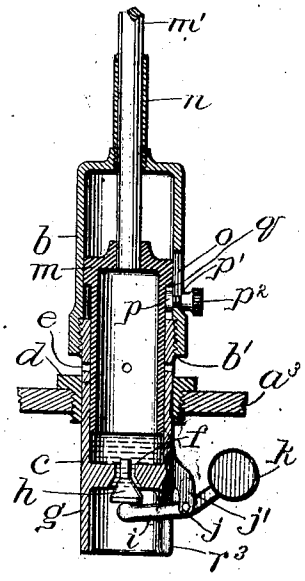


Fig. 4.

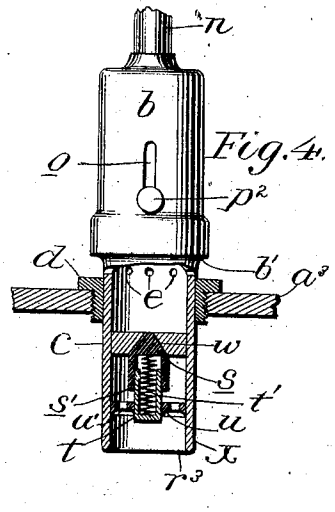
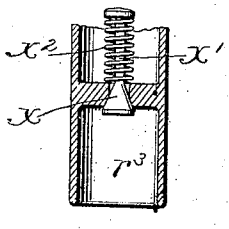


Fig. 5.



Witnesses:

Allen Burdett

Raymond L. Blanc

Inventors

E. M. Frank & J. H. Venners.

By their Attorney

Geo. L. Wheelock.

UNITED STATES PATENT OFFICE.

EMANUEL M. FRANK AND JAMES H. VENNERS, OF NEW YORK, N. Y., ASSIGNORS TO THE P. M. FRANK DISINFECTING COMPANY, A FIRM.

LIQUID-SOAP-DISPENSING APPARATUS.

No. 925,629. Specification of Letters Patent. Patented June 22, 1909.

Application filed November 16, 1907. Serial No. 402,466.

To all whom it may concern:

Be it known that we, EMANUEL M. FRANK and JAMES H. VENNERS, citizens of the United States, both of the city, county, and State of New York, have invented certain new and useful Improvements in Liquid-Soap-Dispensing Apparatus, of which the following is a specification.

This invention relates to liquid-soap dispensing apparatus by which a small quantity of soap may be discharged for use, and the objects of the invention are to provide a substantial, economical and reliable soap dispensing apparatus, and one in which the tendency to squirt the charge of soap with great force from the machine tending to spatter it all around, is removed.

These being some of the objects in view, our invention consists of certain features of construction and combinations of parts to be hereinafter described and then claimed.

In the accompanying drawings showing a desirable form of the invention, Figure 1 is an elevation of our improved liquid-soap dispensing apparatus; Fig. 2 is a vertical central section thereof, clearly showing the soap discharge portions; Fig. 3 is an enlarged detail section of the discharge portions of the apparatus in actuated position when a charge of soap is discharged; Fig. 4 is a broken detail sectional view showing a modified form of automatic discharge valve; and Fig. 5 is another modification of the valve.

The casing or reservoir a which is to contain the liquid-soap may be of any suitable construction, but preferably that shown is employed, and comprises a glass cylinder a' provided with a suitable top and bottom a^2, a^3. The top and bottom a^2, a^3 of the reservoir have preferably applied thereto a top cap r and a bottom cap r^2, which are secured to top a^2 and bottom a^3 by crimping or expanding the edges of the caps upon the latter or they may be secured by solder so as not to be easily removed by one inclined to tamper with the apparatus. The top cap has a suitably closed filling orifice r', and the bottom cap a discharge nozzle r^3. These caps may be formed up or shaped in any desirable and ornamental manner.

Contained within the reservoir which may consist of the parts described, is a suitable charge discharging mechanism, the preferable form of which is illustrated in the drawings. This mechanism is as follows: A charge chamber which is composed of an upper cylindrical section b and a lower cylindrical section c, is located in the lower part of the reservoir, the two sections being screwed together at b', and the lower section c being seated in a suitable gland nut d located in a central opening of the reservoir bottom a^3 so that the longitudinal axis of the reservoir passes through the charge chamber. The liquid-soap which is admitted into the reservoir through the filling orifice r', flows in small streams through one or more perforations e in the lower charge chamber section c, which holes are located just above the bottom a^3. Small jets of liquid-soap flow into the lower section of the charge chamber only when the charge discharging plunger, to be described, is raised entirely above the perforations. A discharge opening f surrounded by a downwardly projecting nozzle or neck g, is located in the lower end of the charge section c and preferably flares downwardly so that it may be controlled by a conical valve h which is seated movably in said discharge opening. Said valve is held to its seat in such manner that when the charge of liquid-soap in the charge chamber is pressed out, said valve will automatically open and then close when the pressure on the charge is removed. A simple means for permitting such automatic action may be a lever i suitably pivoted outside of the nozzle g at j to a small lug j', with the inner end of the said lever supporting the valve h, and the outer end of the lever carrying a weight k. This valve mechanism is contained within the lower cap r^2 so that it may not be tampered with, and the construction is such that there will be no tendency for the soap to clog in nozzle g.

The piston or plunger m for discharging the liquid-soap is snugly yet movably fitted into the lower charge section c, and in its normal position is located within the upper charge section b. This charge plunger m is preferably actuated by a plunger rod m', which at its lower end is screwed to the plunger while its upper end is provided with a knob m^2, located above the upper cap r so that the hand of the person may have convenient access thereto to depress the plunger rod and plunger. Said plunger rod is guided in a guide tube n located axially in the reservoir, its lower end being screwed to the upper end of the charge chamber and

its upper end being suitably secured to the reservoir top a^2. The plunger rod and plunger are normally retracted by means of a suitable retracting spring n' which may be coiled about the plunger rod and located underneath the top cap r between it and the reservoir top a^2.

Means for enabling the dispensing of a substantially definite amount of liquid-soap at one operation are provided and comprise a stop p located just inside of the wall of the upper charge section b, said stop having a longitudinal adjustment relatively to the charge chamber through the medium of its screw stem p' which passes through a longitudinal slot in the upper charge section b, and which screw stem receives a binding nut p^2. The stop p may be adjusted at various heights so that when the plunger m is lowered a shoulder q thereon will be brought in contact with said stop and thus limit the extent of downward movement of the plunger.

It has been found in practice that liquid-soap dispensing apparatus of this general type, that is, with a discharge plunger or piston, discharge the charge of liquid-soap with too much force when the plunger is depressed, thus tending to spatter the soap all about. We obtain in our liquid-soap dispensing apparatus a gentle discharge of the charge of liquid-soap by constructing the plunger m hollow and open at its lower end, to provide an open air chamber which acts as a pneumatic cushion to force out the charge of soap gently when the plunger is depressed. It will be seen that the plunger at the limit of its downward movement is confined at its upper end in the lower end of the upper cylindrical section b, with the advantage that the liquid soap cannot flow in over the top of the plunger, which acts as a seat or cut-off during such downward movement.

The operation briefly is as follows. The reservoir is supplied with a quantity of liquid-soap, said reservoir being of course supported stationary in any suitable and convenient location. A charge of the liquid-soap will flow through the perforations e into the charge chamber, and a person desiring to discharge the charge of soap simply presses down upon the plunger rod, thus lowering the plunger m as shown in Fig. 3 and thereby causing the pluger with its air cushion to discharge the charge from the discharge opening f by automatically opening the valve h, whereupon the charge of liquid-soap flows from the discharge nozzle r^3 onto the hand of the operator. On releasing the pressure, the valve h automatically closes, and the plunger is retracted to normal position, thus permitting another charge of liquid-soap to flow through the perforations e into the charge chamber.

In Fig. 4 a modification of the valve mechanism is illustrated, the same comprising a conical valve seat w, a conical valve s, having a depending skirt s' that fits snugly yet slidingly over a cup t which is firmly fixed to the center of a diaphragm u located in the nozzle x and provided with discharge orifices u'. A spring t' is located in the cup t and is surrounded by the skirt s' of the valve and bears on the valve so as to press it to its seat. By such construction the clogging of the action of the spring by the liquid-soap is avoided.

In Fig. 5 the automatic valve x has a long stem x' passing up into the charge chamber, which valve is drawn normally to its seat by spring x^2, so that the nozzle r^3 contains no valve mechanism tending to clog it.

Were the upper section b of the charge chamber omitted it will be observed that the plunger and charge section c would strictly constitute telescoping parts, which they are in effect, as shown.

It is obvious that various modifications are within the scope and spirit of the invention, and we do not limit ourselves to the specific construction shown.

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

1. In a liquid-soap dispensing apparatus, the combination of a reservoir, a charge-chamber communicating therewith and having a discharge opening, an automatic valve controlling said opening, a guide-tube connecting the top of the reservoir with the charge-chamber, a discharge plunger working in said chamber, a plunger rod guided in said tube for depressing said plunger, a retracting spring located above the top of the said reservoir, and a cap applied to the top of said reservoir and confining and guarding said spring.

2. In a liquid-soap dispensing apparatus, the combination of a reservoir, a charge chamber communicating therewith and having a discharge opening, an automatic valve for said opening, a discharge plunger in said chamber, and means within the reservoir for variably regulating the length of stroke of the plunger to vary the amount of soap discharged.

3. In a liquid-soap dispensing apparatus, the combination of a reservoir, a charge chamber communicating therewith and having a discharge opening, an automatic valve controlling said opening, a charge-cushioning discharge plunger working in said chamber, a vertically adjustable regulating stop within the reservoir and contact means on the plunger coöperating with the stop to limit the down stroke of the plunger.

4. In a liquid-soap dispensing apparatus, the combination of a reservoir, a charge-chamber communicating therewith to receive liquid soap from said reservoir and

having a discharge opening, said chamber being composed of two cylindrical sections, the lower of which passes through and is mounted in the bottom of the reservoir, and the upper of which cylindrical sections is secured to the lower section, a valve controlling the discharge opening, a discharge plunger normally located in the upper section of said chamber with its extreme lower end fitting snugly in the upper end of the said lower section, and means whereby said plunger at the limit of its downward movement is confined at its upper end in the lower end of the said upper section.

5. In a liquid-soap dispensing apparatus, the combination of a reservoir, a charge-chamber having a discharge opening, said chamber being composed of two cylindrical sections, the lower of which passes through and is mounted in the bottom of the reservoir and is provided with perforations above said bottom and the upper of which sections is secured to the lower one, a valve controlling said discharge opening, a discharge plunger normally located in the upper section of said chamber, with its extreme lower end fitting snugly in the upper end of the said lower section, and means whereby said plunger at the limit of its downward movement is confined at its upper end in the lower end of the said upper section.

6. In a liquid-soap dispensing apparatus, the combination of a reservoir, a charge-chamber communicating therewith and having a discharge opening, an automatic valve for said opening, a discharge plunger in said chamber, and coöperating parts on the charge-chamber and plunger for variably regulating the length of stroke of the plunger to vary the amount of liquid-soap discharged.

7. In a liquid soap dispensing apparatus, the combination of a reservoir, a charge chamber communicating therewith and having a discharge opening, a valve controlling said opening, a discharge plunger working in said chamber, a guide tube fixed to the top of the reservoir and detachably connected with the charge-chamber, a plunger rod guided in said tube and a protected retracting spring located above the top of the reservoir to act on the plunger.

8. Means for discharging liquid-soap from a reservoir, comprising two telescoping parts, one of which is provided with a soap inlet and a valve-controlled discharge opening, and the other of which is imperforate and axially elongated to provide an air cushion for the charge, a cylindrical section detachably connected with the said orificed part and normally inclosing said imperforate part, the lower end of said other imperforate part fitting snugly in normal position in the upper end of said soap inlet part, and means whereby at the limit of the downward movement of said imperforate part it is confined at its upper end in the lower end of the said upper section.

Signed at New York, N. Y., this 29th day of October, 1907.

EMANUEL M. FRANK.
JAMES H. VENNERS.

Witnesses:
GEO. L. WHEELOCK,
GERTRUDE W. MARTLING.