Nov. 12, 1935. E. E. STILL 2,020,916

LIQUID SOAP DISPENSER

Filed Aug. 22, 1934

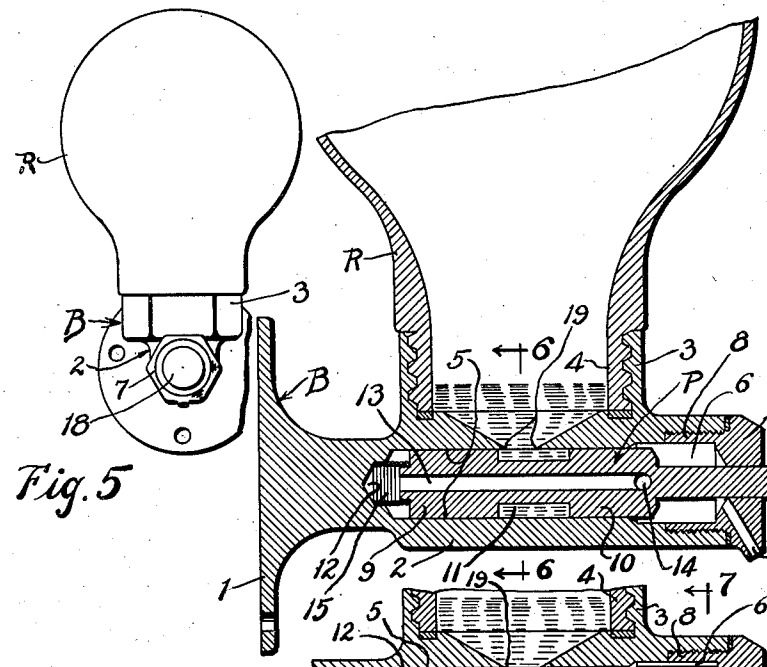


Fig. 5

Fig. 1

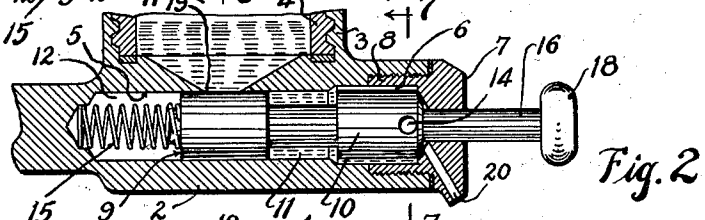


Fig. 2

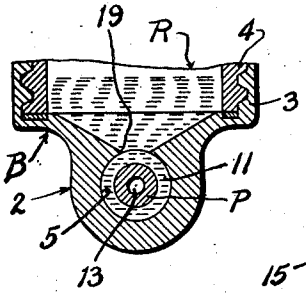


Fig. 6

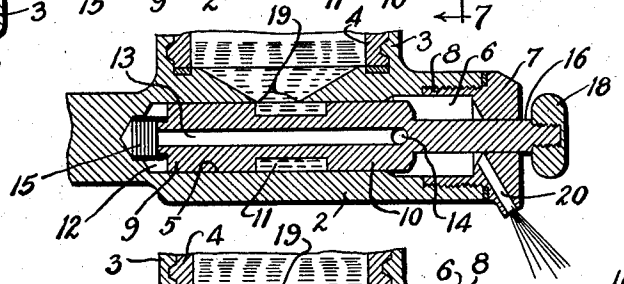


Fig. 3

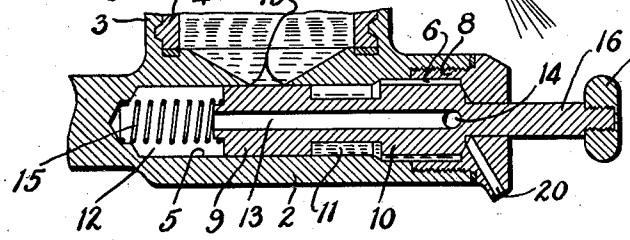


Fig. 4

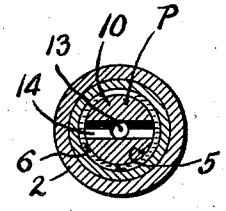


Fig. 7

INVENTOR.
Eben E. Still
BY Luther L. Mack
ATTORNEY.

Patented Nov. 12, 1935

2,020,916

UNITED STATES PATENT OFFICE

2,020,916

LIQUID SOAP DISPENSER

Eben E. Still, Los Angeles, Calif.

Application August 22, 1934, Serial No. 740,918

10 Claims. (Cl. 221—102)

This invention has for a main object the provision of a simple, efficient and economical dispenser for liquid soap arranged to dispense the soap by displacement instead of by gravity or by direct action of a piston on a fluid, as in other well known types of dispensers.

To this end, my invention contemplates the provision of a base having a cylindrical bore therein with an inlet in communication with a suitable soap receptacle and an outlet remote from the inlet, and a piston slidable in said cylinder and so formed as to provide separate air, charging and discharging chambers within the base. Thus, by thrusting the piston inwardly the inlet is opened to communication with the charging chamber, and upon the return stroke of the piston the soap admitted through the inlet is transferred to the discharge chamber but is held against discharge by the piston when the same is at its outermost extreme of movement. Upon the subsequent inward thrust of the piston, however, air from the air chamber is forced through the piston, or otherwise, into the discharge chamber for exhausting the previous charge of soap for use, while at the same time a new charge is admitted through the inlet to the charging chamber.

Other objects will appear as the description of my dispenser progresses.

In the accompanying drawing I have shown a preferred form of device, subject to modification within the scope of the appended claims without departing from the spirit of my invention. In said drawing:

Fig. 1 is a sectional elevation of a dispenser embodying my improvements, and showing the piston initially thrust inwardly as in a priming operation for receiving a charge of soap;

Fig. 2 is a fragmentary similar section of the same showing the piston normally positioned as at the completion of the priming stroke and in readiness to discharge the previously admitted charge of soap;

Fig. 3 is a similar section of the same showing the piston again thrust inwardly as in a discharging operation;

Fig. 4 is a similar section of the same showing the piston again restored to normal position;

Fig. 5 is a side elevation of the assembled dispenser;

Fig. 6 is a transverse section of the dispenser on line 6—6 of Fig. 1; and

Fig. 7 is a section of the same on line 7—7 of Fig. 2.

Briefly described my improved dispenser includes a base B arranged to detachably support a soap receptacle R, and a plunger or piston P slidably mounted in said base. The base B has a flange 1 adapted to be suitably attached to a wall or to a supporting member and a horizontal body 2 having a socket 3 on its upper side and internally threaded to receive an externally threaded neck 4 of the receptacle R.

Body 2 has a horizontal cylindrical bore 5 formed therein which is enlarged at its open end to provide a counterbored discharge chamber 6 adapted to be closed by means of a removable head 7 formed with a threaded portion 8 adapted to be screwed into the end of the chamber 6. Piston P has spaced inner and outer portions 9 and 10 of like diameter corresponding to the bore 5 and adapted to slidably fit said bore, thereby providing a movable charging chamber 11.

Rearwardly of the portion 9 of the piston an air chamber 12 is provided which is in constant communication with a central bore 13 in piston P and an outlet 14 is formed in the portion 10 of the piston for affording communication between bore 13 and discharge chamber 6. A compression spring 15 is held between the rear end of piston P and the adjacent end of bore 5 for urging the piston outwardly to normally closed position. Piston P has a stem 16 which is slidable in and extends through the head 7 and is provided at its outer extremity with a suitable operating button 18, by means of which the piston may be operated in a dispensing operation.

The socket 3 has a conical bottom with a central inlet 19 in communication with the bore 5 and which is normally closed, as shown in Fig. 2, by the portion 9 of piston P. An outlet 20 from chamber 6 is provided in the head 7, through which the liquid soap is dispensed at each inward thrust of the piston.

In operation, when the soap receptacle R is filled with soap and is attached in inverted position to the socket 3, the portion 9 of the piston will normally close the inlet 19 so that the soap will not leak from the receptacle. When the piston is thrust inwardly in an initial operation, against the tension of spring 15, air is forced outwardly from chamber 12 through bore 13 of the piston into and from chamber 6 while the charging chamber 11 is moved into registration with inlet 19 where it is filled with a supply of soap from receptacle R.

Upon the release of pressure from piston P the spring 15 operates to restore the piston to normally closed position in its cylinder, there-

by establishing communication between chambers 11 and 6 and transferring the charge of soap to chamber 6, as shown in Fig. 2. When piston P is again thrust inwardly air from chamber 12 is forced through bore 13 of the piston into chamber 6 and serves to exhaust the contents of the discharge chamber through outlet 20, for use, and at the same time recharge the chamber 11 with soap for a subsequent operation.

Thus, in the operation of the device, the piston may not become airbound and vents for the cylinder are not necessary except through outlet 20, leakage is impossible, and accurately measured quantities of soap are dispensed at all times. The dispenser may be thoroughly and quickly cleaned, or replacements made, by removing the head 7. Leathers usually employed for plungers are unnecessary with the type and arrangement of piston shown, and the device is therefore durable and sanitary.

It will be also noted that the portion 9 of the piston forms a closure for the inlet 19 while the outer end of the portion 10 forms a closure for the outlet 20 when the piston is positioned at its outermost extreme of movement, thereby doubly preventing leakage of the soap from the dispenser.

What I claim is:

1. A liquid soap dispenser comprising a soap receptacle and a base therefor having separate air, charging and discharging chambers, said air chamber being in constant communication with said discharging chambers and operating means in said base for simultaneously charging said charging chamber with a measured quantity of soap from said receptacle and discharging a previously charged quantity of soap from said discharge chamber when pressure is created in said air chamber.

2. A liquid soap dispenser comprising a soap receptacle, a base having a socket for detachably supporting said receptacle and provided with an inlet, a cylinder in communication with said inlet and having an outlet spaced from the inlet, a piston slidable in said cylinder and formed with a pair of spaced portions and a reduced intermediate portion whereby to provide a charging chamber intermediate the ends of said piston adapted to be moved to and from communication with said inlet, said piston terminating short of the cylinder to provide an air chamber and a discharge chamber at opposite extremities thereof in said cylinder, and means for affording communication between said air discharge chambers, for the purpose described.

3. A liquid soap dispenser comprising a soap receptacle, a base for detachably supporting said receptacle and provided with a cylinder therein, a detachable closure for said cylinder, a piston slidable in said cylinder and provided with spaced portions forming a charging chamber therebetween, an inlet and an outlet to said charging chamber, said piston being of less length than said cylinder for providing an air chamber and a discharge chamber in said cylinder at opposite extremities of said piston and in constant communication, an outlet to said discharge chamber, said piston being operative upon the inward movement thereof for opening said inlet to introduce a quantity of soap to said charging chamber and to expel air from said air chamber into said discharging chamber for discharging soap from said outlet under pressure.

4. A liquid soap dispenser comprising a soap receptacle, a base therefor having a cylinder with an inlet and an outlet, an end closure for said cylinder, a piston slidable in said cylinder and formed with spaced portions forming a charging chamber therebetween normally closed from communication with said inlet by one of said portions, that portion of the cylinder adjacent the inner end of said piston forming an air chamber, that portion of the cylinder outwardly of said piston forming a discharge chamber adjacent said outlet, said piston having a passage therein affording constant communication between said air and discharge chambers, and means for automatically restoring said piston to normal position at the completion of each inward movement thereof, whereby upon the inward movement of the piston said inlet will be opened to and for charging said charging chamber with a quantity of soap and upon the restoration of said piston said charge of soap will be transferred to said discharge chamber, and upon a succeeding inward thrust of the piston the expulsion of air from said air chamber will be effective for discharging the soap from said outlet.

5. A liquid soap dispenser comprising a soap receptacle, a base for supporting the same for use, said base including a cylinder having an inlet from said receptacle and an outlet spaced therefrom, and a piston slidable in said cylinder and provided with spaced portions for respectively closing said inlet and said outlet and so formed as to provide an air chamber at the rear of said inlet closing portion and a discharge chamber at the outer end of said piston, said piston having a passage therethrough for maintaining constant communication between said air and discharge chambers, whereby upon the inward thrust of the piston pressure from said air chamber will be effective for discharging a measured quantity of soap from the discharge chamber.

6. A liquid soap dispenser comprising a soap receptacle, a base therefor including a cylinder having a central inlet and an outlet near an extremity thereof, a piston slidable in said cylinder normally closing said inlet and formed so as to provide a chamber in which to admit a measured quantity of soap from said receptacle to an intermediate portion of said cylinder upon the inward thrust of said piston and to transfer said quantity of soap to a position for discharge from said cylinder upon the restoration of the piston to normal position, and means for restoring said piston to normal position, a succeeding inward thrust of said piston serving to discharge the previously admitted charge of soap and to recharge the cylinder for a succeeding operation.

7. A liquid soap dispenser comprising a soap receptacle, a base therefor including a cylinder and a piston slidable therein and terminating short of the inner end of said cylinder so as to provide an air chamber, a charging chamber intermediate the ends of said piston, a discharge chamber at the outer end of said piston, an inlet from said receptacle to said charging chamber normally closed by a portion of said piston, an outlet to said discharge chamber normally closed by a portion of said piston, means for urging said piston to closed position, and means for affording communication between said air chamber and said discharge chamber whereby a quantity of soap previously admitted to said charging chamber and transferred to said discharge chamber may be discharged from the discharge chamber upon a succeeding inward thrust of the

piston by reason of the expulsion of air from said air chamber.

8. A liquid soap dispenser comprising: a receptacle provided with a cylinder in communication therewith and having an outlet remote therefrom, a piston slidable in said cylinder and formed with spaced portions providing a charging chamber therebetween adapted for communication with said receptacle when the piston is thrust inwardly for admitting a charge of liquid to said charging chamber, said cylinder having a discharge chamber communicating with said outlet and a pressure chamber in constant communication with said discharge chamber, and means for moving said piston outwardly subsequent to a charging operation, whereby the pressure in said pressure chamber will evacuate said discharge chamber through said outlet of the contents of a previous charge of liquid.

9. A liquid soap dispenser comprising: a receptacle provided with a cylinder having an inlet and an outlet, a piston slidable in said cylinder formed so as to form separate pressure, charging and discharge chambers at spaced points relative to said piston, said pressure and discharge chamber being in constant communication, a portion of said piston normally closing communication between said receptacle and said charging chamber and another portion of said piston normally closing said outlet, said piston being movable in a given direction for affording communication between said charging chamber and said receptacle and in an opposite direction for transferring the contents of the chamber to said discharge chamber, the initial movement of the piston serving to discharge the contents of the discharge chamber by creating pressure in the pressure chamber.

10. A liquid soap dispenser comprising: a receptacle provided with a cylinder, a piston slidable in said cylinder and formed so as to provide longitudinally spaced pressure, charging and discharge chambers in said cylinder, said receptacle being arranged for communication with said charging chamber, said discharge chamber having an outlet, said pressure and discharge chambers being in constant communication, and means whereby on the movement of said piston in a given direction said charging chamber will be opened to communication with said receptacle for receiving a charge of liquid and pressure will be created in said pressure chamber, and on the reverse movement of the piston the charge of liquid will be transferred to the discharge chamber while a previous charge of liquid will be discharged therefrom.

EBEN E. STILL.