Oct. 4, 1932. J. F. PALMER 1,880,271

LIQUID DISPENSING FAUCET

Filed May 19, 1930

FIG. 1.

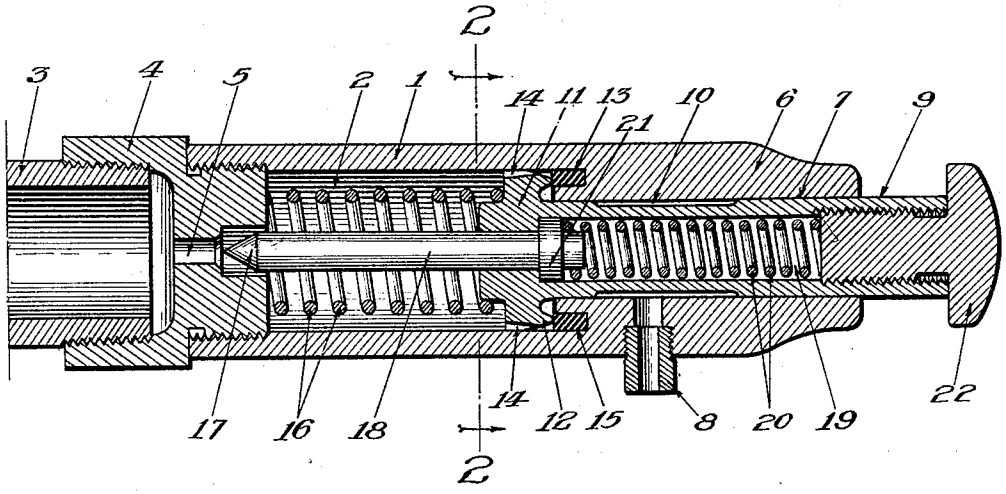
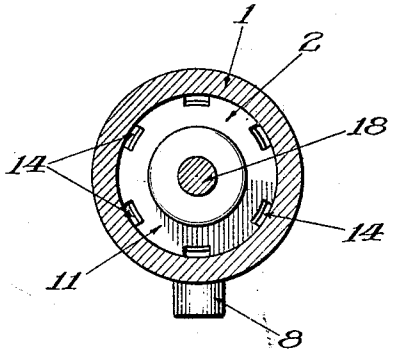


FIG. 2.



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LIQUID DISPENSING FAUCET

Application filed May 19, 1930. Serial No. 453,646.

This invention relates to improvements in a liquid dispensing faucet.

The present application is a continuation of an original application Serial No. 15,931, filed March 16, 1925, as to the matter common to both applications.

The dispensing faucet to which the invention applies has a casing provided with a receiving chamber into which a plunger is movable to displace or discharge soap or other liquid therefrom in a limited quantity.

The invention has as its object to provide an efficient and durable dispensing faucet.

Another object is to provide a dispensing faucet with valves which will be positive and precise in action.

Another object is to provide a dispensing faucet in which the supply inlet will be closed and the fluid placed under compression before the discharge outlet is opened.

Another object is to provide a dispensing faucet with durable valves to control the passage of fluid therethrough.

According to the present invention, the plunger is provided with both a slide valve and a lift valve to control the discharge outlet from the receiving chamber and operates another lift valve to close the supply inlet before the discharge outlet is opened by the slide valve.

Another characteristic of the invention is that the discharge lift valve has a resilient seat arranged in a groove and is thereby retained from displacement or distortion by the pressure exerted thereon.

A dispensing faucet embodying the invention is illustrated in the accompanying drawing in which the views are as follows:

Fig. 1 is a central longitudinal section through the faucet.

Fig. 2 is a transverse section on the line 2—2 of Fig. 1.

The faucet has a casing 1 which contains a receiving chamber 2 to receive soap or other liquid from a supply source through a pipe 3.

The casing 1 is attached to the pipe 3 by a plug or head 4 which closes the rear end of the receiving chamber 2 and has an inlet 5 to admit liquid from the pipe 3 into the receiving chamber.

The front end or head 6 of the casing 1 has a longitudinal bore 7 from which is a lateral discharge port or outlet 8.

The bore 7 contains a reciprocable plunger 9 which functions as a sliding valve to control the outlet 8 and has a groove or port 10 in the periphery thereof to place the outlet 8 into communication with the receiving chamber 2 when the plunger is moved inwardly.

The plunger has upon its inner end a piston 11 having an axial flange 12 to engage a yieldable or resilient gasket or seat 13 around the plunger and thereby provide a lift valve to control the egress of liquid from the receiving chamber.

The piston 11 is preferably fitted in the chamber 2 and provided with ports 14 around its periphery for the passage of liquid from one side to the other thereof as it is moved.

The gasket 13 is arranged in a groove 15 which is concentric with the bore 7 and has continuous inner and outer peripheral walls to hold the gasket 13 against displacement or distortion by the flange 12.

The plunger 9 is urged to its initial or outermost position and the flange 12 normally held in engagement with the gasket 13 by a spiral compression spring 16 which is arranged within the chamber 2 and bears against the base 4 and the piston 11.

The inlet 5 is controlled by a lift valve 17 having an elongated stem or rod 18 which is carried by the plunger 9 and slidable in a bore 19 therein.

The inner part of the bore 19 is constricted to support and guide the valve stem 18 and the outer part thereof contains a helical compression spring 20 which urges the valve stem 18 inwardly.

The outer end of the valve stem 18 is provided with a head 21 which is of greater diameter than the constricted portion of the bore 19 and limits the inward movement of the valve stem under the influence of the spring 20.

The outer end of the plunger 9 is provided with a button or actuator 22 which closes the

bore 19 and provides an abutment for the spring 20.

The faucet is operated by pressing inwardly upon the actuator 22 to close the inlet valve and open the outlet valves, and cause the plunger to displace soap or other liquid from the receiving chamber and discharge it through port 10 to its discharge outlet 8.

The spring 20 is compressed by the valve stem 18 as the plunger moves inwardly and holds the inlet valve 17 against its seat.

The inlet valve is closed before the port 10 moves into communication with the chamber 2, so that a uniform quantity of liquid is discharged during each reciprocation of the plunger 9.

When the actuator is released, the spring 16 returns the piston 11 to its initial position and the spring 20 holds the inlet valve closed until the outlet 8 is closed by the sliding outlet valve formed by the plunger 9 and the bore 7.

Then the plunger 9 engages the head 21 of the valve stem and moves the valve 17 away from the inlet 5 to admit another charge of liquid into the receiving chamber.

The spring 16 urges the flange 12 against the gasket 13 and relieves the sliding outlet valve from the pressure of the liquid in the chamber 2.

The invention herein set forth is susceptible of various modifications without departing from the scope thereof as hereafter claimed.

The invention is hereby claimed as follows:

1. A dispensing faucet, comprising a casing containing a receiving chamber and having an inlet thereto and an outlet therefrom, a plunger arranged in said casing and reciprocable therein, a normally open valve carried by said plunger to control said inlet port and having its stem slidable in said plunger, a spring to press said inlet valve inwardly and close said inlet as said plunger is moved inwardly, a yieldable valve seat arranged in a groove formed in one end of said casing concentric to said plunger and having inner and outer peripheral walls to prevent lateral distortion of said valve seat, and a displacement valve carried by said plunger and normally engaging said valve seat to control said outlet port.

2. A dispensing faucet, comprising a casing containing a receiving chamber and having an inlet thereto and an outlet therefrom, a plunger arranged in said casing and reciprocable therein, a normally open valve carried by said plunger to control said inlet port and having its stem slidable in said plunger, a spring to press said inlet valve inwardly and close said inlet as said plunger is moved inwardly, a yieldable valve seat arranged in a groove formed in one end of said casing concentric to said plunger and having inner and outer peripheral walls to prevent lateral distortion of said valve seat, and a displacement valve carried by said plunger and normally engaging said valve seat to control said outlet port and having passageways in the periphery thereof to permit liquid to pass from one side to the other of said valve during reciprocation thereof.

3. A dispensing faucet, comprising a casing provided with a receiving chamber having a supply inlet and a discharge outlet, a plunger slidable into said receiving chamber to compress and discharge liquid through said discharge outlet and having a slide valve and a lift valve to control said discharge outlet, an annular ledge arranged within said chamber around said plunger and having an annular groove concentric thereto, an annular resilient gasket arranged within said groove and engaged by said lift valve to control said discharge outlet, and another lift valve carried by said plunger to control said supply inlet and operated to close said supply inlet before said slide valve opens said discharge outlet.

4. A dispensing faucet, comprising a casing provided with a receiving chamber having a supply inlet and a discharge outlet, a plunger slidable into said receiving chamber to discharge liquid therefrom through said discharge outlet, a lift valve carried by said plunger and having an annular flange concentric therewith, an annular ledge arranged within said chamber around said plunger and having an annular groove therein in concentric axial alinement with said flange, and an annular resilient seat arranged within said annular groove and engaged by said flange to control said discharge outlet.

5. A dispensing faucet, comprising a casing provided with a receiving chamber having a supply inlet and a discharge outlet, a plunger slidable into said receiving chamber to compress and discharge liquid therefrom through said discharge outlet, a slide valve formed on said plunger to control said discharge outlet, a lift valve carried by said plunger and having an annular flange concentric therewith, an annular ledge arranged within said chamber around said plunger and having an annular groove therein in concentric axial alinement with said flange, an annular resilient seat arranged within said annular groove and engaged by said flange to control said discharge outlet, and another lift valve carried by said plunger to open said supply inlet and operated by said plunger to close said supply inlet before said slide valve opens said discharge outlet.

6. A dispensing faucet, comprising a casing provided with a receiving chamber, a removable head closing the rear end of said chamber and having a supply inlet surrounded by a valve seat, a head closing the front end of said chamber and having a bore in axial alinement therewith and a discharge

outlet communicating with said bore, a plunger fitted in said bore to form therewith a slide valve to control said outlet and having a peripheral port to provide communication between said chamber and said outlet upon inward movement of said plunger, a spring urging said plunger outwardly, an annular resilient gasket arranged in an annular groove formed in said front head concentric to said bore, a lift valve carried by said plunger and arranged within said chamber and having an annular axial flange to engage said gasket and control said outlet, an inlet valve carried by said plunger to control said supply inlet and having its stem slidable into said plunger, and a spring urging said inlet valve toward said inlet to enable the same to close said inlet upon inward movement of said plunger and before said discharge outlet is opened and to enable said plunger to advance into said chamber and displace a part of the contents thereof and expel it through said discharge outlet.

7. A dispensing faucet, comprising a casing provided with a receiving chamber, a removable head closing the rear end of said chamber and having a supply inlet surrounded by a valve seat, a head closing the front end of said chamber and having a bore in axial alinement therewith and a discharge outlet communicating with said bore, a plunger fitted in said bore to form therewith a slide valve to control said outlet and having a peripheral port to provide communication between said chamber and said outlet upon inward movement of said plunger, a spring urging said plunger outwardly, an annular resilient gasket arranged in an annular groove formed in said front head concentric to said bore, a lift valve carried by said plunger and arranged within said chamber and having an annular axial flange to engage said gasket and control said outlet, and having passageways around its periphery for the passage of liquid from one side to the other side thereof, an inlet valve carried by said plunger to control said supply inlet and having its stem slidable into said plunger, and a spring urging said inlet valve toward said inlet to enable the same to close said inlet upon inward movement of said plunger and before said discharge outlet is opened and to enable said plunger to advance into said chamber and displace a part of the contents thereof and expel it through said discharge outlet.

8. A dispensing faucet, comprising a casing provided with a receiving chamber having a supply inlet and a discharge outlet, a plunger slidable into said receiving chamber to discharge liquid through said discharge outlet, a lift valve to control said discharge outlet, an annular axial groove formed within said casing in front of said valve and around said plunger, and an annular resilient valve seat arranged in said groove to be engaged by said valve and retained from radial distortion by its inner and outer peripheries engaging the side walls of said groove.

9. A dispensing faucet, comprising a casing provided with a receiving chamber having a supply inlet and a discharge outlet, a plunger slidable into the receiving chamber to discharge liquid therefrom through said discharge outlet, a lift valve carried by said plunger, and a seal formed between said valve and its seat by an annular gasket arranged in a groove having inner and outer peripheral walls to retain said gasket from radial distortion.

10. A dispensing faucet, comprising a casing provided with a receiving chamber having a supply inlet and a discharge outlet, a plunger slidable into the receiving chamber to discharge liquid therefrom through said discharge outlet, a lift valve carried by said plunger, a seal formed between said valve and its seat by an annular flange having an angular edge, and an annular gasket arranged in a groove having inner and outer peripheral walls to retain said gasket from radial distortion.

In witness whereof, I have hereunto subscribed my name.

JOHN FREDERICK PALMER.