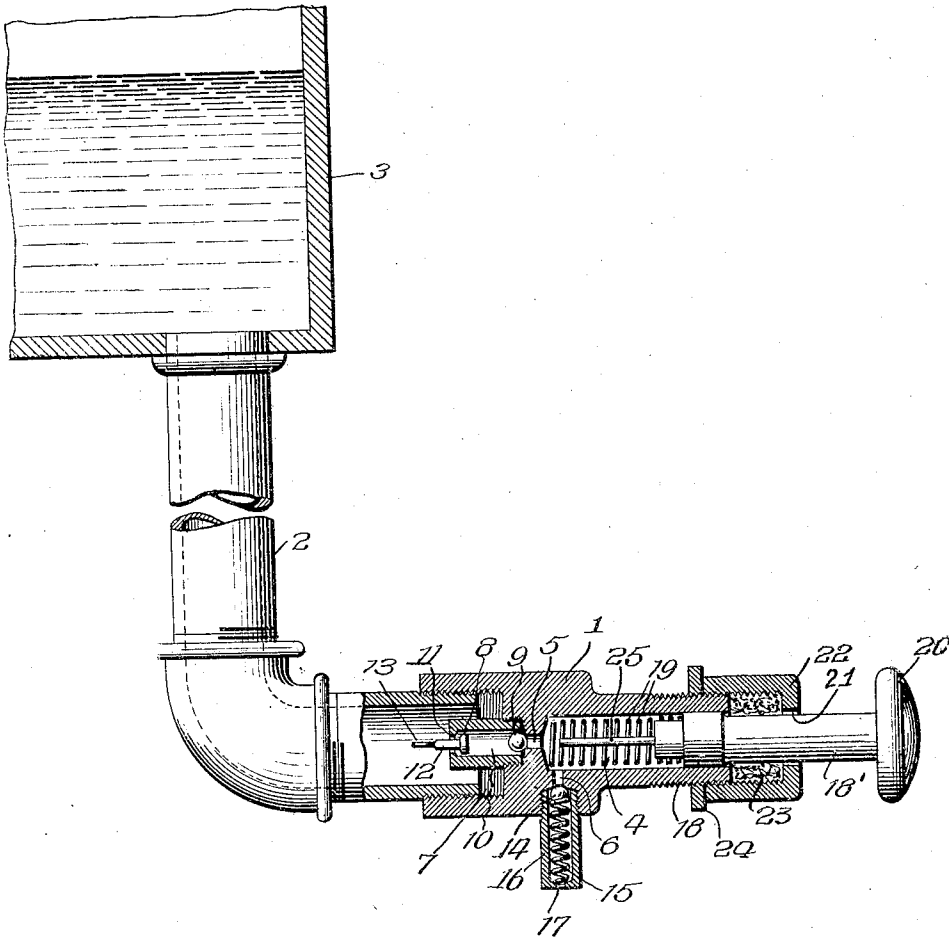


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J. F. PALMER
DISPENSING FAUCET
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UNITED STATES PATENT OFFICE

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DISPENSING FAUCET

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This invention relates to liquid dispensing faucets.

The dispensing faucet to which the invention applies in particular has a casing for connection to a source of fluid under pressure, an inlet thereto and an outlet therefrom, valves controlling the inlet and the outlet, and a plunger reciprocable in the casing to eject a limited quantity of fluid during each reciprocation.

An object of the invention is to provide an efficient and durable dispensing faucet.

Another object is to provide a faucet from which working parts may be removed and replaced without disconnecting the faucet from its source of liquid.

Another object is to provide a faucet which will not leak.

Another object is to provide a faucet which may be readily assembled and installed.

Another object is to provide a faucet which may be readily and economically manufactured.

Another object is to provide a faucet in which the inlet valves are open during the major portion of the movement of the piston to enable a uniform charge of liquid to enter the receiving chamber during each operation of the faucet.

Other objects and advantages will appear hereinafter.

The invention is exemplified by the faucet illustrated in the accompanying drawing.

The faucet is shown in central longitudinal section and has a casing 1 which is connected by a supply pipe 2 to a tank 3 containing a supply of liquid, such as soap.

The liquid is delivered to the faucet under pressure, as by arranging the tank 3 above the faucet.

The casing 1 contains a receiving or supply chamber 4 and has an inlet 5 thereto arranged in the rear end thereof and an outlet 6 arranged in its lower wall.

The inlet 5 provides communication between the receiving chamber 4 and a recess 7 which is formed in the rear end of the casing 1 and internally threaded for attaching the faucet to the threaded open end of the supply pipe 2.

The liquid admitted to the receiving chamber 4, through the inlet 5, is controlled by two valves 8 and 9 working in a tubular inlet valve housing 10 threaded into the dispenser-casing.

The tubular inlet housing 10 has a restricted opening 11 at its outer end, through which extends the stem 12 of the valve 8.

The valve 8 may take the form of a flat disk which seats in the outer end of the inlet casing 10, and when so seated closes the restricted opening 11 therein, thus checking the flow of liquid soap from the soap chamber back into the supply pipe.

The extent of movement of the valve 8 is limited by a stop 13 on the opposite end of the valve stem 12. The stop 13 may be formed by flattening the end of the valve stem 12 after the same has been passed through the restricted opening.

The valve 9 working in the inlet valve housing 10 may take the form of a ball which, under pressure of the liquid, is adapted to seat directly against the restricted inlet opening 5 and close the same.

Thus when the valve 9 seats to close the inlet 5, the flow of liquid soap from the supply pipe into the soap chamber 4 is stopped.

The outlet opening 6 is adapted to be closed by a ball check valve 14 seated therein, under pressure of a coil spring 15.

The outlet ball check-valve 14 and the coil spring 15 are contained within a tubular outlet valve housing 16, threaded into an opening in the side of the dispenser 1.

The outlet valve housing 16, at its outer end has a restricted opening 17, through which the liquid is delivered from the faucet.

The annular shoulder immediately surrounding the restricted opening 17 serves as a seat for the spring 15.

The pressure of the coil spring 15, when in extended position, should exceed the pressure of the liquid soap admitted from the supply pipe to the liquid receiving chamber 4 so as to prevent opening of the outlet check valve while the chamber is receiving a charge of liquid soap.

A piston 18 working in the receiving chamber 4 is normally held at the outer end thereof

by the coil spring 19. By pushing on the knob or push button 20 at the outer end of the piston rod 18', the piston 18 may be moved inwardly against the action of spring 19.

5 When pressure on the knob 20 is relieved, the tension of spring 19 returns the piston 18 to its normal position.

The piston rod 18' passes through an opening 21 in a knurled cap 22 threaded onto the outer end of the faucet casing.

This cap 22 contains graphite packing 23, or other suitable packing, which prevents the leakage of the liquid soap at the outer end of the chamber 4.

15 A lock nut 24 serves to lock the cap 22 in adjusted position on the faucet casing.

A small rod 25 fastened in the inner end of the piston 18 moves therewith and controls the position of the inlet ball valve 9.

20 When the faucet is connected with a supply pipe and the chamber 4 is filled with liquid, the inlet valve 8 is open, the inlet valve 9 is held closed by the pressure of the liquid in the pipe 2 and the tank 3, and the outlet valve 14 is held closed by its spring 15.

Inward movement of the piston 18 places the liquid in the chamber 4 under pressure and, when this pressure becomes greater than the pressure exerted upon the valve 9 by the liquid in the pipe 2 and tank 3, valve 9 will be opened and the valve 8 closed thereby.

Continued inward movement of the piston 18 increases the pressure upon the liquid in the chamber 4 as the valve 8 prevents the same from being forced into the supply pipe.

This pressure causes the outlet valve 14 to open and liquid to be ejected forcibly through the outlet 6 and opening 17.

When the piston is released, the spring 19 urges the same outwardly, the spring 15 urges the valve 14 to its seat and closes the outlet, the pressure of the liquid in the pipe 2 opens the valve 8, and the rod 25 holds the valve 9 open to allow liquid to flow through the inlet 5 and refill the chamber 4.

As the piston moves outwardly, the pressure of the liquid in the valve housing 10 holds the valve 9 against the end of the rod 25 until the piston approaches the limit of its outward movement when the rod 25 disengages the valve 9 which closes the inlet 5 and relieves the chamber 4 from the pressure of the liquid in the pipe 2 and tank 3.

The outlet valve assembly and the piston assembly may be removed while the faucet is in service as the valve 9 prevents discharge of the liquid from the pipe 2.

In assembling the faucet, the inlet valve housing 10 and the inlet valves 8 and 9 may be assembled as one unit, the outlet valve housing 16, valve 14 and spring 15 assembled as another unit, and the piston 18, knob 20 and cap 22 assembled as a third unit and then the several units attached to the casing 1.

65 The invention herein set forth is sus-

ceptible of various modifications without departing from the scope thereof as hereafter claimed.

The invention is hereby claimed as follows:—

70 1. A liquid dispensing faucet to which liquid under pressure is supplied, comprising a casing having a liquid receiving chamber therein, an inlet and an outlet for the receiving chamber, an inlet check valve adapted when seated to prevent discharge of liquid from the receiving chamber through the inlet, a second inlet valve adapted under pressure of the liquid supplied to the faucet to close the inlet, an outlet check valve and a piston 80 within the receiving chamber controlling the opening and closing of said valves, a charge of liquid being admitted through the inlet to the receiving chamber by the outward movement of the piston and discharged therefrom by the inward movement of the piston.

2. A liquid dispensing faucet to which liquid under pressure is supplied, comprising a casing having a liquid receiving chamber 90 therein, an inlet and an outlet for the receiving chamber, a piston working in the chamber to alternately draw a charge of liquid therein through the inlet and discharge the same therefrom through the outlet, an inlet check valve, and an inlet stop charge valve, the inward movement of the piston causing the opening of the stop charge valve and then the closing of the check valve and the outward movement thereof allowing the pressure of the liquid to open the check valve and then to close the stop charge valve.

3. A liquid dispensing faucet to which liquid under pressure is supplied, comprising a casing having a liquid receiving chamber 105 therein, inlet check and stop charge valves controlling the admission of liquid to the chamber, an outlet through which liquid is discharged from the chamber, and a piston working in the chamber and so controlling the operation of the valves that by its movement in one direction the check valve is opened and then the stop charge valve is closed, and by its movement in the opposite direction the stop charge valve is opened and then the check valve is closed.

4. A liquid dispensing faucet comprising a casing having a liquid receiving chamber and an inlet thereto and an outlet therefrom, a piston for controlling the admission of liquid to the chamber and its discharge therefrom, opposed inlet check valves, and a removable auxiliary casing for the inlet check valves secured to the main casing.

5. A liquid dispensing faucet comprising a casing having a liquid receiving chamber and an inlet thereto and an outlet therefrom, a piston for controlling the admission of liquid to the chamber and its discharge therefrom, a removable auxiliary casing provided with 130

a restricted opening and secured to the main casing, a check valve within the auxiliary casing adapted to seat and close the restricted opening upon movement of the piston in one direction, and a second check valve working in the auxiliary casing adapted to close the inlet under pressure of liquid supplied to the faucet when the piston reaches a predetermined point in its movement in the opposite direction.

6. In a liquid dispensing faucet, a casing having a liquid receiving chamber, an auxiliary casing secured thereto which contains oppositely seating inlet check valves, and an outlet check valve for said chamber.

7. In a liquid dispensing faucet provided with a casing having a liquid receiving chamber therein, an inlet check valve, a stop charge valve for closing the inlet to prevent the passage of liquid therethrough into the receiving chamber, and a removable auxiliary casing for containing the two valves and secured to the main casing.

8. A liquid dispensing faucet to which liquid under pressure is supplied, comprising a casing having a liquid receiving chamber therein and an inlet and outlet for the chamber, an inlet check valve, a stop charge valve, an outlet check valve, a piston for controlling the admission of liquid to the receiving chamber and its discharge therefrom, the inward movement of the piston creating a pressure in the chamber which first opens the stop charge valve, then closes the inlet check valve and finally opens the outlet check valve, and means moving with the piston engaging the stop charge valve whereby during the outward movement of the piston the means holds the stop charge valve open until the piston reaches a predetermined point in its movement.

9. A liquid dispensing faucet to which liquid under pressure is supplied, comprising a liquid receiving chamber and an inlet and an outlet therefor, an inlet check valve, a stop charge valve for the inlet, a piston controlling the admission of liquid to the receiving chamber and its discharge therefrom, the inward movement of the piston creating a pressure in the chamber which first opens the stop charge valve and then closes the inlet check valve, and a rod carried by the piston and adapted to engage the stop charge valve whereby during the outward movement of the piston the rod holds the stop charge valve open for a predetermined movement of the piston.

10. A liquid dispensing faucet comprising a liquid receiving chamber, and removable inlet and outlet valve housings secured thereto, the outlet valve housing forming a discharge nozzle.

11. A liquid dispensing faucet comprising a liquid receiving casing, a piston therein, an inlet check valve therefor, and means con-

trolled by the motion of said piston for engaging said valve to positively hold the same in closed position.

12. A liquid dispensing faucet comprising a liquid receiving casing, a piston therein, an outlet valve and two inlet valves for said casing, and means carried by the piston to open one of said inlet valves upon movement of said piston.

13. A liquid dispensing faucet comprising a casing having a receiving chamber and an inlet thereto and an outlet therefrom, two valves responsive to fluid pressure and acting alternately to control the flow of fluid through said inlet, means for controlling said outlet, and a piston reciprocable in said chamber to eject fluid through said outlet under pressure as said piston moves inwardly and having means to hold one of said inlet valves against closing to thereby admit liquid to said receiving chamber only while the outlet is closed.

14. A liquid dispensing faucet, comprising a casing having a receiving chamber and an inlet thereto and an outlet therefrom, a normally closed valve controlling said outlet, two valves controlling said inlet and responsive to fluid pressure at opposite ends of said inlet to hold one of said valves open and the other closed, a piston movable into said chamber to place the liquid therein under pressure and discharge the same through said outlet, and a rod carried by said piston in a fixed position to engage said inlet valve and hold the same open during the major part of the movement of said piston to admit liquid to said chamber.

15. A liquid dispensing faucet, comprising a casing having a receiving chamber and an inlet thereto and an outlet therefrom, a normally closed valve and a normally open valve controlling said inlet and responsive to fluid pressure, a normally closed spring check valve controlling said outlet, and a plunger movable into said chamber to forcibly eject liquid through said outlet valve and having a rod fixed thereto to hold said normally closed inlet valve open during the major part of its return stroke to thereby admit liquid to said chamber.

In witness whereof, I have hereunto subscribed my name.

J. FREDERICK PALMER.

CERTIFICATE OF CORRECTION.

Patent No. 1,819,381.

Granted August 18, 1931, to

JOHN FREDERICK PALMER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 57, strike out the article "the"; lines 103 and 104, claim 3, strike out "to which liquid under pressure is supplied; page 3, line 22, claim 7, strike out "for"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of September, A. D. 1931.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.