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L. T. WARD

2,388,026

DISPENSING FAUCET

Filed May 18, 1942

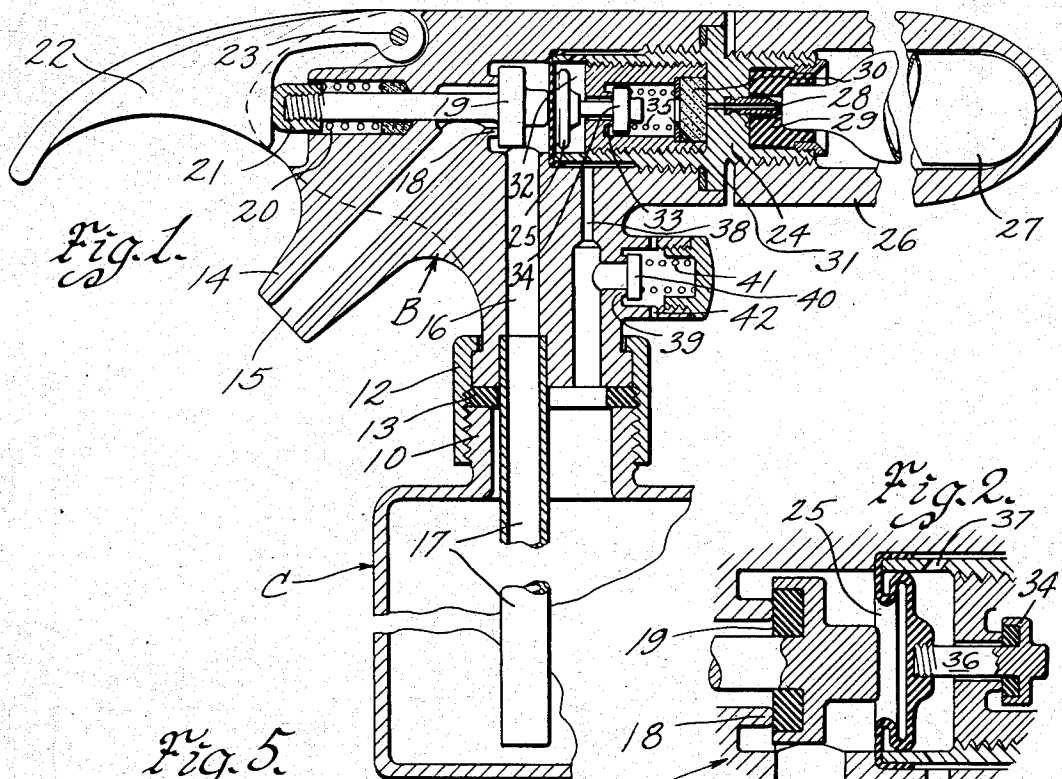


Fig. 1
ca

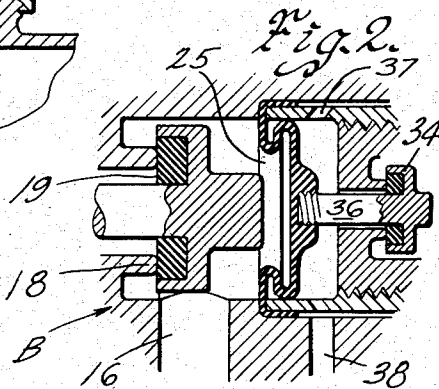


Fig. 2
ca

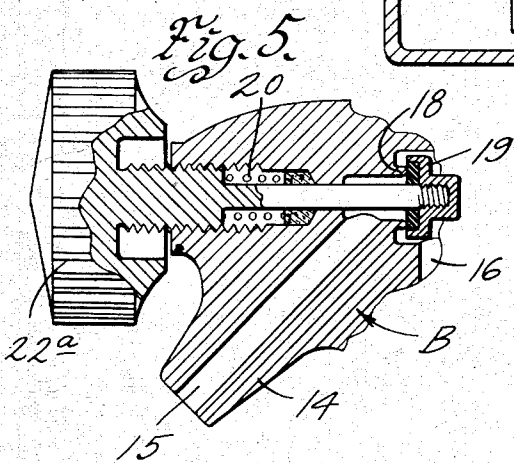


Fig. 5
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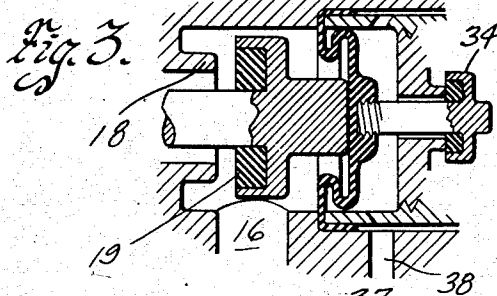


Fig. 3
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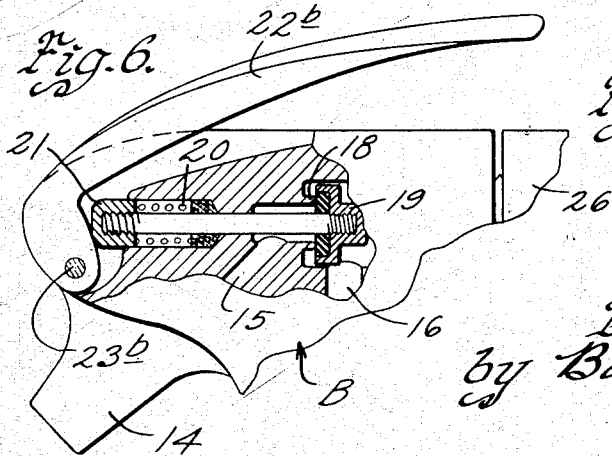


Fig. 6
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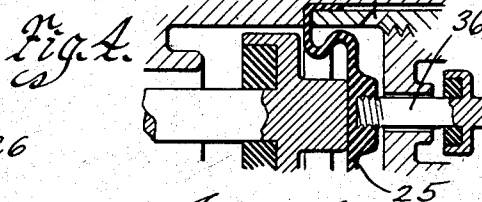


Fig. 4
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UNITED STATES PATENT OFFICE

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DISPENSING FAUCET

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2 Claims. (Cl. 277-20)

My present invention has to do with a dispensing faucet which employs compressed gas bulbs for supplying the dispensing pressure, the gas therefrom being under control of the faucet in addition to the handle of the faucet being operable to control liquid flow from the faucet.

One object of my present invention is to provide a dispensing faucet which is simple in construction and includes both a liquid valve and a pressure valve, the liquid valve being initially openable, and upon further opening movement thereof effecting opening of the gas pressure valve.

Still a further object is to provide a compressed gas bulb holder and piercing pin therefor associated with the valve body, whereby an inexpensive structure, eliminating the necessity of the usual pressure systems, is provided.

Another object is to provide a valve body having therein a liquid valve seat and a liquid valve plug normally coacting therewith, a pressure valve seat and plug being also provided, and the two being separated by a diaphragm which permits operation of the pressure valve from the liquid valve through the diaphragm.

Still another object is to provide a pressure relief valve associated with the dispensing faucet to prevent the possibility of introducing too high a pressure in the container for liquid or beverage to be dispensed.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawing. Although the invention is susceptible of a variety of embodiments, it is unnecessary to fully describe and illustrate more than one in order to give a full understanding of the invention both from its structural and functional standpoints. Accordingly, I have illustrated a preferred and desirable embodiment of the invention in the accompanying drawing, in which:

Figure 1 is a vertical sectional view through a dispensing faucet embodying my invention;

Figures 2, 3 and 4 are enlarged sectional views similar to a portion of Figure 1, showing respectively the liquid and pressure valves closed, the liquid valve open and the pressure valve closed, and both the liquid valve and the pressure valve open; and

Figures 5 and 6 are sectional views showing modified forms of operating handles for the faucet.

On the accompanying drawing I have used the reference character B to indicate generally a valve body, and C a container on which the valve body is mounted. The manner of mounting may comprise a valve neck 10 on the container with which a union nut 12 coacts, a suitable sealing gasket 13 being interposed between the neck and the valve body. The valve body B has a spout 14 provided with a liquid discharge passageway 15. Another liquid discharge passageway 16 is provided in the valve body communicating with a syphon tube 17, terminating at its lower end adjacent the bottom of the container C.

Between the passageways 15 and 16 is a liquid valve seat 18. A valve plug 19 is normally seated thereagainst under the action of a spring 20. A head 21 on the stem of the plug 19 may be engaged by a lever 22 pivoted at 23 for opening the valve plug 19.

In Figure 5 I show a modification wherein a knob 22^a is substituted for the lever 22, and is threaded into the valve body B.

Another modification is shown in Figure 6 wherein a lever 22^b is pivoted at 23^b and extends in the opposite direction from the lever 22. Any of the three types of valve opening mechanisms shown in Figures 1, 5 and 6 may be used.

A fitting 24 is threaded into the valve body B against a diaphragm 25. The diaphragm 25 may be of rubber or may be of metal soldered or brazed to the fitting 24. The fitting 24 has a bulb holder 26 removably screwed thereon and adapted to force a compressed gas bulb 27 against a piercing pin 28. The piercing pin 28 is surrounded by a rubber gasket 29 to seal the neck of the bulb 27 against gas escape. The piercing pin 28 communicates through a ceramic or carborundum insert 30 with a cavity 31. The cavity 31 is separated from a cavity 32 by a valve seat 33. A pressure valve plug 34 is normally seated against the valve seat 33 by a spring 35. The pressure valve plug 34 has a stem 36 connected with the head of the bellows 25. A plurality of escape openings or ports 37 is provided in the fitting 24.

Gas from the ports 37 passes into a passageway 38 communicating with the container C adjacent the top thereof. A valve seat 39 also communicates with the passageway 38, and a relief valve plug 40 is normally seated thereagainst by a spring 41. Escape openings to atmosphere are provided at 42 adjacent the relief valve plug 40.

Practical operation

In the operation of my dispensing faucet the lever 22 or the lever 22^b, as the case may be, is

depressed, or the knob 22* is rotated for first unseating the liquid valve plug 19 from the seat 18. The closed position is shown in Figure 2, whereas the unseated position is shown in Figure 3. This will permit liquid to be dispensed from the spout 14 if there is sufficient gas pressure on the liquid in the container C.

If there is not sufficient pressure, or if the faucet has been in the position of Figure 3 long enough to permit the pressure in the container C to reduce to atmosphere, then compressed gas may be introduced from the bulb 27 into the container C by further opening of the valve 19. The valve 19 thereupon engages the diaphragm 25, as in Figure 4, for opening the pressure valve plug 34. Gas may now flow from the bulb 27 through the piercing pin 28 and the insert 30, and then through 31, 33, 32 and 38 to the container C. If too much gas is admitted, the excess will be relieved by opening of the relief valve 40, the spring 41 of which has been set to cause pressure relief at a pressure that prevents excessive foaming of the liquid being dispensed.

A dispensing faucet of the character herein disclosed permits the liquid to be withdrawn, and, at the same time, the dispensing pressure to be applied to the liquid in the container C for displacing it. In the closing cycle the pressure valve 34 closes first, and, finally, the liquid valve 19 returns closed. With such an arrangement the gas pressure in the container C may be partially dissipated, if, desired, between the closing of the pressure valve and the closing of the liquid valve.

My dispensing faucet may be used in a variety of applications. It may be used for the dispensing of most any type of liquid, such as water, beverage, chemicals, food concentrates and syrups, which are subject to oxidation. It is particularly designed for domestic use in dispensing carbonated beverages, fruit juices, milk drinks, etc. By applying suitable attachments to the discharge spout 14, my dispensing faucet can be used for spraying or dispensing considerable quantities of liquid. It can be used in connection with the container C, having a capacity of from one to fifty gallons or more. Each bulb 27 will dispense approximately one gallon of liquid so that by using additional bulbs the capacity of the faucet is increased. The faucet is also adaptable for dispensing beer, as well as carbonated beverages, because CO₂ gas is present in both. In such cases, the bulb 27, of course,

is charged with CO₂ gas, and supplants costly pressure systems now used for beer and fountains.

The bulbs 27 need not be filled with CO₂ gas necessarily, as if the liquid to be dispensed needs to be free from taste or chemical action, the bulb may be charged with a different gas or combination of gases.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure, or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. A dispensing faucet comprising a valve body having a bore, a liquid discharge spout and a liquid intake passageway, a valve seat between said passageway and said spout, a valve plug normally seated thereagainst, a compressed gas receiving passageway and a compressed gas discharge passageway in said valve body, a diaphragm across said bore and separating said last passageways from said liquid valve plug, a valve seat in said bore between said last two passageways, a pressure valve plug normally seated thereagainst, and means for opening said liquid valve plug and for thereafter opening said pressure valve plug, the liquid valve engaging said diaphragm as the liquid valve plug is opened beyond a partially open position.

2. A dispensing faucet comprising a valve body having a bore, a liquid discharge spout and a liquid intake passageway, a valve seat between said passageway and said spout, a valve plug normally seated thereagainst, a diaphragm across said bore, a sleeve threaded into said bore against said diaphragm for sealing the edge of the diaphragm relative to the bore, a compressed gas receiving passageway in said sleeve and a compressed gas discharge passageway in said valve body, a valve seat in said sleeve between said last two passageways, a pressure valve plug normally seated thereagainst, and means for opening said liquid valve plug and for thereafter causing it to engage said diaphragm whereby said diaphragm may be moved by said liquid valve, said diaphragm being connected with said pressure valve for opening it when the diaphragm is moved in response to the liquid valve plug being opened beyond a partially open position.

LAWRENCE T. WARD.