

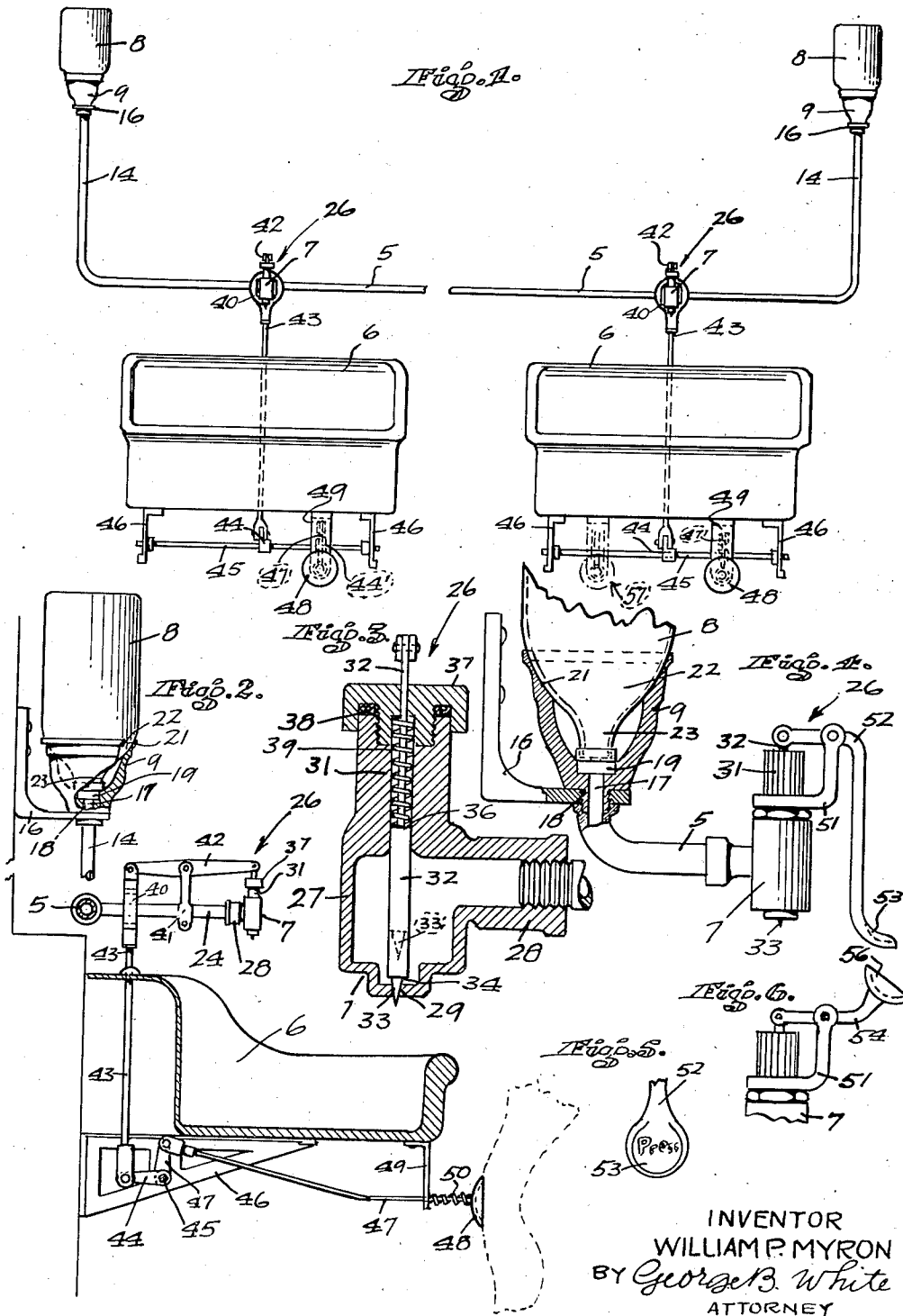
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LIQUID DISPENSER

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LIQUID DISPENSER

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1 Claim. (Cl. 221—94)

This invention relates to liquid dispensers.

The primary object of the invention is to provide a liquid dispenser, preferably a liquid soap dispenser, wherein liquid soap can be dispensed without touching the device by hand. The device is particularly adapted to be used in places where sanitary handling is desirable, such as in modern hospitals. Liquid can be dispensed by my device by merely touching a control element, either by knee or by a brush or tool in the hand of the person using it.

A further object of the invention is to provide a liquid dispenser of the gravity feed type wherein a container is firmly but removably held in place to allow gravity flow into the conduit.

In connection with liquid soap dispensers of this type, I provide a valve structure whereby the congealing and clogging of the outlet of the dispenser valve is entirely prevented.

Another object of the invention is to provide a soap dispenser adapted for use in connection with a plurality of sinks, at the same time and with equal efficiency, and in a highly sanitary manner.

In this specification and the annexed drawing, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms; and it is also to be understood that in and by the claim following the description, it is desired to cover the invention in whatsoever form it may be embodied.

The invention is clearly illustrated in the accompanying drawing, wherein

Figure 1 is a front view of a multiple arrangement of a gravity flow dispenser system constructed in accordance with my invention, and with knee control; a dual knee control being indicated in broken lines at one of the sinks.

Figure 2 is a side view of my device showing parts of the retaining cup, and the sink in section.

Figure 3 is a sectional view of a preferred construction of the valve used in the dispensing device.

Figure 4 is a modified form of a dispensing valve and valve control.

Figure 5 is a fragmental view of the dished end of the actuating lever of the modified form illustrated in Figure 4, and

Figure 6 is another modified form of valve and valve control construction for my device.

In carrying out my invention I make use of a conduit 5, disposed above a sink 6, to convey

flow of liquid toward a dispenser valve 7. It is preferred to use gravity flow of liquid in my dispenser, and this can be accomplished by placing a container, such as a bottle 8 in an inverted position into a cup 9. The bottom of said cup has a passage therethrough in communication with the conduit 5.

When my dispenser device is used in connection with liquid soap it is arranged conveniently with respect to the wash sink 6 so that it can be readily used in a sanitary manner.

For instance my device may be used in connection with a plurality of sinks 6. The conduit 5 is extended above, and behind the sinks 6, preferably secured in the wall behind said sinks 6. The ends of the conduit 5 are extended upwardly so that the complete conduit is formed, in U shape with the upward extensions 14 as parallel legs. On the upper end of each extension is a cup 9. Each cup 9 is supported on a bracket 16, which latter is suitably secured to the wall. The cup 9 has an aperture 17 through its bottom 18, and a countersunk recess 19 in the inner face of the bottom 18 around the upper end of the aperture 17. The inside wall of the cup 9 widens upwardly so as to form a graduated shoulder 21 which fits the outer periphery of the shoulder 22 of the bottle 8 adjacent the neck 23 of said bottle 8. The neck 23 of said bottle 8 has the usual outlet opening therein. The shoulder 22 of the cup 9 is so formed as to center the neck 23 over the cup aperture 17, and to firmly support the bottle 8 in place. When the cup 9 is designed to accommodate a two quart bottle, then the recess 19 is so proportioned as to accommodate and hold the outlet neck of a smaller bottle, such as a one quart bottle.

Thus liquid soap flows by gravity from the bottle 8 into the cup 9. The engagement of the shoulder 22 of the bottle 8 with the inner wall 21 of the cup 9 effectively inhibits or retards the flow of air into the cup to a sufficient pressure to limit the rise of the liquid level in said cup and so that the liquid soap must flow down through the aperture 17 into the leg 14 of the conduit 5. The inner surface of the cup is not polished but left rough or otherwise uneven so that, on account of the usual unevenness of the bottle periphery and of the inner surface of the cup atmospheric air may reach to the mouth of the bottle to permit flow of liquid. When two bottles 8 are used, as shown in Figure 1, the conduit 5 is fed from both ends. It is to be noted that the liquid level in one bottle 8 does not affect and does not depend on the liquid level in the other

bottle 8. As a matter of fact, in actual use, one of said bottles 8 may be entirely emptied and removed, while the other bottle 8 is full or partly filled, yet the liquid soap does not rise into the empty bottle 8, nor above the aperture 17 of the empty cup 9.

On the conduit 5 is an outlet conduit 24. In the event of an arrangement as shown in Figure 1, there is an outlet conduit 24 extended above each sink 6. On each conduit 24 is a valve mechanism 26. All the valve mechanisms 26 are of the same construction, hence the description of one will suffice.

A valve casing 27 has an inlet 28 thereof threadedly secured to the outer end of the outlet conduit 24. The casing 27 is hollow, and it has an outlet orifice 29 in its bottom. The orifice 29 is preferably tapered downwardly, but it may be of other suitable shape. Opposite and above the orifice 29 and upwardly extended from the top of the casing 27 is a guide 31 in which is slidably disposed a valve stem 32. The lower end of the valve stem 32 terminates in a tapered needle valve 33 adapted to fit the orifice 29. The needle valve 33 is longer than the height of the orifice 29 through the bottom wall of the casing 27 so that when the needle valve 33 fully closes the orifice 29 it extends beyond and outside of the lower end of the orifice 29. In this manner the accumulation of liquid soap in the orifice 29 is positively prevented, and the interior of the casing 27 is sealed against air. Consequently congealing of the soap at the orifice 29 and the resulting clogging is entirely obviated and the valve orifice 29 allows unobstructed flow of liquid soap every time the valve stem 32 is lifted and the needle valve 33 is raised out of said orifice 29. The needle valve 33 also clears the orifice 29 every time it is returned to its seat and moves completely through and beyond the orifice 29. A shoulder 34 on the valve stem 32 further determines the limit of movement of the stem 32, but this shoulder 34 does not seat on the orifice 29, until the needle valve 33 is materially worn on its outer periphery.

The top of the valve stem 32 is reduced in diameter at a shoulder 36 and it extends above and outside of the guide 31 of the casing 27. Into the top of the casing 27 is threaded a suitable packing nut 37 through which the end of the valve stem 32 extends. The packing nut 37 holds the usual packing 38 in place. A coil spring 39 between the nut 37 and the upper shoulder 36 of the valve stem 32 normally urges the valve stem 32 downwardly, so as to close the orifice 29.

The valve mechanism 26 may be opened by various control mechanisms so constructed as to obviate the use of hands. For instance a convenient control mechanism operable by knee is illustrated in Figures 1 and 2. On the outlet conduit 24 is a pivot lug 41. A lever 42 is pivoted intermediate its ends on the lug 41 so that it extends parallel with the conduit 24. An end of the lever 42 is connected to the top of the valve stem 32, and the other end thereof to a guide ring 40 on the end of a vertical link 43, the latter extends behind the sink 6 downwardly and is suitably guided for vertical reciprocation. The guide ring 40 extends around the outlet conduit 24. The lower end of the link 43 is below the level of the bottom of the sink 6 and is pivotally secured to an arm 44, which latter is secured on a bar 45. The bar 45 is suitably journaled in brackets 46. A bent actuating bar 47 extends from another arm 44' on the bar

45 forwardly under the sink 6. The free end of the bar 47 is slidably held in a bracket 49 extended downwardly from the front edge of the bottom of the sink 6. Said free end of the bar 47 extends beyond the plane of the front of the sink 6 and terminates in a dished engagement cap 48. The hollow or concave side of said cap 48 is so spaced above the floor, that it is opposite the knee of a person of average height standing in front of the sink 6. A coil spring 50, around the bar 47 and between the bracket 49 and the cap 48 normally urges the bar 47 forwardly so that it assists the valve spring 39 in keeping the valve 26 normally closed. The dished cap 48 is so formed as to fit the radius of the knee cap of an average person. The location of the cap 48 relatively to the ground or floor is twenty one inches above the ground or floor, because it was found that in this position it hits the knee of ninety eight percent of persons using the sink. The dishing of the cap 48 compensates for slight variations in knee height of persons, and it assures full action.

Another form of valve control is illustrated in Figure 4, wherein a bracket 51 extends upwardly in front of the upper portion of the valve 7. An actuating lever 52 is pivoted in the upper fork of the bracket 51. An end of the lever 52 extends horizontally and rearwardly and it pivotally engages the top of the valve stem 32. The other end of the lever 52 extends forwardly and then downwardly in front of the valve 26 and terminates in a forwardly inclined dished enlargement 53, which can be conveniently touched and pressed by the arm or wrist of a person to open the valve 26.

In the form shown in Figure 6 a lever 54 is pivoted in the bracket 51 and is connected at one end to the top of the valve stem 32 similarly to the connection of the lever 52. The forward end of the lever 54, however extends forwardly and upwardly and it terminates in a dished bottom 56, which latter can be readily pressed, for instance, by the end of the handle of a scrubbing brush or the like in the hand of the person using the sink.

As it is shown in Figure 1, if so desired the same valve 7 may be provided by a dual knee control. The second knee control 57 is similar to the first described knee control, and it operates the same valve as the first knee control, only it is at the other end of the sink 6 to allow the use of the sink at either end, or permit the use of the sink by two persons at the same time.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

In a soap dispenser a conduit adapted to conduct flow of liquid soap therethrough, and a dispenser valve on the conduit comprising, a valve body having a lateral inlet connected to the conduit so as to support the valve on the conduit, said valve body having a chamber therein in direct communication with said lateral inlet, said valve body having a substantially frusto conical outlet orifice on its bottom for gravity outflow of liquid soap directly from said chamber, a valve stem extended through said chamber to the top of the valve casing, a conical needle valve on the end of the valve stem fitting into said outlet so as to extend beyond and outside of said outlet orifice when the valve is closed, and means connected to said valve stem for actuating the same to move said needle valve into open and closed position in said chamber relatively to said outlet orifice.

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