Feb. 20, 1923. 1,446,217.

M. L. SHULTZ.

GRAVITY SOAP DISPENSING VALVE.

FILED APR. 20, 1920.

Fig. 1.

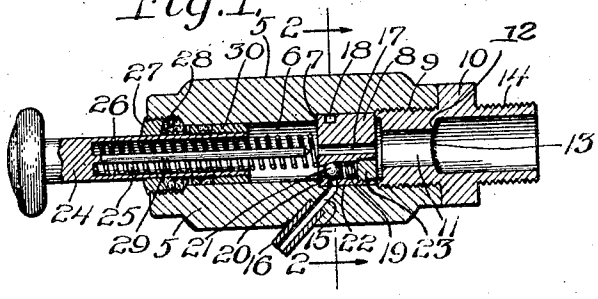


Fig. 2.

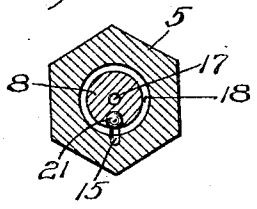


Fig. 3.

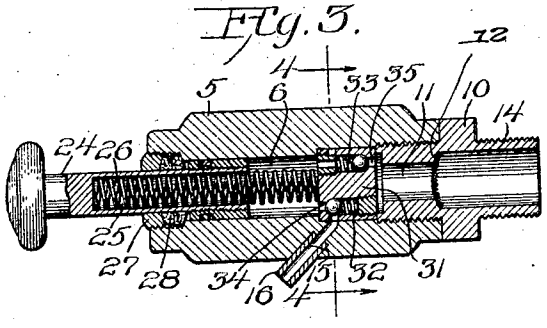
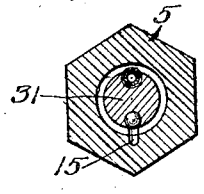


Fig. 4.



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UNITED STATES PATENT OFFICE.

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GRAVITY SOAP-DISPENSING VALVE.

Application filed April 20, 1920. Serial No. 375,191.

To all whom it may concern:

Be it known that I, MICHAEL L. SHULTZ, a citizen of the United States, residing at Chicago, county of Cook and State of Illinois, have invented certain new and useful Improvements in Gravity Soap-Dispensing Valves, of which the following is a specification.

The present invention has to do with a soap-dispensing valve or the like for dispensing liquid soap and other liquid materials, although, as will presently appear, the construction herein disclosed may be used for dispensing many other classes of liquid or semi-liquid material.

One of the objects of the invention is to provide a very simple device which will operate in a very positive manner to deliver the desired quantity of soap at each operation. Another object of the invention is to provide a construction which may be adjusted or re-set from time to time in order to adjust or modify the quantity of material which will be delivered.

Another object of the invention is to provide a very simple and effective valve arrangement for positively insuring the flow of the material in the proper direction through the apparatus when it is operated. In this connection, one feature of the invention is to make provision for a valve unit construction within the completed article, which valve unit may be inserted or removed largely independently of other parts, so as to facilitate repairs or replacements of the valve parts.

Other objects and uses of the invention will appear from a detailed description of the same, which consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawing—

Figure 1 shows a longitudinal sectional view through a dispensing device embodying the features of the present invention;

Fig. 2 shows a cross section taken on the line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 shows a longitudinal section through a modified form of construction, and

Fig. 4 shows a cross section taken on the line 4—4 of Fig. 3, looking in the direction of the arrows.

I will first describe the construction shown in Figs. 1 and 2.

In this case there is provided a body member or block 5 which may be of circular or angular form. It is provided with a longitudinal bore 6 of circular form, within which operates a plunger. Near one end of this bore is provided a shoulder 7 against which may be seated a valve block 8, and at its extreme end the bore is threaded as at 9 for the accommodation of one end of a nipple 10. This nipple is provided with a longitudinal bore 11 having a shoulder 12 against which seats a strainer or screen 13. The end 14 of the nipple is threaded for connection to a stationary fixture or to the pipe through which the soap or other material is delivered.

Adjacent to the shoulder 7 the body 5 is provided with a delivery passage 15, which conveniently terminates in a nozzle or spout 16. The valve block 8 is provided with a central longitudinal bore 17, the rear end of which communicates with the bore 11 of the nipple 10, and the front end of the bore 17 communicates with the chamber 6. The valve block 8 is furthermore provided with an encircling groove or recess 18 which communicates with the delivery passage 15, no matter what angular position the valve block 8 may occupy within the fixture.

The valve block is provided with a longitudinal bore 19, the extreme end portion 20 of which is of reduced size and constitutes a port in communication with the chamber 6. A ball valve 21 seats within the passage 19 and is normally held against the shoulder at the inner end of the port 20 by means of a spring 22. A plug 23 closes the inner end of the passage 19 and maintains the spring under the desired compression. This arrangement is such that when the liquid is forced through the port 20 by pressing back the check valve 21 said liquid may find its way into the annular or encircling groove 18 and thence into the discharge passage 15. Of course, in case the ball check valve happens to stand directly opposite the discharge passage 15 the liquid passing the ball check valve will flow immediately into the discharge passage 15 without having to encircle a portion of the valve member 8 through the recess 18, but by

the provision of said recess 18 it is not necessary to set the valve member in the device at any particular angular position.

A piston or plunger works within the chamber 6. This plunger includes a stem 24, the inner end of which is provided with a bore 25 for the accommodation of a spring 26. One end of said spring presses against the inner end of said bore 25 and the other end presses against the valve member 8. A nipple 27 serves to compress a packing gland or gasket 28 against the stem 24.

A needle 29 extends centrally through the bore 25 of the plunger and has its outer end secured to a portion of the plunger, while its inner end always stands in alignment with the central bore or passage 17 of the valve member. When the plunger is forced home this pin 29 enters the bore 17 with a nice fit and closes the same, so that any further inward movement of the plunger compels the soap or other material to be discharged past the check valve and through the passage 15. On the back stroke the withdrawal of the pin 29 causes the suction of the desired amount of soap into the bore 6 preparatory to the next operation.

On the inner end of the sleeve 24 is mounted a plunger head 30; and said plunger head is preferably threaded onto said inner end, as clearly illustrated in Fig. 1. On the back stroke this plunger head limits the backward movement by engagement with the packing gland, and on the front or working stroke the plunger head 30 or the inner end of the sleeve 24 limits the movement, depending upon which of these parts comes first into contact with the valve member 8. Ordinarily the inner end of the sleeve will make this contact. In such case the threading of the plunger head 30 backward along the sleeve 34 will cause a reduction of the effective stroke, so that it is possible to thus set the device to deliver just the desired quantity of material.

The construction shown in Figs. 3 and 4 is similar to that above explained but differs therefrom chiefly in the detailed construction of the valve member. This valve member, in the construction of Figs. 3 and 4, is designated by the numeral 31. It is provided with two transverse passages 32 and 33, respectively, which passages have the reduced ends 34 and 35 constituting ports communicating respectively with the plunger chamber 6 and the bore 11 of the nipple 10. A ball check valve is located within each of the passages 32 and 33 and the construction of each of these ball check valves may be similar to that explained in reference to the ball check valve 20. The passage 33 accommodates the intake valve and the passage 32 accommodates the discharge or delivery valve. In the present construction the longitudinal passage 17 has been dispensed with and the pin 29 is accordingly eliminated.

While I have herein shown and described only certain embodiments of the features of my present invention, still I do not limit myself to the same except as I may do so in the claims.

I claim:

1. In a device of the class described, the combination of a body member having a longitudinally extending bore, the forward portion of said bore being of uniform diameter, there being a shoulder in the central portion of the bore, and the rear end of the bore being threaded, a valve member seated against the shoulder aforesaid, a nipple threaded into the rear end of the bore and in engagement with the valve member to hold the same against the seat aforesaid, there being a longitudinally extending passage in the nipple, a screen in said passage, there being a peripheral groove encircling the valve member, there being a longitudinally extending passage in the valve member communicating with the groove aforesaid and having its front end of reduced size and constituting a port in communication with the first-mentioned bore, a ball check valve working in said longitudinally extending passage of the valve member, a spring in said passage normally pressing the ball check valve into seated position, a plug closing the rear end of said passage, there being a discharge port in the body member in position to communicate with the encircling groove of the valve member, a plunger stem working in the first-mentioned bore, a plunger head threaded onto the inner end of said stem, a spring normally forcing the plunger into the forward position, there being a suitable intake port in the valve member in communication with the bore of the nipple, and means for closing said intake port when the plunger is forced towards the valve member, substantially as described.

2. In a device of the class described, the combination of a body member having a longitudinally extending bore, the forward portion of said bore being of uniform diameter, there being a shoulder in the central portion of the bore, a valve member seated against the shoulder aforesaid, means for securing said valve member in position against the shoulder, there being a peripheral groove encircling the valve member, there being a longitudinally extending passage in the valve member communicating with the groove aforesaid and having its front end of reduced size and constituting a port in communication with the first-mentioned bore, a ball check valve working in said longitudinally extending passage of the valve member, there being a discharge port in the body member in position to communicate with the encircling groove of the valve

member, a plunger stem working in the first-mentioned bore, and a plunger head threaded on the inner end of said stem, there being a suitable intake port in the valve member, and means for closing said intake port when the plunger is forced towards the valve member, substantially as described.

3. In a device of the class described, the combination of a body member having a longitudinally extending bore, the forward portion of said bore being of uniform diameter, there being a shoulder in the central portion of the bore, a valve member seated against the shoulder aforesaid, there being a peripheral groove encircling the valve member, there being a longitudinally extending passage in the valve member communicating with the groove aforesaid, a check valve in said longitudinally extending passage, there being a discharge port in the body member in position to communicate with the encircling groove of the valve member, a plunger stem working in the first-mentioned bore, and a plunger head adjustably mounted on the inner end of said stem, there being a suitable intake port in the valve member, and means for closing said intake port when the plunger is forced towards the valve member, substantially as described.

4. In a device of the class described, the combination of a body member having a longitudinally extending bore, the forward portion of said bore being of uniform diameter, there being a shoulder in the central portion of the bore, a valve member seated against the shoulder aforesaid, there being a peripheral groove encircling the valve member, a passage in the valve member communicating with said groove and with the forward portion of the bore of the body member, a check valve in said passage, there being a discharge port in the body member in position to communicate with the encircling groove of the valve member, and a longitudinally operable plunger in the forward portion of the bore of the body member, and means for closing said intake port when the plunger is forced towards the valve member, there being a suitable intake port in the valve member, substantially as described.

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