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2,184,439

DISPENSING VALVE

Filed May 18, 1938

FIG. 1.

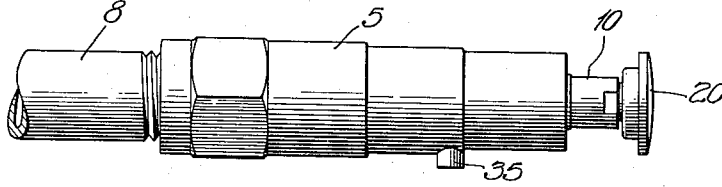


FIG. 2.

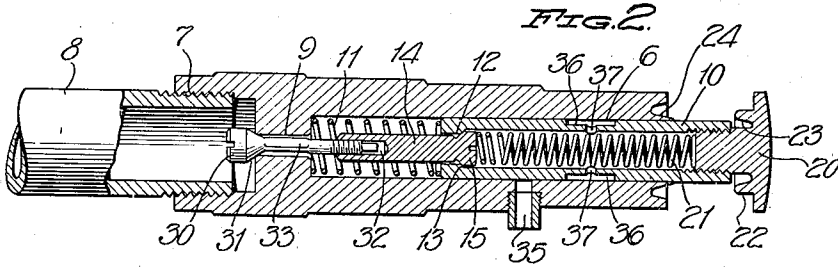


FIG. 3.

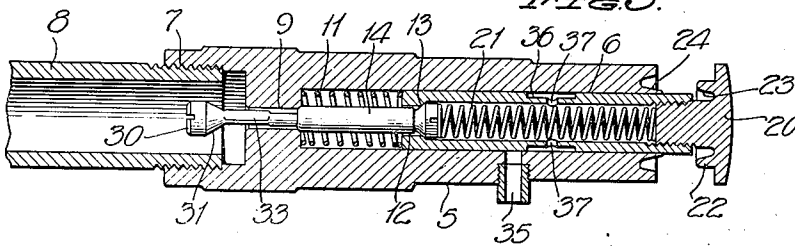


FIG. 4.

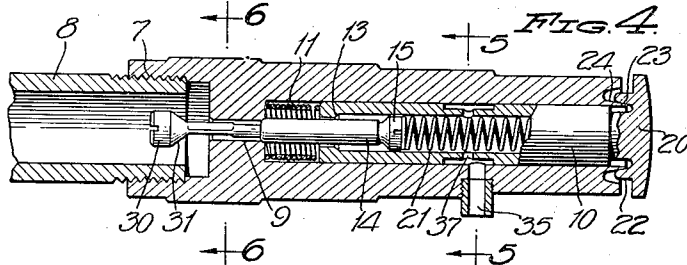


FIG. 5.

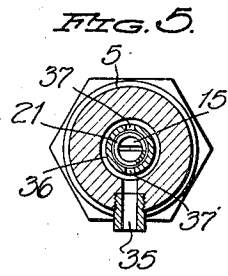


FIG. 7.

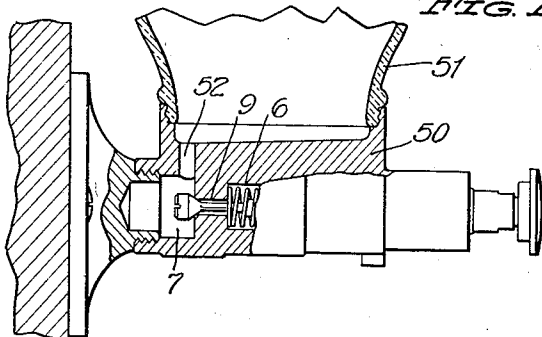
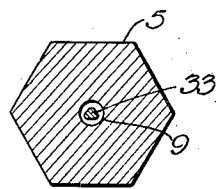


FIG. 6.



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DISPENSING VALVE

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Application May 18, 1938, Serial No. 208,538

2 Claims. (Cl. 221—102)

This invention relates to new and useful improvements in dispensing valves and more particularly it pertains to such valves as are employed in apparatus for dispensing liquid soap.

It is one object of the present invention to improve the construction and method of operation of valves of the afore-mentioned type and particularly, so to construct said valves, that seepage or leakage thereof, a fault quite common in said valves as generally constructed, will be entirely obviated.

One fault with liquid soap dispensing valves as formerly constructed, lies in the use of compressible packings which, due to the use of chemicals in the liquid soap, rough usage and many other contributing reasons, rapidly deteriorate and fail to perform the function for which they are intended.

A feature of the present invention resides in a novel construction and arrangement of parts whereby the use of packings of the compressible type are entirely dispensed with.

In this type of valve as generally constructed, the liquid soap is discharged under pressure created by an operating member, and it is a further feature of the present invention, so to construct the valve that leakage around the operating member as a result of the pressure produced to discharge the liquid soap, is prevented.

Other features of the invention relate to certain novel and improved constructions, arrangements and combinations of parts hereinafter described and particularly pointed out in the claims, the advantages of which will be readily understood and appreciated by those skilled in the art.

The invention will be clearly understood from the accompanying drawing illustrating the invention in its preferred form and the following detailed description of the constructions therein shown.

In the drawing:

Figure 1 is a view in side elevation of a dispensing valve constructed in accordance with the present invention,

Figure 2 is a longitudinal sectional view on a slightly enlarged scale, the view illustrating the several parts in their normal or closed position,

Figure 3 is a view in longitudinal section similar to Figure 2, but showing the parts in position during an operation of the valve,

Figure 4 is a longitudinal sectional view illustrating the parts in the position which they assume when the valve is fully open,

Figure 5 is a detail sectional view taken substantially on the line 5—5 of Figure 4,

Figure 6 is a detail sectional view taken substantially on the line 6—6 of Figure 4, and

Figure 7 is a fragmentary detail sectional view illustrating a valve constructed in accordance with the present invention as applied to a liquid soap dispenser of the receptacle type.

Referring to the drawing by reference character, 5 designates the valve body. The valve body 5 has a recess 7 formed in one end thereof and this recess is internally threaded to provide for the attachment of the valve to a pipe line 8 leading to a suitable source of liquid soap supply not shown.

Leading inwardly of the opposite end of the valve body 5, there is a passage 6 which terminates at its inner end a point short of the recess 7 heretofore mentioned. This passage 6, however, has communication with the recess 7 through a relatively smaller passage 9.

Mounted for sliding movement in the passage 6, there is a sleeve 10 and interposed between the inner end of said sleeve 10 and the inner end of the passage 6, there is a coil spring 11, which tends normally to force the sleeve 10 outwardly of the passage 6.

The inner end of the sleeve 10 is formed with an opening 12 of slightly smaller diameter than the internal diameter of the passage 6 which construction provides an annular shoulder or valve seat 13.

Slidably mounted in the opening 12 in the inner end of the sleeve 10, there is a valve member 14 having a valve head 15. The valve head 15 is positioned within the sleeve 10 and is adapted to have seating engagement with the annular shoulder or valve seat 13 to cut off communication between the interior of the sleeve 10 and the passage 6 through the opening 12 heretofore mentioned.

The outer end of the sleeve 10 is closed by an operating member 20 which is preferably threaded into the said outer end of the sleeve. Interposed between the operating member 20 and the head 15 of the valve member, there is a coil spring 21 and this spring 21 tends normally to maintain the head 15 of the valve member in seating engagement with the shoulder or seat 13.

The operating member 20 is provided upon its inner face with a circular continuous flange 22 having a tapered inner seat 23. This tapered inner seat 23 is adapted to engage a tapered seat 24 upon the end of the valve body just at the completion of an operating stroke of the operating member 20 to act as a safety seal or closing means for the outer end of the valve body.

The reference character 30 designates a second valve member arranged in the recess 7 of the valve body and this valve member 30 has a tapered seat 31 adapted, when the parts are in their closed or normal position, to engage the defining edge of the outer end of the relatively smaller passage 9, to close the same. Extending through the passage 9 and having threaded engagement with an internally threaded recess 32 in the valve member 14, there is a stem extension 33 and this construction provides means for adjustably connecting together the valve members 14 and 30.

The valve body 5 has a discharge outlet 35 and the sleeve 10 has a reduced portion 36 which forms an annular channel which is adapted to register or coincide with the discharge outlet 35 upon an operation of the device. The annular channel formed by the reduced portion 36 has communication with the interior of the sleeve 10 through the medium of ports 37 in the bottom wall of said channel.

The valve operates in the following manner:

In Figure 2, the several parts are illustrated in their normal or closed position. In Figure 3, the parts are shown in an intermediate position which they assume during an operating stroke, while in Figure 4, the parts are shown in a full open position.

When the parts are in the position in which they are shown in Figure 2, it will be noted that the valve head 15 is seated against the shoulder or seat 13, cutting off communication between the interior of the sleeve 10 and the passage 6, and the second valve member closing the outer end of the smaller passage 9. The several parts are normally retained in this position by the pressure of the springs 11 and 21. In this position of the parts, it is to be understood that the pipe line 8 and the recess 7 will be filled with liquid soap as will also the space or chamber between the inner end of the sleeve 10 and the inner end of the recess 6.

When pressure is applied to the operating member 20, the sleeve 10 is moved inwardly of the passage 6 until the inner end of the valve member 14 engages and closes the inner end of the smaller passage 9, in which position, the several parts are illustrated in Figure 3 of the drawing and the parts are retained in this position so long as the pressure is applied to the operating member 20 by reason of said pressure being transmitted to the valve member 15 through the medium of the coil spring 21.

Under the influence of the pressure exerted upon the operating member 20, the sleeve 10 is moved further into the passage 6 to the position in which it is shown in Figure 4 in which position the channel in the sleeve coincides with the discharge outlet 35 and establishes communication between the interior of the sleeve 10 and the discharge outlet 35 as illustrated in Figure 4.

In the movement of the sleeve 10 from the position in which it is shown in Figure 3 to the position in which it is shown in Figure 4, the inner end of the sleeve 10 acts as a piston to displace the liquid soap between said inner end of the sleeve and the inner end of the passage 6. The valve member 14, being in seating engagement with the shoulder or seat 13, this liquid can only be displaced into the interior of the sleeve 10 by passing around the valve member 14 through the opening 12. When this liquid passes into the interior of the sleeve 10, it in turn displaces such

liquid as may be within said sleeve through the discharge outlet 35.

As illustrated in Figure 4, when the sleeve has reached the extent of its instroke, the annular tapered seat 23 of the operating member 20 engages the annular tapered seat 24 of the valve body to prevent seepage of any liquid which might possibly escape around the exterior of the sleeve. This is not likely, however, since the sleeve 10 has a sliding fit of a liquid tight nature with the walls of the passage 6 in the valve body.

With the parts in the position in which they are shown in Figure 4, release of the pressure upon the operating member 20 permits the several parts to return to the normal closed position in which they are shown in Figure 2, under the influence of the springs 11 and 21, in which position, the several parts are retained by said springs until pressure is again applied to the operating member 20.

By reason of the relatively long bearing surface between the sleeve 10 and the walls of the passage 6, it is possible to obtain a sliding liquid tight joint between these parts without resorting to compressible packings thereby eliminating the troubles and difficulties arising from the use of these constructions and permitting of the use of metal only in parts which are exposed to the liquid material used.

The valve, in that form of the invention illustrated in Figure 7, is of the same construction and has the same method of operation as heretofore described, except that in the construction shown in Figure 7, the passages 6 and 9 and the recess 7 are formed in a member 50 which forms a supporting base for the liquid receptacle 51 and the member 50 has a passage 52 by which the liquid is conveyed from the receptacle 51 to the recess 7.

From the foregoing, it will be apparent that the present invention provides a device in which the several objects of the invention are accomplished and while the invention has been illustrated and described in a preferred form, it is obvious that it is not limited to the construction herein illustrated and that it may be practiced in other forms which rightfully fall within the scope of the appended claims.

Having thus described the invention, what is claimed as new, is:

1. A device of the character described comprising a valve body having a discharge opening intermediate of its ends, a recess at one end thereof, a passage extending into said valve body from the opposite end thereof and terminating short of said recess, a relatively smaller passage extending from the inner end of the first mentioned passage into said internally threaded recess, a sleeve having an open inner end, said sleeve being slidably mounted in said first mentioned passage, a valve member slidably mounted in the open inner end of said sleeve for closing the open inner end thereof, a second valve member connected to the first mentioned valve member, said second mentioned valve member being arranged to close the outer end of said relatively smaller passage, means for holding said valve members normally in their closed positions, means for simultaneously moving said valves to their open position, and means for establishing communication between the interior of the sleeve and the discharge opening of the valve body, after said valves have been moved to their open positions, said means comprising an annular channel extending around the exterior of the

sleeve and ports extending through the sleeve and located in said annular channel.

5 2. A device of the character described comprising a valve body having a discharge opening intermediate of its ends, a recess at one end thereof, a passage extending into said valve body from the opposite end thereof and terminating short of said recess, and a relatively smaller passage
10 extending from the inner end of the first mentioned passage into said internally threaded recess, a sleeve having an open inner end, said sleeve being slidably mounted in said first mentioned passage, a valve member slidably mounted
15 in the open inner end of said sleeve for closing the open inner end thereof, a second valve mem-

ber connected to the first mentioned valve member, said second mentioned valve member being arranged to close the outer end of said relatively smaller passage, resilient means for holding said valve members in their closed positions, means
5 for reciprocating said sleeve to move the valves to their open positions, and means for sealing the outer end of the larger passage in the valve body when the valves are moved to their open
10 position, said sealing means including a tapered seat upon the end of the valve body, and means carried by the sleeve operating means for sealing engagement with said tapered seat when the
sleeve operating means is operated.

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