

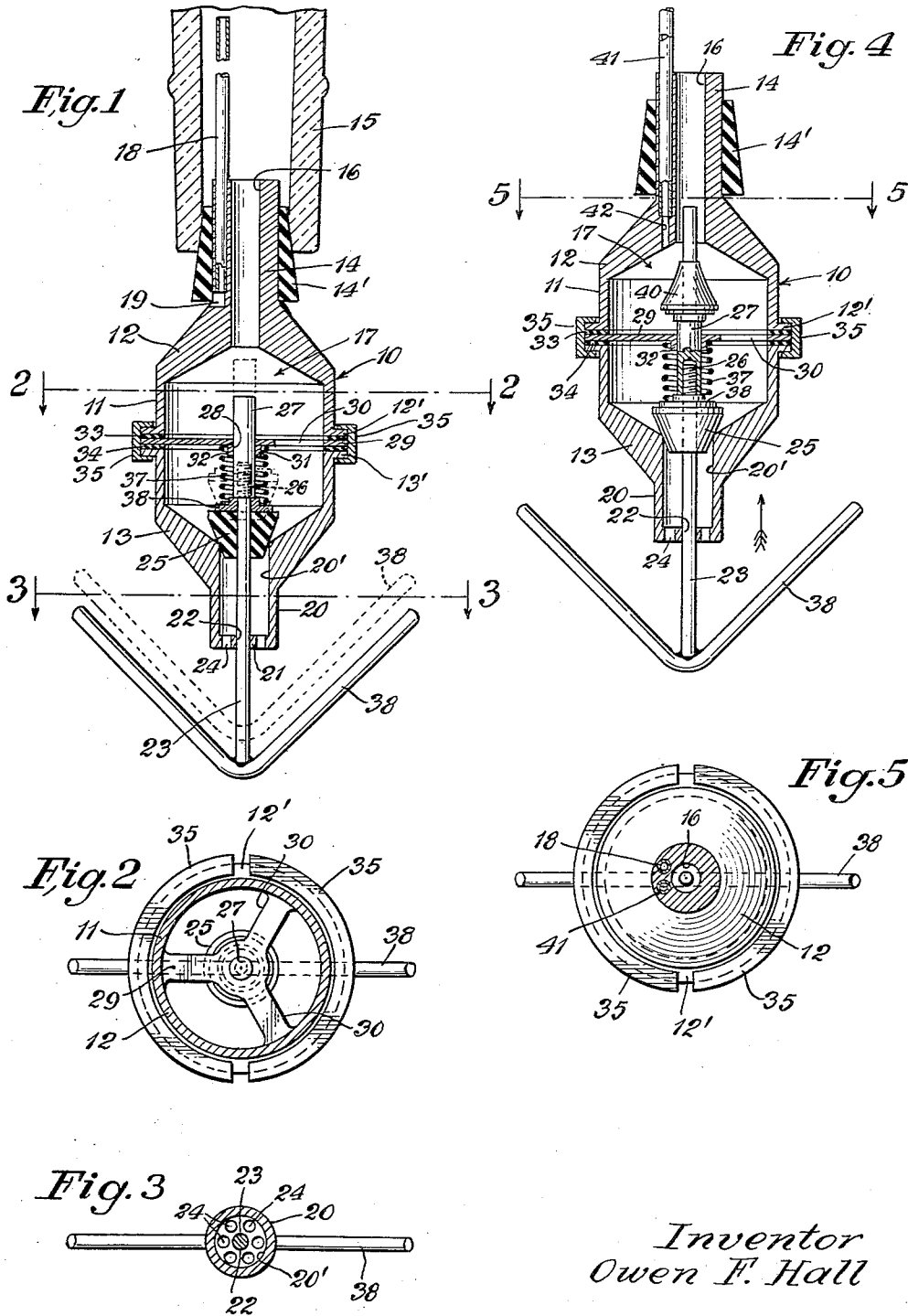
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DISPENSING VALVE UNITS

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DISPENSING VALVE UNITS

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3 Claims. (Cl. 222-449)

This invention relates to improvements in dispensing valve units for bottles and more particularly to dispensing valve units adapted to be detachably inserted in the neck of a beverage bottle when the bottle is supported in inverted position for dispensing the contents thereof.

One form of my invention may consist of a dispensing valve adapted for relatively free flow of liquid from the bottle as long as the valve is actuated. A second form of my invention may be adapted to provide a metered flow of predetermined liquid from the bottle when the valve is actuated.

Dispensing valves of the general character above described are usually of a relatively complicated and expensive construction, are difficult to assemble or disassemble, and cannot be readily cleaned as is often necessary with devices of this kind.

Among the objects of the present invention are to provide a dispensing valve structure of the character described which is of simple and economical construction, can be readily assembled or disassembled, and easily cleaned.

The invention may best be understood by reference to the accompanying drawings, in which:

Figure 1 is a longitudinal section of a dispensing valve constructed in accordance with my invention, showing it inserted in the neck of a bottle supported in inverted position. The valve shown in this figure is of the type adapted for free flow of liquid from the bottle when the valve is held in open position.

Figure 2 is a section taken on line 2-2 of Figure 1.

Figure 3 is a section taken on line 3-3 of Figure 1.

Figure 4 is a longitudinal section of a modified form of dispensing valve, which is adapted to provide a metered flow of liquid when the valve is actuated.

Figure 5 is a detailed section taken on line 5-5 of Figure 4.

Referring now to the details of the embodiment of my invention shown in Figures 1, 2 and 3, the dispensing valve unit indicated generally at 10 consists of an enlarged hollow main body 11 made up of two cuplike portions 12 and 13 of generally similar shape and size made of suitable metal or plastic material. The larger ends of portions 12 and 13 are detachably connected together in end-to-end relation, as will presently be more fully described, to form the hollow main body 11.

One of the cuplike portions 12 is provided with a neck 14 of reduced diameter, surrounded by a tapered sealing ring 14' made of suitable yieldable material such as rubber, for securing the valve unit to a bottle neck 15, as shown in Figure 1. The neck 14 of the upper cup portion 12 has an inlet bore or passage 16 extending axially therethrough which opens into an enlarged upper chamber 17 of the cup portion 12. A small vent pipe 18 extends through the neck 14 along one side of the inlet passage 16, and communicates with a passage 19 opening laterally into the open air below the tapered sealing ring 14'. It will be understood that the upper end of the vent pipe 18 is adapted to extend upwardly as

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usual within the bottle to a point above the liquid level, so as to afford free flow of liquid from said bottle as the device is operated.

The lower portion 13 of the valve body has a neck 20 of reduced diameter, with a discharge passage 20' extending axially therethrough. A disc 21 is mounted in the lower end of the discharge passage 20', which disc has a central aperture 22 therein forming a bearing for a valve plunger 23. Said disc also has a plurality of apertures 24, 24 surrounding the central aperture 22 for permitting discharge of liquid from the valve.

The valve mechanism associated with the plunger 23 consists of a tapered valve member or plug 25 made of suitable yieldable material such as rubber mounted on the plunger, and adapted for seating engagement in the upper end of the discharge passage 20' of the lower cuplike member 13. The upper end of the plunger 23 has a threaded portion 26 axially engaged in a guide stem 27 which projects upwardly through an aperture 28 in a cross plate 29. Said cross plate consists of a flat, spider-like ring having its outer rim adapted to fit between outwardly extending flanges 12' and 13' on the adjacent rims of the upper and lower cuplike portions 12 and 13.

The cross plate 29 has a plurality of segmental openings 30 intermediate its rim and a central guide portion 31 through which the guide stem 27 of the valve member extends. In the form shown herein, the guide portion of the cross plate includes a downwardly bent flange 32 to provide an elongated bearing for said valve stem.

The cross plate is mounted between the flanged rims 12' and 13' of the cuplike portions 12 and 13, with annular washers 33 and 34 interposed between said cross plate and said flanges, respectively.

The two cuplike portions are held together by suitable clamping means, herein consisting of two clamping ring segments 35, 35 which are U-shaped in cross section, as shown in Figure 1, and are adapted to hold the opposing flanges of the said cup-shaped portions under yielding tension when the device is in assembled relation, as in Figure 1.

Although the clamping means shown herein consists of two separate ring segments, for convenience in assembly or disassembly, said clamping means could be made of a single ring member split at one point, or of more than two separate, shorter ring segments if desired.

The valve member 25 is normally urged toward closed position by a coil spring 37 surrounding the guide stem 27 and interposed between the cross plate 29 and a backing washer 38 engaged with the upper face of the valve member 25. The plunger 23 has a cross bar 38 connected to its lower end, in the form shown, said cross bar being bent in a V-shape, as shown, so as to extend partially into a beverage glass or the like when the valve is to be moved into open position, as shown in dotted lines in Figure 1.

From the above description it will now be understood that my improved form of valve is extremely simple in construction and operation, requiring a minimum number of moving parts. It can be readily disassembled by removing the clamping members 35, 35, whereupon the two cuplike portions 12 and 13 may be separated, and the cross plate 29, washers 33, 34, and coil spring 37 can be removed, to expose the inner surfaces of said cuplike portions for cleaning. If desired, the valve member 25 can also be removed from the plunger 23 by unscrewing the stem 27 from the said plunger, whereupon the plunger and the valve member can also be entirely removed from the device for cleaning, or for replacement or repair.

Manifestly, the parts just described can be as readily assembled, in the reverse order mentioned.

In the modified form of device shown in Figure 4,

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the main elements of the valve structure are the same as previously described in connection with the form of device as shown in Figures 1 to 3, the only structural differences being with respect to the addition of an auxiliary valve member 40 mounted on the upper end of the stem 27 for closing the inlet passage 16, and an additional vent pipe 41 having a port 42 opening directly into the upper chamber 17 of the valve body. The auxiliary valve member 40 is arranged to be open when the valve member 25 is closed, but operates to close the upper end of the main valve chamber when the valve plunger 23 is held in raised position to open valve member 25 for discharging liquid from the valve body.

It will be understood that with the modified form of valve mechanism shown in Figures 4 and 5, it is possible to hold the plunger 23 in an intermediate position, so that valves 25 and 40 are both open at the same time, thus providing continuous unmeasured flow of liquid through the valve, yet this form of valve can be used to dispense liquid in metered amounts of reasonably uniform quantities when desired, by quickly moving the plunger upwardly and holding it in its uppermost position to keep the auxiliary valve 40 closed, until the initial amount of liquid within the valve chamber has been withdrawn, and then releasing the plunger so that the lower valve 25 will be quickly restored to closed position. In practice it has been found that it is usually preferable to provide for the metering of an approximately uniform volume of liquid, with the possibility of a slight increase in volume if desired, rather than use a dispensing device which can only be operated to provide an exactly uniform, metered amount of liquid every time it is actuated.

Although I have shown and described certain embodiments of my invention, it will be understood that I do not wish to be limited to the exact construction shown and described but that various changes and modifications may be made without departing from the spirit and scope of the invention as defined by the appended claims.

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I claim:

1. A liquid dispensing valve for containers, comprising a pair of cup-like members having hollow body portions and outwardly extending opposed rim flanges of given outer shape, one of said cup-like members having an inlet passage and the other of said cup-like members having an outlet passage, valve means comprising a spring-pressed plunger extending axially through the outlet passage, a valve member fixed on said plunger within the hollow body portion of the other cup-like member for seating engagement relative to the outlet passage therein, guide means for said guide stem comprising a perforated cross plate having the marginal edge portion thereof supported between the opposed rim flanges of the cup-like members, and clamping means having an inwardly opening groove corresponding in shape to the said given outer shape of the rim flanges, said clamping means removably engaging the opposed rim flanges with the rim flanges being received within the groove to create a liquid-tight seal therebetween, said clamping means further detachably securing the cup-like members together to form an enlarged liquid receiving chamber intermediate the inlet and outlet passages.

2. The structure as set forth in claim 1, wherein said clamping means is substantially of U-shape in cross-sectional configuration and has a length no greater than the length of said rim flanges.

3. The structure as set forth in claim 1, wherein said hollow body portions are annular in configuration and of substantially the same diameter and said given outer shape of the said rim flanges is continuous, annular and circular.

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