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L. T. WARD

2,222,247

DISPENSING DEVICE

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Fig. 1

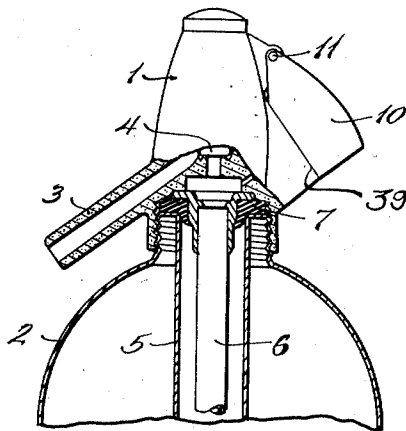


Fig. 2

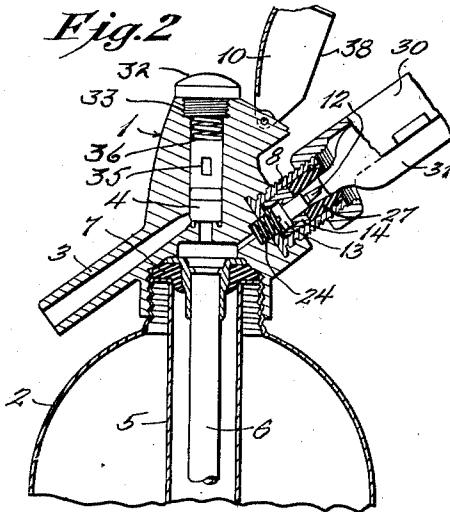


Fig. 3

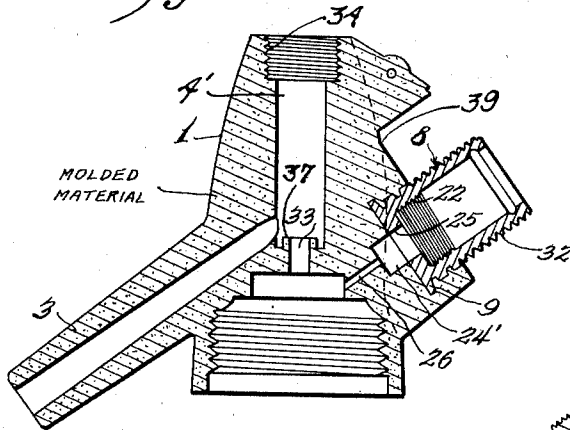
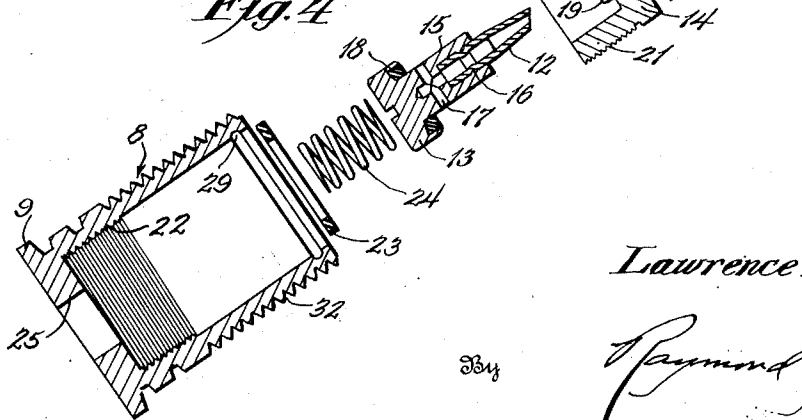


Fig. 4



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2,222,247

DISPENSING DEVICE

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6 Claims. (Cl. 225-22)

This invention relates to a dispensing device and an associated charging valve for use on liquid dispensers in general. The dispenser head is formed as a one-piece body by molding the same from a synthetic resin plastic to provide a discharge nozzle integral therewith, the screw plug or casing which receives the charging valve being anchored firmly within the body of the head during the molding operation.

In liquid dispensers of the type herein disclosed, it has been the practice to provide a charging valve and a piercing pin which, in operation, were detachably secured together but which had to be separated one from the other in the event that it became necessary to replace the valve or the pin after these parts became worn due to excessive operation of the same. Usually, special tools were found necessary to disassemble these parts and replacement thereof offered an intricate and time consuming operation to the usual unskilled users of the dispenser who ordinarily made such replacements. One well known type of prior art devices referred to is disclosed in Patent No. 2,047,096, issued to William Brewer. The prior art devices of this type were also relatively expensive to construct.

According to the present invention, the charging valve is formed integrally with the piercing pin and is supported within a screw plug or valve casing by means of a threaded bushing which functions also as a valve seat. The screw plug is threaded at its free end to receive a gas bulb holder and the novel arrangement of valve, valve seat bushing and valve spring permits the use of a relatively short screw plug. As shown in Patent 2,047,096, a dust cap is provided to cover the free end of the screw plug. In accordance with the present invention, a dust cap is pivoted to the dispenser head body and the relatively short screw plug disclosed permits the use of a pivoted dust cap which, when closed over the plug, is positioned close to the dispenser head body.

The main object of this invention is to provide, in a dispenser of the gas pressure type, a unitary charging valve and piercing pin that may be readily assembled or disassembled with respect to the associated parts.

Another object is to provide a dispenser head wherein the main body thereof including the nozzle is molded from a resinous plastic material and in a manner to permit a ready assembly therewith of a charging valve and a liquid control valve and associated lever.

Another object is to provide, in a dispenser

head, a novel type of dust cap which is pivotally secured to the dispenser head in a manner to cover and conceal the exposed part of the screw-threaded plug or bushing within which the valve and pin are housed.

Another object is to provide a charging valve and piercing pin unit and related parts that are simple in construction and inexpensive to manufacture.

A further object is to provide a novel means for supporting the charging valve spring within a valve housing in a manner to permit the use of a valve housing of minimum length.

Other objects will appear from the specification which follows and the accompanying drawing, wherein—

Figure 1 is a view in elevation, partly in section, of a dispenser head assembled with a dispenser flask;

Fig. 2 is a view, partly in section, showing a unitary piercing pin and charging valve just prior to piercing a gas bulb;

Fig. 3 is a view, in section, showing the molded body portion of the dispenser head; and

Fig. 4 is an exploded view showing the piercing pin and related parts.

Referring to Fig. 1, the improved syphon head 1 is shown as applied to the metallic body or tank 2 in a manner disclosed in the patent issued to Lawrence T. Ward, No. 2,092,596, dated September 7, 1937. The head 1 is formed, for the most part, by molding the same from a heat hardened plastic such as a synthetic resin. The nozzle 3 is molded integral with the head and a dispensing valve assembly 4 is detachably mounted within a chamber 4' formed in the head. A measuring tube 5, siphon tube 6 and associated gasket 7 are shown in a relation corresponding to that shown in Fig. 7 of said patent, but this relation may be varied as desired and forms no part of the present invention.

As shown in Fig. 3, the screw plug or piercing pin nipple 8 is firmly molded in position as a unit with the material of the head 1, which material is preferably a synthetic resin of great hardness and toughness and which is not corroded by any type of fluid dispensed. The inner or embedded end of the plug 8 terminates in a hexagonal shaped flange 9 which assists to anchor this plug in position and to resist displacement due to torsional or other stresses applied thereto. A dust cover 10 is secured to the head 1 by means of a pivot 11 and, as shown in Fig. 1, may be displaced downwardly to cover completely the outer threaded free end of the plug 8. It

will be noted in this figure that this cover is shaped in a manner to preserve the symmetry of the head 1, and the contour lines of this cover blend in with the contour of the head to present an ornamental appearance.

The various parts associated with the plug 8 which are shown assembled in Fig. 2, are shown as separated as an "exploded" view in Fig. 4. It will be noted that the piercing pin 12 is permanently assembled with a check valve 13 as a removable or replaceable unit and which may be readily removed for repair or replacement purposes by merely removing the valve housing 14. The valve disc 13 has a tubular extension 15 within which the tubular pin 12 is secured as by a crimp 16 and one or more lateral ports 17 are formed in the wall of the extension 15 to permit gas to pass from within the central bore of this extension, thence outwardly and around the valve disc 13 when the latter is unseated.

A valve facing washer 18 is arranged to contact the valve seat 19 when the valve is seated thereon. The member 14 has a central opening 20 to receive the pin 12 and is threaded on its outer periphery at 21 to permit the threads thereon to engage a corresponding thread 22 formed on the inner wall of plug 8. A washer 23 provides a gas tight seal between the plug 8 and the inner end of the member 14. Prior to assembly of the member 14 and pin-valve unit 12-13, a valve spring 24 is inserted within the plug 8. This plug is provided with a circular flange or valve stop 25 forming an opening which serves not only to receive and center the spring 24, but also forms an outlet port to pass gas therethrough, thence through a port 26 formed in the material of the head 1. A recess 24' is formed in the material of the head 1 during the molding operation or this recess may be drilled out after the plug 8 is molded into position. The spring 24 is seated in this recess at its inner end in a manner to permit the greater portion of this spring to be compressed within the recess 24' when the valve 13 is unseated.

After the seat member 14 and the unit 12-13 are assembled within the plug 8 with the spring 24 engaging the disc 13, a cylindrical tapered rubber washer 27 is inserted within the outer open end of the plug 8 and a split snap retaining ring 28 is positioned in a groove 29 formed in the plug 8 in a manner to retain this washer in position.

As shown in Fig. 2, a bulb holder 30 with a bulb 31 therein may be screwed onto the plug 8 which has threads 32 thereon to engage the usual threads formed on the bulb holder.

During the operation of screwing the holder 30 in position, the sealed end of the bulb will be forced against the pin 12 which will be moved inwardly to first unseat disk 13 and thereafter move this valve disk against the bottom of the plug 8, after which contact the pin is caused to pierce the bulb seal and permit gas to flow from the bulb and through the holes 17, around the open valve 13 and through port 26 into the syphon tank 2. When the holder 30 is removed, the spring 24 and gas pressure acting on the valve 13 will cause the latter to engage its seat 19. The tank 2 is thereby charged through the tube 6 and, thereafter, the contained liquid may be dispensed therefrom upon operation of the main control valve 4 to permit carbonated fluid to flow through a port 33 and out of the nozzle 3.

It will be noted that, during assembly, the spring 24 is merely dropped into position within

the flange 25 and the recess 24'. The valve and pin unit 12-13 is inserted within the member 14 and this unit and member 14 are screwed into position within the plug 8, during which operation, the spring 24 is gradually stressed to an amount necessary to adequately force the disk 13 against its seat 19. During this operation, only one member 14, is worked on and by a simple rotary motion, thereby permitting assembly of all four parts 8, 13, 14 and 24 in a very simple and expeditious manner. It will be noted also that the seating of valve 13 within the member 14 with the spring 24 in recess 24' permits the use of a relatively short member 14 as well as a relatively short plug 8 and that the member 14 functions as a guide for the disc 13. Also, the force exerted on pin 12 in puncturing the bulb 31 is exerted directly upon the extreme inner shouldered end of the plug 8 closely adjacent to the anchorage point thereof.

The fluid control valve 4 is retained within its chamber 4' by means of a cap or plug 32 which has threads 33 that engage threads 34 formed in the body 1. This valve 4 is moved upwardly by a lever which engages a slot 35 while a spring 36 serves to maintain the valve 4 normally engaged with its seat 37 which is molded integrally with the body 1. The valve 4 and control lever form no part of this invention and same have been shown in more detail in said Patent No. 2,092,596. As shown in Fig. 1, the lower edge 38 of the cap 10, in closed position, engages a flat shoulder 39 formed on the body 1.

I claim:

1. A charging valve assembly for a fluid dispenser comprising a tubular plug, a tubular valve housing, means for detachably supporting said housing within the plug, a valve member, a tubular piercing pin extending from said valve member, a circular valve seat extending inwardly from and adjacent one end of the housing, said valve being adapted to engage said seat with the pin extending beyond said end of the housing, said valve and pin being removable as a unit from the housing.

2. In a valve assembly as set forth in claim 1, a valve stop extending inwardly from one end of the plug, the other end of the plug being threaded to permit attachment thereto of a gas capsule holder whereby the seal of a gas capsule positioned in the holder may be forced against the piercing pin to cause the latter to move as a unit with the valve until the valve engages the stop.

3. In a valve assembly as set forth in claim 1, a valve stop extending inwardly from one end of the plug, a spring for forcing the valve against the valve seat, said valve being movable by pressure on said pin into engagement with the stop.

4. A charging valve assembly for a liquid dispenser comprising a tubular plug, a tubular valve housing, means for detachably supporting said housing within the plug, a valve member, a tubular piercing pin integral with said valve member, a circular valve seat extending inwardly from and adjacent one end of the housing, said valve being adapted to engage said seat with the pin extending beyond said end of the housing, a spring for forcing the valve against the valve seat, said valve being movable from its seat upon engagement of a gas bulb seal with the pin, a circular flange formed on said plug adjacent an end thereof, said valve being movable to contact the flange, the free edge of the flange forming an opening, said spring being positioned within the opening.

5. A charging valve assembly for a dispenser comprising a tubular plug, a tubular valve housing, said plug and housing having interengaging threads, a valve seat extending inwardly from the inner wall of the housing adjacent one end thereof, a check valve within said housing and adapted to engage said seat, a tubular piercing pin integral with the valve and extending from and beyond said one end of the housing when the valve is seated, a valve stop extending inwardly from the inner wall of the plug for engagement with the valve when the latter is moved away from its seat, said housing being removable from the plug to thereafter permit the valve and pin to be removed from the housing.

6. A dispenser head comprising a body portion, a bulb piercing pin and valve, a plug for enclosing said pin and valve, said body portion being shaped to form a recess having a one side and a second side extending at an angle to said one side, one end of the plug being secured to the body portion within said recess, a dust cap pivotally secured to said body portion adjacent one end of said second side and being movable to engage over and completely cover the other end of the plug and to contact said one side, said cap when closed over the plug substantially fully occupying said recess to provide a body contour wherein no recess is visual.

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