COMBINED SHEARING DEVICE AND CLOSURE FOR LIQUID DISPENSERS

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Fig. 1.

Fig. 2.

Fig. 3.

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My invention relates to a combined shearing device and closure for liquid dispensers, and more particularly to a simplified means for operating such a device.

There are devices of this sort now on the market such as disclosed in patent to Pershall, No. 2,133,772, issued October 18, 1938. The present invention has all the advantages of these devices and is an improvement thereon in that it simplifies the structure thereof by eliminating certain of the parts and by changing other parts to perform the function of the eliminated parts. I also raise certain parts up and out of possible contact with the container contents to lessen the possibility of these parts becoming sticky and gummy therefrom.

Further objects are to provide a construction of maximum simplicity, efficiency, economy, and ease of assembly and operation, such as illustrated in the accompanying drawing, and while I have shown therein a preferred embodiment, it is to be understood that the same is susceptible of variation and change, and comprehends other details, arrangements of parts, and conceptions not hereinbefore disclosed without departing from the spirit of the invention.

In the drawing:

Fig. 1 is a side view partly in side elevation and partly in vertical cross section of an embodiment of my invention attached to the neck of a container.

Fig. 2 is a front view in vertical cross section of said embodiment, and

Fig. 3 is a top plan view thereof.

Referring more particularly to the disclosure in the drawing, the novel closure and shearing device 1 is shown mounted upon a container 2 and removably secured thereto by means of the threaded neck 3 of the interior of the container and complementary threads (not shown) on the exterior of the neck of the bottle.

The top 4 of the device is flat and is provided with raised portion 5 substantially midway between its sides, the front 6 of the raised portion being spaced slightly from the front of the device and at substantially a right angle to the top. The rear 7 of the raised portion is raised from the rear of the device but rises gradually therefrom. The front 6 and rear 7 of the raised portions are arcuate. In the front 6 of the top 8 of the raised portion is part or opening 9 providing a discharge spout for the container, the front of this opening having the arcuate contour of the front 6 of the raised portion, the other sides being substantially straight.

Mounted centrally of the top 8 of the raised portion 5 is spout closure and shearing blade member 10 held slidably in place by means of lugs 11 projecting inwardly from the top of the sides of the raised portion 5. This blade is of relatively thin and resilient metal and forms a movable or slidable shearing element which closely contacts the upper edge of the spout and coats therewith to shear off and forcibly hurl or propel the residue or final part of the sheared flow away from the spout and thereby eliminate or prevent dripping. In order to accomplish this novel function and result, the invention comprehends forming the spout with relatively thin walls with the width of the blade or slidable shearing member 10 slightly greater than the width or cross section of the spout opening, and the curvature of the shearing edge 10a of the blade having a greater radius than the radius of the arcuate edge or front portion of the spout and formed with a flatter arc. Thus, as the blade 10 is quickly and forcibly moved or shot across the upper edge of the discharge spout which forms the stationary shearing member, it first shears the dispensed liquid adjacent the opposite sides of the passage and next at the extreme forward edge of the arcuate lip, thereby concentrating or collecting the final flow or globule of the dispensed liquid at the extreme forward edge of this lip, and as the shearing edge 10a of the blade extends beyond the lip, the rapid movement of the propelled blade cleanly shears the liquid and hurls or propels it away from the spout.

In order to rapidly propel or shoot the blade or shearing element 10 across the spout or stationary shearing member in tight shearing relation therewith, the rear end 12 of the blade is bent upwardly to form a trigger portion and is provided with a slot 13 for receiving a lug or upward projection 14 on lever 15 pivotally mounted upon a pin 16 spanning a bifurcated bracket or extension 17 of the closure. This lever 14 is provided with spaced extensions 18 and 19 providing a slot for the reception of one end 20 of a coil spring 21 mounted upon the pin 16, with the other end 22 of the spring bearing against the web 23 of the bracket or extension 17. To this bracket is detachably secured a handle 24.

To insure that the liquid flows as freely as
possible through the discharge spout, the closure is provided with an opening or vent 25. Since it is extremely important that the vent be opened and maintained open during pouring, I provide a pointed or tapered projection 26 formed or provided on lever 18 and aligned with the vent 25 so as to enter the latter when the trigger is released. This projection insures against clogging of the vent of any obstruction or film of the liquid which would tend to collect therein and clog the opening.

In the operation of the device, downward pressure applied to the trigger portion 14 of the blade 10 retracts the resilient blade against the compression of the spring 21 through the lever 18. This spring being quite heavy and tending at all times to move the blade into its closed or shearing position, it will be evident that removal of the pressure from the trigger will permit the heavy spring to propel or shoot the blade or slidable shearing member onto and across the spout, shearing and hurling the last vestige of the liquid away from the spout.

By the present arrangement of the blade, guide-way lugs and position of the upper surface of the spout, the resilient outer end of the blade or slidable shearing member will be flexed by the lugs and maintained in close contact with the upper surface of the spout and stationary shearing edge, so as to insure a clean cut-off or shearing of the dispensed liquid, and by extending the end of the blade or shearing member 10 beyond the outer edge of the spout, the last trace of the discharged liquid will be forcibly projected or hurled away from the spout. For the purpose of cleaning the blade and the top portion of the projection 5 on which the blade slides, the blade is made readily removable from the lever 15 by lifting the rear end of the blade so that it is free of the lug 14 and permits removal of the blade by withdrawing it rearwardly. It is apparent that it may be difficult to remove sticky or other substances from beneath the blade were the blade not removable. In order to prevent accidental separation of the blade from the lever it is made sufficiently flexible so that it will ride with the lever in the arc of travel of the lever, as shown in dotted lines in Figure 1.

Having disclosed my invention, I claim:

A combined shearing device and closure adapted for mounting on a container to dispense the liquid contents thereof, a dispensing spout having an anuate stationary drip shearing edge, a resilient, slidable mounted drip cutting blade adapted to slide directly across said edge to open and close said spout and shear the liquid therefrom, the rear portion of the blade extending rearwardly of the device and being raised to provide an operating trigger, a slot in said blade, and a spring pressed lever having a portion projecting through said slot, said blade being sufficiently flexible to follow the arc of travel of the lever as and for the purpose set forth.

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