July 10, 1956 S. E. LEBET 2,753,578

COMBINED SQUEEGEE AND SPRAY DEVICE

Filed May 3, 1952

FIG. 2

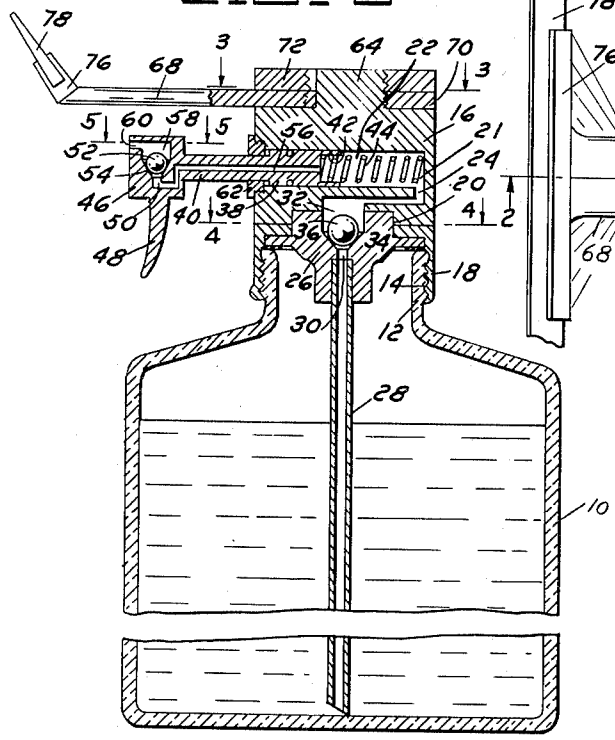


FIG. 1

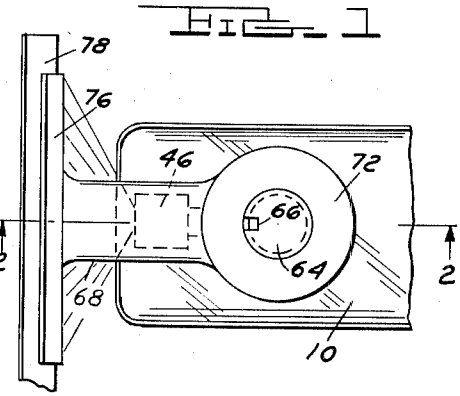


FIG. 3

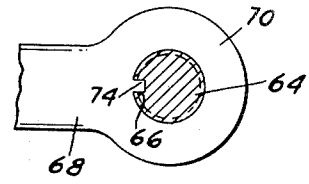


FIG. 5

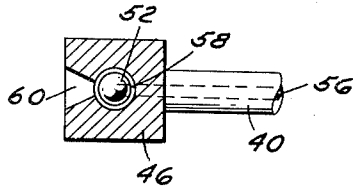
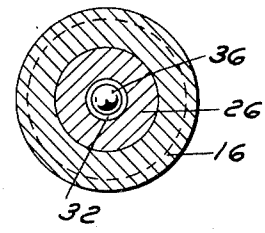


FIG. 4



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COMBINED SQUEEGEE AND SPRAY DEVICE

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2 Claims. (Cl. 15—133)

This invention relates to a combined squeegee and spray device and more particularly to a device of this character in the form of a cap member adapted to be applied to the mouth of a bottle.

It is an object of this invention to provide a simple attachment in the nature of a cap for a bottle which includes a spraying device and a squeegee arranged such that a surface such as glass can be sprayed with liquid and simultaneously wiped with the squeegee.

In the drawings:

Fig. 1 is a fragmentary top view of the device of this invention as applied to a bottle.

Fig. 2 is a vertical section of the device and bottle taken along the lines 2—2 in Fig. 1.

Fig. 3 is a fragmentary sectional view taken along the lines 3—3 in Fig. 2.

Fig. 4 is a sectional view taken along the lines 4—4 in Fig. 2.

Fig. 5 is a fragmentary sectional view taken along the lines 5—5 in Fig. 2.

The device of this invention is adapted for use with a conventional bottle such as shown at 10 having a reduced neck and mouth portion 12 which is exteriorly threaded as at 14. Accordingly, the device is provided with a body portion 16 having a threaded bore 18 at its lower end which is adapted to be screw threaded over the mouth of the bottle 10. The body portion 16 is preferably molded from plastic and fashioned with a counterbore 20 communicating with the threaded bore 18 at one end and with the inner end 21 of a transversely aligned bore 22 through a passage 24 at its other end.

Within the counterbore 20 there is secured, as by cementing or other suitable means, a valve body member 26 which supports a depending siphon tube 28. The bore of tube 28 is aligned with a passage 30 in valve body member 26, the passage 30 in turn communicating with an enlarged passage 32 in the valve body member which has a conically-shaped seat 34 on which a ball valve 36 seats by gravity to control passage 30. The enlarged passage 32 communicates with the end of cylindrical bore 22 through the passage 24.

Within cylindrical bore 22 there is arranged a reciprocable piston member 38. Piston 38 is fashioned as the inner end portion of a plunger stem 40. At its inner end piston 38 is cup shaped as at 42 and receives one end of the compression spring 44, the oher end of the spring seating against the end wall of bore 22. At its outer end plunger stem 40 is fashioned with an enlarged head 46 having a depending finger piece 48. Head 46 is formed interiorly with a valve port 50 controlled by a ball check 52 which seats on a conical seat portion 54. Port 50 communicates with a central passage 56 extending through the plunger stem 40 and piston 38 to the inner end thereof. The valve seat 54 is located at the lower end of a chamber 58 provided with an orifice 60 on the front face of head 46. The orifice 60 (more than one orifice may be used if desired) is preferably fan shaped as shown in Fig. 5.

The plunger stem assembly 40 is arranged to be retained within the cylindrical bore 22 by a stop nut 62. It should be pointed out that no attempt has been made to show in the drawing the exact manner in which the various pieces would be molded from plastic. For example, the plunger stem assembly 40 can be molded from two or more pieces cemented or otherwise secured together; and the head 46, for example, may be originally molded with an open upper end to permit insertion of the ball check 52. Thereafter a piece forming the top wall of the head 46 may be cemented into place. The drawing merely serves to indicate the general arrangement of the various elements. The particular design of each element to provide a satisfactory arrangement both from the standpoint of manufacture and assembly may vary but is within the skill of designers in the plastic molding art.

The upper end of body 16 is fashioned with a reduced upstanding threaded stud portion 64 provided with a vertical slot 66 at one side thereof. An arm 68 has an apertured flange 70 at one end thereof which is arranged to be inserted over the stud portion 64 and secured in place by a threaded nut or disc member 72. Flange 70 is formed with a lug 74 which engages in the slot 66 to hold arm 68 in a position aligned in the same vertical plane as plunger stem 40. Arm 68 extends outwardly beyond head 46 and is fashioned with a U-shaped retainer 76 at its outer end in which is secured a rubber blade or squeegee element 78.

The operation of the device is as follows: When the device is screwed on the mouth of a bottle containing water or other suitable cleaning solution, and the bottle is gripped in the manner of a pistol with the forefinger engaged with finger piece or trigger 48, the finger piece may be reciprocated to discharge a spray of liquid through the orifice 60 onto the surface being cleaned. When the plunger stem 40 is pushed inwardly of body 16 the pressure of the air or liquid in bore 22, passages 56 and 24, and chamber 32 causes ball check 36 to seat on the conical valve seat 34 and causes the ball check 52 to become unseated. Thereafter, when trigger 48 is released spring 44 tends to urge piston 38 in an outwardly direction and this tends to reduce the pressure in bore 22, chamber 32 and passages 24 and 56. Thus, when trigger 48 is released ball check 52 seals with valve seat 54 and ball check 36 opens passage 30. Thus, liquid is sucked upwardly through tube 28 and into bore 22. On the successive inward movement of piston 38 the liquid in bore 22 will be forced out of head 46 as a spray through orifice 60. The spray of liquid will be fan shaped and the various elements will be dimensioned such that the spray impinges against the surface being cleaned over an area slightly less than the length of the squeegee 78 as is shown in Fig. 1. Therefore, if the finger piece 48 is actuated back and forth and at the same time the squeegee 78 is drawn downwardly over the surface being sprayed, the surface will first be wet by the spray emitted from orifice 60 and then wiped clean by the squeegee 78.

Thus, by means of the present device a cleaning liquid may be sprayed onto a surface such as a glass window or the like, and simultaneously therewith the surface may be wiped clean by means of the squeegee 78. The device can therefore be used very conveniently; and the fact that it is formed in the nature of a cap member for a bottle further adds to its desirability, since it can be employed with conventional bottles that are sold containing cleaning solutions for glass and the like.

I claim:

1. A combined spraying and squeegee device comprising a cap member having an internally threaded recess

at the lower end thereof for enabling threaded attachment of the cap to the externally threaded mouth of a bottle containing a cleaning liquid, a siphon tube depending from said cap through said recess, said cap having a bore therein extending transversely of the axis of said recess and communicating with said siphon tube, a spring biased piston in said bore having an extension projecting out of said cap member, a head at the outer end of said extension, said extension and piston having a passageway therein communicating at one end with said head and at the other end with said bore, a spray orifice in said head communicating with said passageway and arranged to direct a spray of liquid out of said head in a plane extending generally transversely of the vertical axis of said cap and bottle, means on said head for reciprocating said piston comprising a member arranged to be engaged and actuated by a finger of the hand in which the bottle is held, outwardly opening check valve means in said passageway and between said bore and said siphon tube said cap having at its upper end a support extending upwardly beyond said head, an arm mounted at one end on said support and extending transversely of the vertical axis of said cap member and said bottle in the direction of said head, said arm projecting laterally outwardly from said cap member beyond said

head and having at its outer end a transversely extending squeegee blade, said piston and head, when reciprocated, serving to pump liquid from said bottle upwardly through said siphon tube and outwardly through the orifice in said head whereby when the bottle is held in one hand, its surface may be sprayed with liquid and the liquid wiped therefrom in one operation.

2. The combination called for in claim 1 wherein said support comprises a threaded portion and including a threaded member engageable with said threaded portion for retaining said arm on said cap member.

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