

April 22, 1952

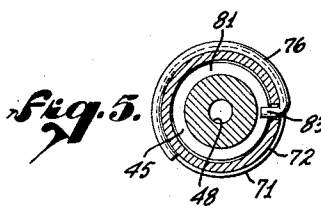
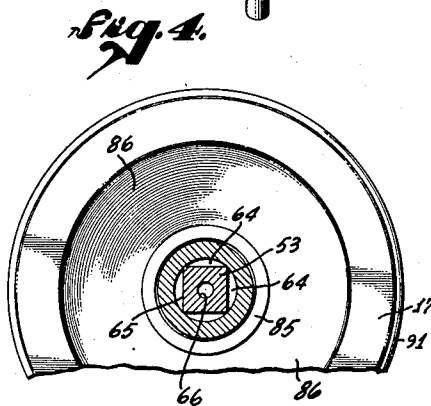
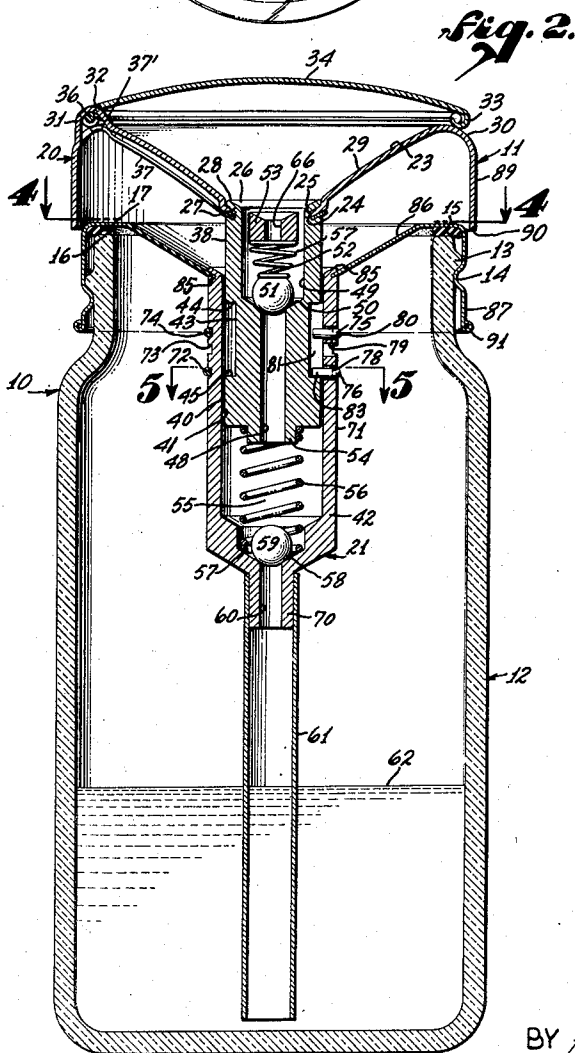
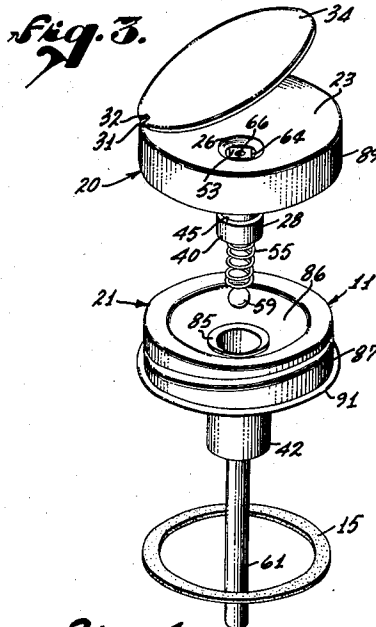
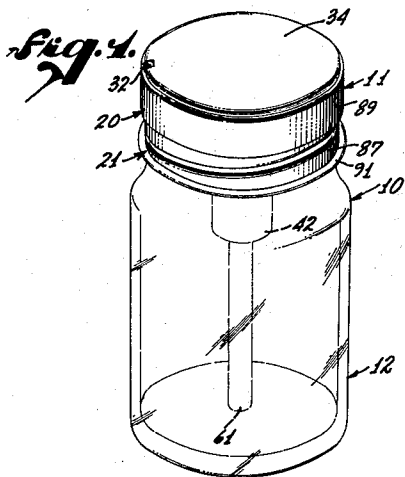
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2,593,591

ADJUSTABLE AUTOMATIC FLUID DISPENSER

Filed Jan. 14, 1949

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

Fig. 6.

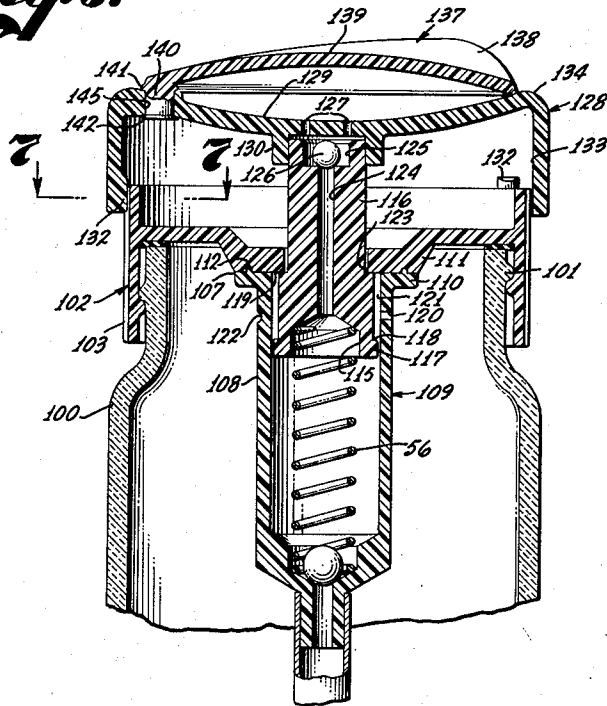


Fig. 7.

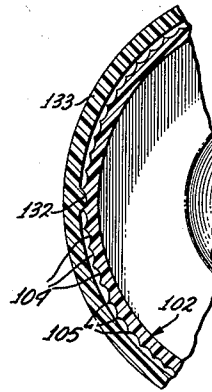


Fig. 8.

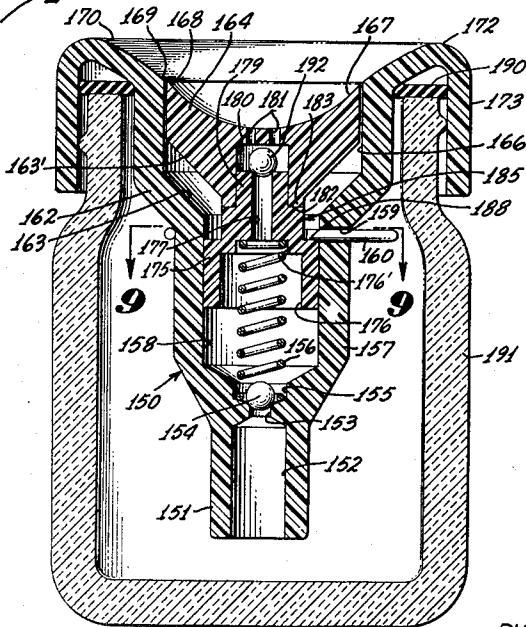
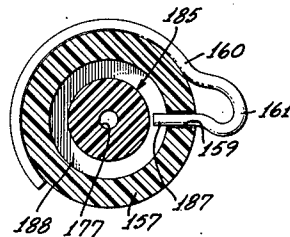


Fig. 9.



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2,593,591

ADJUSTABLE AUTOMATIC FLUID
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13 Claims. (Cl. 222-205)

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This invention relates to liquid dispensing apparatus or the like and more particularly to a new and improved dispenser, valve construction therefor and associated functional parts.

Dispensing apparatus of various types are known to the prior art but none of them embody a satisfactory cover or pump mechanism nor provide for sanitation at the outlet orifice. Moreover, when the container is upset the contents spill. Leakage also frequently occurs during the normal operation of the mechanism around slidable or other moving parts. In addition, a pump stroke sufficiently long to be satisfactory for certain liquids or purposes delivers too much fluid for other liquids or uses.

Valve mechanisms now in use are designed for production from plastic materials or, if designed to be made from metal, prove too costly for sale to and use by the general public. Obviously, plastic, although perfectly satisfactory for such substances as alcohol, is unsatisfactory for containing many of the common solvents such as acetone and the like.

Oil, on the other hand, tends by capillary action to creep over the surface of the container resulting in a final messy appearance and causing the oil-coated container to become a collector for dust, thus obviating the desired sanitation which is one of the requisites of a container and dispenser of the character intended.

Stainless steel being a material of choice, it is a particular object of this invention to provide a satisfactory container which can be made of this or the like material for safety, conveniently, and economically holding caustic solutions, solvents and the like.

In view of the above, it is manifestly among the objects of this invention to provide a safe, satisfactory and convenient dispensing container and dispensing means, as stated, which will avoid the above difficulties associated with prior art devices heretofore known.

It is another object of this invention to provide a satisfactory dispensing container of non-affected material such as stainless steel which may be readily and economically manufactured on a mass production basis.

Another object of this invention is to provide a new and improved dispenser construction for preventing spillage of the contents of the container when the same is accidentally overturned or inverted.

Another object of the invention is to provide a fluid trap means to prevent oozing of the pumped material from the container or apparatus at other points than the discharge orifice.

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Yet another object of the invention is to provide means whereby fluid tending to escape between sliding parts of the pump assembly, as during operation, will be permitted to return to the reservoir.

Another further object of the invention is to provide readily adjustable preferably pre-determined means for regulating the length of a pump stroke and hence to control the quantity of material pumped at each such stroke.

Another further object of the invention is to provide a new and improved convenient sanitary and attractive cap or cover for a delivery dish for said dispenser.

Yet another object of the invention is the provision of a new and improved sanitary and efficient discharge orifice, web, and adjacent construction in combination.

It is also among the objects of this invention to provide improvements over prior art devices heretofore used for analogous purposes.

With these and other objects in view, the invention consists in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the appended claims and illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a perspective view of a dispenser selected as illustrating the invention.

Figure 2 is a vertical sectional view of the dispenser.

Figure 3 is a partially exploded view of a portion of the operative mechanism.

Figure 4 is a sectional view as on a line 4-4 of Figure 2.

Figure 5 is a sectional view taken as on a line 5-5 of Figure 2.

Figure 6 is a vertical sectional view of a modified form of dispensing apparatus.

Figure 7 is a fragmental sectional view as on a line 7-7 of Figure 6.

Figure 8 is a vertical sectional view of a still further modified form of container.

Figure 9 is a sectional view as on a line 9-9 of Figure 8.

Referring more particularly to the drawings, a dispensing container generally designated by the numeral 10 comprises a pump mechanism 11 and a container 12.

The pump mechanism 11 may be secured to the container 12 by any suitable means such as a male thread 13 upon the container and a female thread 14 upon the pump, as will be more fully set forth. A flattened, ring-type gasket 15 of

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conventional construction preferably seals the upper edge 16 of the container between said edge and the corresponding pump portion 17.

The pump 11 comprises a piston assembly 20 and a cylinder assembly 21.

The piston assembly preferably comprises a delivery cup 23 having an axial orifice 24 formed therein and an offset portion 25 surrounding the orifice, designed to be clamped or peened beneath a flange or shoulder 26 of a thickness equal to the offset 25, and a flare-shaped upper portion 27 of a piston 28. By this means the upper surface 29 of the cup 23 is made flush with the corresponding surface of the flange 26 to provide maximum strength and sanitation with economical construction.

At its rim 30 the assembly 20 may be formed with an up-struck ear 31 corresponding with a cut-out portion 32 in the edge 33 of a cap 34 which may thereby be hinged to the top of the piston assembly in a manner to cover and protect the cup 23, as by means of a hinge pin 36 preferably formed of a straight springy wire adapted to be confined within the curled-over edge 33 of the cap for a substantial distance therearound. Thereby, not only is a hinge pin provided but the cap is given a desired weight, form and rigidity while the hinge so formed is neat and attractive in appearance affording a desired sanitary and easily cleaned construction. A leaf spring 37 secured to the piston 38 and having a preferably arcuate end 37' urged against the arched wire 36, as between the ears 31, holds the cover 34 yieldably in extremes of closed and open (i. e., preferably greater than 90°) positions.

The piston 28 by means of the cylindrical walls 38 and 40 makes a close but slidable fit within the bore 41 of a cylinder 42 and is further formed with an annular restricted area or recess 43 defining spaced shoulders 44 and 45. The piston is further provided with a bore 48 and a counter-bore 49, the latter forming a tapered valve seat 50 for a ball valve 51 which is normally held in closed position thereagainst as by means of a tapered coil spring 52 which is supported against a right-lined, preferably square keeper, spider, or outlet guard 53 optionally press fit within the counterbore 49. The lower end of the piston 28 around the bore 48 is formed with a depending flange 54 for a coil spring 56 nested at its lower end in a counterbore 57 the tapered walls 58 of which provide a seat for a gravity ball check valve 59 which guards a bore 60. The bore 60 provides, together with the bore 48 and a depending conduit 61, a passageway for a fluid 62 continuous with a fluid pressure chamber 55 and outlet valve chamber 57.

The walls of the counterbore 49 comprising the upper valve or outlet chamber 57 are also continuous with and smoothly blend into the flared flange 26 and provide discrete, uninterrupted passageways 64 with the sides 65 of the plug 53. Said plug may be axially ported at 66. Its upper surfaces are preferably curved and dished out to conform to the surface 29 of the dish 23. This construction again provides an economical and sanitary outlet and may permit facile access to the ball valve 51 for centering the same or to the chamber 57 for cleaning if desired.

The conduit 61 may be press fit on a nipple 70 formed at the lower end of the cylinder 42.

Formed around the outside wall 71 of the cylinder, as shown, are three annular grooves 72, 73 and 74 into the first and last of which spring clips 75 and 76 may be clampingly held by their

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own inherent resilience as illustrated most clearly in Figure 5. Corresponding ports 78, 79 and 80 extend radially between corresponding grooves 72, 73 and 74 and a recessed area or fluid-trap chamber 81.

Inwardly turned ends 83, for example, of the spring clips 76 project into the chamber 81 as keepers or stops engageable with the shoulders 44 and 45, respectively, to define desired limits extended or retracted reciprocatory movement of the dish 23 and its piston 28 within the cylinder 42.

The upper end 85 of the cylinder 42 is peened over in a similar manner to the flange 26 to hold a correspondingly tapered apron 86, said apron being formed with a depending annular flange 87 designed to make a slidable telescopic fit within a complementary depending flange 89 of the piston assembly. Thereby, the main piston and cylinder parts are retained in alignment, and sanitation, and strength, including a pleasing appearance, are simultaneously achieved. Preferably the lower marginal edge 90 of the upper flange 89 is clean-cut and plain while the correspondingly marginal edge 91 of the lower flange 87 may be rolled for added strength and finished appearance.

The mechanism above described may be adjusted for length of stroke and volume of delivery of material as by removing the spring clips 75 and 76 from or to one or another of the grooves 72, 73, or 74. Thus, if it is desired to have a stroke of maximum length for maximum fluid delivery per downward stroke of piston, the spring clip 75 may be removed from the groove 74, as illustrated most clearly in Figure 2, whereupon the shoulder 44 will be permitted to travel downwardly as pressure is applied in the cup 23 (as by means of a piece of waste material, cotton or the like, customarily employed for such purpose), until the same has engaged the inwardly turned end 83 of the spring clip 76. The end 83 thus serves as a stop for the shoulder 45 as well as the shoulder 44 permitting a stroke equal to the full distance between said shoulders 44 and 45.

In a similar manner the spring clip 76 might be removed, the piston assembly 20 then riding higher relative to the cylinder assembly 21, permitting the shoulder 45 to engage the intumed end 83 of the spring clip 75 in the upward stroke of the piston 28 under the influence of the coil spring 56 and causing abutting engagement of said inwardly turned finger 83 and the shoulder 44 to define the downward limit of stroke.

It is also obviously possible to place either the spring clip 76 or the spring clip 75 in the groove 73 thereby permitting further modification and adjustment of the length of stroke of the piston 28.

In the use of the container, the pressure chamber 55 is closed at its lower end by the ball valve 59 under the influence of an applied downward pressure upon the cup 21. Trapped fluid will be forced upwardly through the passage 43 past the ball valve 51 and out into the cup 23 through the chamber 57 and orifices 64 and 66.

Relieving downward pressure upon the cup 23 permits the return of the piston 28 to its upper limit of extension under the influence of the coil spring 56, thereby permitting the valve 51 to be closed by the spring 52 forming a vacuum in the chamber 55, opening the valve 59, and drawing the fluid 62 through the conduit 61 past said valve 59 and into the pressure chamber 55 for

delivery to the cup at the next enforced downward stroke of the piston 23.

During continuous pumping operations it may be seen that fluid may tend to leak slowly upwardly between the outer walls 38 and 40 of the piston 23 and the wall 41 of the cylinder bore. By virtue of the port 79, however, as illustrated by way of example in Figure 2 (or any other of the ports 72, 73 and 74 which may have been left open by the omission of a spring clip such as 75 and 76, or even in the presence of such a spring clip by virtue of the optionally larger formation of the ports 78, 79 and 80 than the width of the grooves 72, 73 and 74), the fluid which would otherwise constitute leakage is returned to the reservoir 62 by way of the fluid trap and through said ports.

Notwithstanding this fact and in the event that the container is accidentally overturned, return leakage through the ports 72, 73 and 74 from the interior of the container 12 is prevented at the shoulder 44 and the adjacency of the wall 38 to the wall of the counterbore 41.

The preferred material of which the instant container is to be made is stainless steel in all of the parts thereof except the gasket 15 and, optionally, the container 12. Said container, like any of the other parts, may be made of stainless steel or other desired non-corrosive substance which is capable of withstanding the action of a chemical intended to be used therein. Stainless steel has been found experimentally and practically to be the material of choice as combining the qualities of neat appearance, relative low cost, good manufacturing characteristics, and a sanitary surface resistant to corrosion. It is contemplated that the device will find use in laboratories, doctors' offices, and other places where any number of chemicals are kept for repeated use, for treatment, or in emergencies.

The material as it enters the cup 23 is intended to be dipped up or absorbed by a suitable pad of waste cotton or other material for direct application to a point of intended use.

The modified form of apparatus illustrated in Figures 6 and 7 may comprise a container 100 preferably provided with a screw thread 101 adapted for the threaded securement of a cap 102 having an externally serrated rim 103 defining vertical grooves and ridges 104 and 105, respectively, and secured in any preferred fashion as by gluing, threading, or the like, at 107 to the cylinder 108 of the pump mechanism generally designated at 109.

As illustrated, the cylinder 108 is provided with a flange 110 by which the same may be secured to a corresponding offset area 111 of the cap. In other respects, the cylinder 108 may be optionally similar to the corresponding cylinder assembly 21 of the embodiment of Figures 1 through 5 and accordingly like parts in the two embodiments have been designated by like numerals. An integral annulus 113 is designed to nest within a complementary groove in the cap portion 102 to assure the proper alignment of these parts during assembly.

The coil spring 56 may nest within a recess 115 in the bottom of a piston 116 preferably formed with an annular shoulder 117 defining an annular stop shoulder 118, and another shoulder or stop 119 may be formed in spaced relationship to the shoulder 118.

Any number of axially spaced ports 120 formed through the wall of the piston 108 may confront

and communicate with a drainage space 121 between the piston and cylinder. The piston may be formed with any number of axially spaced ring-retaining grooves 122 corresponding to the ports 120 in a similar manner to the embodiment previously described. A pin, not shown, but similar to the other embodiments illustrated, may be inserted through the port 120 and confined within the groove 122 for engaging and limiting the stroke of the piston 116 to any desired extent. Any such pin may have a maximum limiting abutment against either the shoulder stop 118 or 119, preferably the former. In any event, fluid escaping past the shoulder 117 during pumping movement may be readily returned to the containers through ports such as 120, thereby preventing its escape past the piston at the shoulder 123 or facilitating its return from thereabove.

The piston 116 has an axial port 124 communicating with a counter-bore 125 defining a chamber for a ball check valve 126.

Any number of ports 127 or the like formed in the bottom of a cup 128 are in communication with the chamber 125 permitting fluid in the container to be pumped into the concave surface 129 of the cup for use as described.

A depending annulus 130, preferably formed integrally with the cup 128, may provide means of securement to the upper end of the piston 116 as by gluing or other appropriate means.

Any ridges 132 may be formed in the inside edge of a depending flange 133 preferably continuous with the concave portion 129 of the dish and at the rim 134 of the latter for engagement in one or more grooves 104.

A cover 137 having a suitably shaped finger piece 138 across the top 139 thereof may be pivotally secured as by a pivot construction 140 to any part of the lip 134 as a thickened portion 135 thereof for sidewise pivotal movement of the cap relative to the dish as upon a vertical axis 140. An annular shoulder 141 and an upset shoulder 142 may be used to confine and center the axle portion 140 within a bore 145 in the cup.

The operation of the embodiment of Figures 6 and 7 is similar to that heretofore described in connection with the first embodiment with the exception that relative rotation of the cup 128 and the cap 102 is prevented by the ridge and groove construction 104, 105, and 132. This is especially desirable in the instant embodiment in order that manipulative movement tending to pivot the cover 135 will not cause corresponding rotation of the cup 128. Thereby, during reciprocating movement of the cup and cap, the latter will telescope with the depending flange 133 of the former and the ridges 132 will slide within the corresponding groove 104 preventing relative rotation of the parts.

It is preferable, though inessential, that the embodiment of Figures 6 and 7 be made of plastic, with the exception of the container which may be of glass, and the pin, spring, and ball check valves 59 and 126 which may be of steel. The gasket 15 will be of usual construction.

In the embodiment of Figures 8 and 9 a pump generally designated at 150 may comprise a depending conduit portion 151 having a bore 152 communicating with a restricted port 153 providing a seat for a ball valve 154. A valve chamber 155 provides an abutment for a coil spring 156.

A cylinder portion 157 includes a bore 158 communicating with the upper end of which is a radial opening 159 for the reception of an ap-

appropriately-shaped pin 160 having a finger piece 161 formed therein for a purpose corresponding to those of the analogous pins of the preceding embodiment, as will be set forth.

Conical walls 162 provide a tapered edge 163 corresponding to that of a cup 164 carried by the piston and nested for reciprocative movement within a bore 166. The concave surface 167 of the cup terminates at a lip 168 adjacent the edge 169 of an otherwise tapered and rounded surface 170 of the preferably one-piece cylinder assembly 150 defining a substantially uniform exterior with the concave surface 167 of the cup.

At the rim 172 a depending flange 173 may be provided, said flange 173, rim 172, and surface 170 thereby collectively comprising a "cap" for the container.

A piston 175 may be formed with a bore 176 for the accommodation of the upper end of the spring 156 and a counterbore 176' in communication with the bore 158. A passage 177 leads from the bore 176' to an upper end 179 of the piston and a bore 180 in the cup portion 164 communicating with the concave surface of the cup by any ports 181. A shoulder 182 may form an abutment with the corresponding lower end 183 of the cup 164. A nipple 185 thus formed in the upper portion of the piston 173 may be press fit within the bore 180. It has been found that these parts can be usually slipped together while the plastic of which they may be made is still hot as from the molding operation. Thereafter and during cooling of the parts a relative shrinking of the area of the bore 180 occurs so that a tight fit is achieved between the nipple 185 and said bore.

In use, the cup 164 is reciprocated within the bore 166 thereby creating a pumping action substantially in a manner heretofore described in connection with the first embodiment of Figures 1 through 5. The conical surface 163 at the lowermost point of the stroke 164 may abut against the corresponding surface 163'. The extent of upward movement of the cup is preferably restrained by the inner end 187 of the pin 160 in its abutment with a limiting shoulder or stop 188 formed in the piston 175. Manifestly, any number of axially spaced ports 159 may be provided in a similar manner to that illustrated in connection with the first embodiment, and the pin 160 may then be placed in varying axial distances in the wall of the cylinder to govern the amount of the piston stroke and hence the amount of fluid pumped at any single reciprocation.

It will be observed that by the interposition of a gasket 190 between the cap and the bottle 191 there will be no possible leakage of fluid from the container except to the extent the same may be deposited in the cup surface 167 for use. Any excess fluid leaking into the area between the surfaces 183 and 162 may be forced into the cup as either upwardly between the cup and the surface of the bore 156 or downwardly through any ports 159. In the event there is only one such port, the pin 160 may be made of a relatively lesser diameter.

The form of Figures 8 and 9 may be essentially constructed of only three plastic parts, to wit, the cup portion 164, the piston portion 175 which, when united with the cup portion, comprises only one piece having a ball valve 192 operatively confined therein, and the cylinder portion 150 integral with the cap.

Again, all major parts are preferably of plastic

with the exception of the ball valves 154 and 192, the spring 156 and the clip 160, which may be of metal, the gasket 190, and the container 191, which latter may be of metal, plastic, glass, or the like. The embodiment of Figures 8 and 9 may be used with alcohol, oil, and other non-tacky materials by use of a swab as intended for the other embodiments. It is contemplated, however, that its main use will be found as a dispenser for finger nail polish remover and kindred purposes with or without a swab.

This invention features the provision of a new and improved dispensing container suitable for the convenient confinement of corrosive liquids in particular, providing factors of safety and sanitation and preventing leakage in use or accidental spillage. It likewise features a device of the desired character described having ready, preferably pre-adjusted, means for presetting the delivery rate of fluid per stroke of the piston to suit varying conditions of use as dictated by varying needs and the character of any contained liquid agents.

Although the invention has been herein shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent structures.

The invention having been herein described, what we claim as new and desire to secure by Letters Patent is:

1. In a fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting yieldably upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means defining a continuous communicating fluid passage there-through, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, and an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage; a wall of the cylinder being formed with radial holes in axially spaced relationship, a spring clamp clampable around the cylinder and including an end adapted to be carried in any selected hole for engagement with said abutments to adjust the extent of relative reciprocating movement of the piston means within the cylinder means.

2. In a fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting yieldably upwardly beyond said cylinder means, said cylinder and piston means defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage; an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable pin means, the cylinder wall having a plurality of vertically spaced radial holes therein, the pins being insertable in the holes to adjust the extent of relative reciprocating movement of the piston means within the cylinder means, and a dis-

penser cap supporting said pump within said container, one of said cap and said cup defining an axially disposed substantially frusto-conical recess and the other one of said cap and cup being formed to nest within and being telescopically reciprocable therein.

3. A fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means; said piston means including axially spaced shoulders, said cylinder means having clip-retaining annular grooves and corresponding axially spaced radial ports communicating with said grooves and extending through the walls of the cylinder means, at least one spring clip releasably retained by said clip-retaining grooves including a portion normally extending inwardly through corresponding ports for engagement with said shoulder to define the extent of relative reciprocatory movement of the piston means within the cylinder.

4. A fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means, said passage in said piston means being formed at its upper end with a counterbore, a ball valve confined within the counterbore normally closing the passage, and a substantially rectangular spider having an axial bore therethrough press fit within and flush with the upper end of the counterbore.

5. A fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow

from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means, said piston means having an upper counterbore, said cup being formed of sheet material having an offset central area surrounding its axial port, an annular lip of a thickness equal to the depth of said offset extending upwardly from the piston means around said counterbore, flared outwardly and nested within said offset area of said cup flush with the interior of said cup.

6. A fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means, said piston means having an upper counterbore, said cup being formed of sheet material having an offset central area surrounding its axial port, an annular lip of a thickness equal to the depth of said offset extending upwardly from the piston means around said counterbore, flared outwardly and nested within said offset area of said cup flush with the interior of said cup, said cylinder means including a cup-shaped apron adapted to nestingly accommodate said cup in a lower limit of said reciprocatory movement and a female threaded downwardly turned rim depending from the outer edge of said apron for threaded securement to said container.

7. A fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means, said piston means having an upper counterbore, said cup being formed of sheet material having an offset central area surrounding its axial port, an annular lip of a thickness equal to the depth of said offset extending upwardly from the piston means around said counterbore, flared outwardly and nested within said offset area of said cup flush with the interior of said cup, said cylinder means including a cup-shaped apron adapted to nestingly accommodate said cup in a lower limit of said reciprocatory movement and a female threaded downwardly turned rim

depending from the outer edge of said apron for threaded securement to said container, an annular flange depending from the rim of the cup and adapted to fit over and telescope with said downwardly turned rim during said reciprocating movement.

8. A fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means, said piston means having an upper counterbore, said cup being formed of sheet material having an offset central area surrounding its axial port, an annular lip of a thickness equal to the depth of said offset extending upwardly from the piston means around said counterbore, flared outwardly and nest within said offset area of said cup flush with the interior of said cup, said cylinder means including a cup-shaped apron adapted to nestingly accommodate said cup in a lower limit of said reciprocatory movement and a female threaded downwardly turned rim depending from the outer edge of said apron for threaded securement to said container, an annular flange depending from the rim of the cup and adapted to fit over and telescope with said downwardly turned rim during said reciprocating movement, a dome-shaped cover hingedly secured to the rim of the cup and including a down-turned marginal edge, a hinge pin of substantial length confined within said marginal edge by inherent spring tension and comprising a pintle for said hinged securement.

9. A fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, a piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means, said piston means having an upper counterbore, said cup being formed of sheet material having an offset central area surrounding its axial port, an annular lip of a thickness equal to the depth of said offset extending upwardly from the piston means around said counterbore, flared outwardly and nested within said offset area of said cup flush with the interior of said cup, said cylinder means including a cup-shaped

apron adapted to nestingly accommodate said cup in a lower limit of said reciprocatory movement and a female threaded downwardly turned rim depending from the outer edge of said apron for threaded securement to said container, an annular flange depending from the rim of the cup and adapted to fit over and telescope with said downwardly turned rim during said reciprocating movement, a dome-shaped cover hingedly secured to the rim of the cup and including a down-turned marginal edge, a hinge pin of substantial length confined within said marginal edge by inherent spring tension and comprising a pintle for said hinged securement, said cup rim and said cover having complementary hinge-forming ears formed therein comprising said hinge structure for said pintle.

10. In a fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means, the novelty comprising the outer wall of said piston means having a cut-out portion defining a fluid trap having axially spaced shoulders, encircling grooves formed in the corresponding outer wall of the cylinder means, ports formed in the bottoms of said grooves communicating with said fluid trap, and at least one C-shaped adjusting clip resident in at least one of said grooves and having one in-turned portion extending into said fluid trap by means of said ports and for engagement with said shoulders to limit the reciprocative movement of said piston and cylinder means, at least one of said ports being in open communication with the interior of the container and said fluid trap as and for a drain for the latter.

11. A dispensing apparatus for a fluid container comprising a spring-loaded piston and cylinder pump means depending into the container, a screw cap for the container supporting the pump means vertically therein, and a ported cup having an annular flange depending from the rim thereof in telescoping reciprocatory relation with said cap when the pump is actuated for guiding said pumping movement and for shielding said pump mechanism, adjacent surfaces of said flange and said cap having complementary vertical grooves and ridges longitudinally slidable within one another during said pumping movement, a cover for said dish pivotally secured to the rim of the cup on a vertical pintle and having an upwardly projecting finger piece formed thereon diametrically opposite said vertical pintle for manipulating the cover, about said pintle, adjacent surfaces of said flange and said cap having complementary vertical grooves and ridges longitudinally slidable within one another during said pumping movement.

12. A fluid dispenser comprising a container, cylinder means removably mounted upon said

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container and depending thereinto, piston means mounted for reciprocation within and normally projecting upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means each having and defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage, and adjustable means associated with said cylinder and piston means to limit the extent of relative reciprocating movement of the piston means within the cylinder means; said piston means including axially spaced shoulders, said cylinder means having clip-retaining annular grooves and corresponding axially spaced radial ports communicating with said grooves and extending through the walls of the cylinder means, at least one spring clip releasably retained by said clip-retaining grooves including a portion normally extending inwardly through corresponding ports for engagement with said shoulder to define the extent of relative reciprocatory movement of the piston means within the cylinder, a cover for said dish pivotally secured to the rim of the cup on a horizontal axis, an extended hinge pin of springy wire confined within the rim of the cover and extending arcuately across an opening formed in said cover, spaced ears projecting upwardly from the rim of the cup, and a spring finger secured beneath the cup and normally urged against the hinge pin to hold the cover yieldably in extremes of open and closed position.

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13. In a fluid dispenser comprising a container, cylinder means removably mounted upon said container and depending thereinto, piston means mounted for reciprocation within and normally projecting yieldably upwardly beyond said cylinder means and including axially spaced abutments, said cylinder and piston means defining a continuous communicating fluid passage therethrough, valve means in said cylinder means and said piston means, the latter means being effective to pump a fluid upwardly from said container through said passage, and an axially ported cup disposed at the upper end of said piston means in a position to receive a flow from said passage: a wall of the cylinder being formed with radial holes in axially spaced relationship, a spring clamp clampable around the cylinder and including an end adapted to be carried in any selected hole for engagement with said abutments to adjust the extent of relative reciprocating movement of the piston means within the cylinder means, said cylinder being formed with circumferentially disposed peripheral grooves communicating with said respective holes for receiving a spring clamp in any pairs of holes.

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