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3,276,641

ACTUATOR FOR DISPENSING PUMP

Filed Oct. 23, 1964

2 Sheets-Sheet 1

Fig. 1

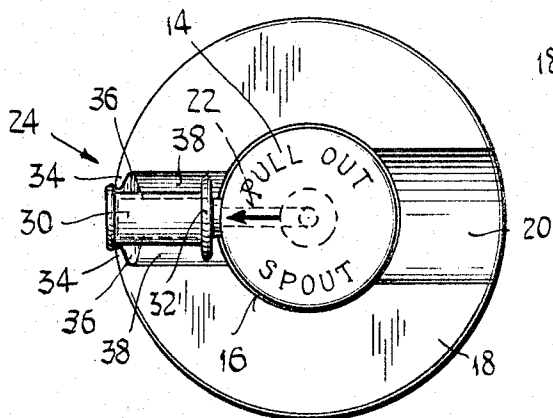


Fig. 2

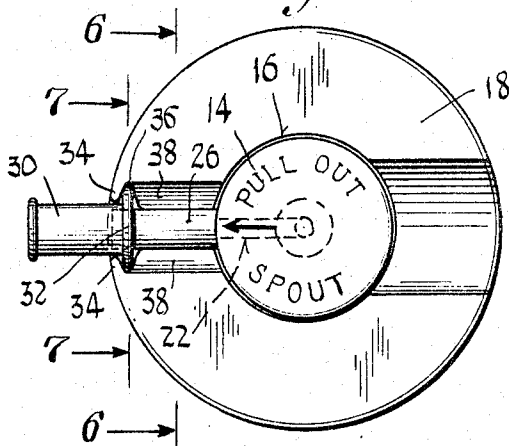


Fig. 3

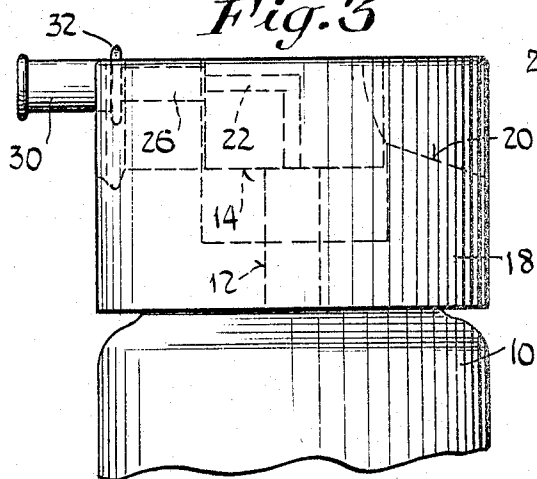


Fig. 4

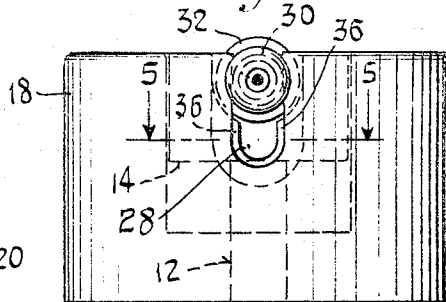


Fig. 5

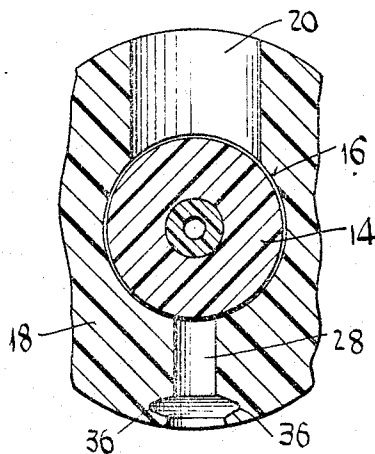
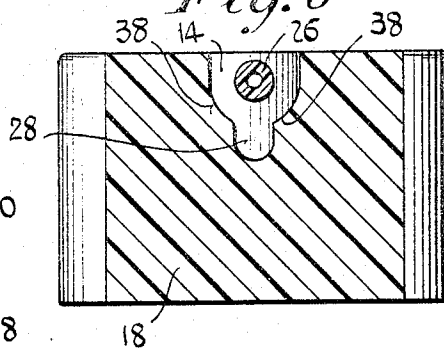


Fig. 6



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Fig. 7

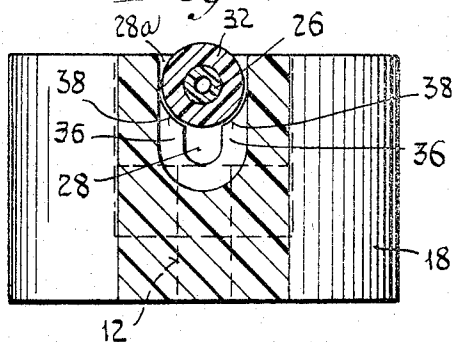
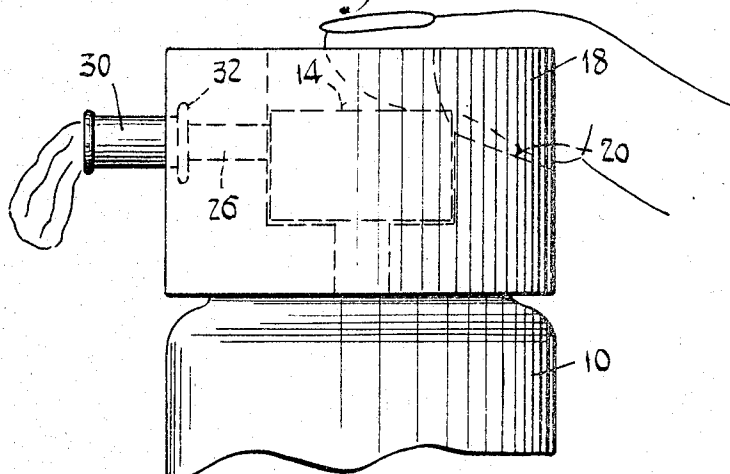


Fig. 8



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ACTUATOR FOR DISPENSING PUMP

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7 Claims. (Cl. 222-526)

This invention relates to small hand-held pump-type dispensers, and more particularly to the actuator and discharge-nozzle structures thereof.

An object of the invention is to provide a novel and improved actuator for a dispensing pump of the type outlined, wherein the plunger is automatically maintained in a locked condition by novel, advantageous means when the device is not set up for use, thereby preventing inadvertent discharge of the contents of the container.

Another object of the invention is to provide an improved actuator as above set forth, wherein the discharge nozzle is axially retractable to a storage or shipping position for occasions when the dispenser is not in use.

A further object of the invention is to provide a novel actuator in accordance with the foregoing, wherein the retracting of the discharge nozzle automatically effects the locking of the pump plunger, said nozzle unlocking the plunger when moved to its advanced, operative position.

Features of the invention reside in the provision of an improved actuator device as outlined, which is extremely simple in its construction, economical to fabricate, easy to operate and rugged and reliable in operation.

Another feature of the invention resides in the provision of a combination semiautomatic locking means and advanceable-retractable discharge spout, wherein a single movable part performs the function of extending the spout passage and also unlocking the pump plunger, and vice versa.

Other features and advantages will hereinafter appear.

In the drawings accompanying this specification, similar characters of reference are used to designate like components throughout the several views, in which:

FIG. 1 is a top plan view of the improved locking-type actuator as provided by the invention, the discharge spout being shown in the retracted, locking position.

FIG. 2 is a view that of FIG. 1, but showing the discharge spout in the extended, operative position wherein the pump plunger is unlocked and in readiness for use.

FIG. 3 is a side elevational view of the actuator in the operative condition of FIG. 2.

FIG. 4 is a front elevational view of the improved pump actuator device of FIGS. 1-3.

FIG. 5 is a fragmentary horizontal section, taken on the line 5-5 of FIG. 4.

FIG. 6 is a fragmentary vertical section taken on the line 6-6 of FIG. 2.

FIG. 7 is a fragmentary vertical section taken on the line 7-7 of FIG. 2, and

FIG. 8 is a side elevational view like that of FIG. 3, but showing the depress button in the depressed or lowered position after a downward pump action has been effected.

Referring now particularly to the drawings, there is illustrated in FIG. 3 a container 10 which may be of any usual type, having incorporated or disposed within its neck portion a reciprocable pump unit of a type known in the art. For example, there may be mounted in the neck of the container 10 a pump like that described and disclosed in the copending application of W. R. O'Donnell and W. Steiman, Serial No. 278,962, filed May 8, 1963, now Patent No. 3,159,316 and entitled "Atomizer

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Pump," such application being owned by the assignee of the present application. Or, a pump of the type shown in Coopridge Patent No. 2,889,964 may be provided in the neck of the container 10.

Pumps of the above type have an upwardly extended hollow shank or plunger through which the substance of the container is pumped in response to its reciprocation. In FIGS. 3, 4 and 7 there is indicated by the numeral 12 such a reciprocable plunger shank. At its upper extremity the shank 12 mounts a finger engageable depress button 14, which rests in a central circular recess 16 of a stationary cap member or body 18, the latter being attached to the neck of the container 10 in any conventional manner, as for example by the use of the usual screw threads. To facilitate convenient actuation of the depress button 14, the cap body 18 may be provided with a radially extended deep finger notch 20 as seen in FIGS. 1-3 and 5.

It will be understood that with the above arrangement, finger pressure may be applied to the button 14 of the pump, to depress the latter, and upon removal of such finger pressure the button 14 will be shifted upward by the usual return spring of the pump construction (not shown). Accordingly, a reciprocation of the pump shank 12 may be readily effected, by which the liquid contents of the container 10 will be forced upward through the bore of the shank 12 and through an L-shaped passage 22 of the button.

In accordance with the present invention there is provided on the depress or pump operating button 14 a novel, axially extendable discharge nozzle designated generally by the numeral 24, and the cap body 18 is so arranged that in conjunction with the nozzle a locking of the button 14 and plunger 12 is effected when the nozzle is in its retracted position as indicated in FIG. 1. In effecting this, the button 14 has a lateral or radially extending discharge spout portion 26 which is rigidly affixed to the button, and the cap body 18 has a radial recess 28 adapted to accommodate the spout portion or stem 26 for both the raised position of the button 14 shown in FIG. 3 and a depressed position of the button as indicated in FIG. 8.

The discharge nozzle also comprises an outer movable tubular portion 30 adapted to telescopically receive the inner stem portion 26 of the button 14. The outer nozzle portion 30 has at its inner end an external annular flange 32 which is normally disposed in an enlarged portion 28a of the recess 28, as seen in FIGS. 1-4 and 7.

To prevent the outer nozzle portion or member 30 from being pulled off the inner stem 26, the cap body 18 has side flanges 34, FIGS. 1 and 2, which are engageable with the annular flange 32 to effect a retention of the spout member 30 when it is in the extended position shown in FIGS. 2, 3 and 8.

The recess 28, 28a in the cap body 18 is also provided with a pair of vertically extended oppositely disposed slots 36 which provide clearance for the annular flange 32 of the spout 30 when the latter is in the extended position of FIGS. 2, 3 and 8. For such extended position of the spout member 30, the button 14 may be depressed without interference. However, when the spout member 30 is in the retracted position shown in FIG. 1, the flange 32 of the member will engage and be obstructed by horizontally extending shoulders 38 as provided in the recess 28, 28a. This is clearly seen in FIGS. 1 and 7. In consequence, it is not possible to depress the button 14 when the spout is retracted, and accordingly there is prevented any inadvertent discharge of the contents of the container 10 for such condition.

The retraction of the telescopic spout 30, 26 as seen in FIG. 1 enables the dispenser advantageously to occupy a

smaller space, and this is especially desirable for purposes of storage and shipment. On such occasions, there is positively prevented any accidental discharge of the contents of the container 10, inasmuch as the button 14 is prevented from having any downward, pumping movement.

At the time that the dispenser is to be placed in use, the user merely pulls outward the spout portion 30, to the position shown in FIGS. 2, 3 and 8. This position is defined by engagement of the annular flange 32 of the spout member 30 with the vertical flanges 34 of the cap body 18. The user then merely applies finger pressure to the button 14 to effect a pumping action of the latter, whereupon the substance contained in the vessel 10 will be discharged from the spout 24. It is understood that the stem 26 of the button 14 is hollow and is in communication with the L-shaped passage 22 of the button, in order to bring the pump material to the outer spout member 30.

The unlocking of the button 14 is thus automatically effected in response to the natural operation required of the user, in pulling out the spout member 30 to its operative position. A legend may be applied to the actuator structure, informing the user that the spout must first be extended to the position of FIGS. 2, 3 and 8 prior to placing the dispenser in use. Such legend is indicated in FIGS. 1 and 2, comprising the expression "pull-out spout," together with a suitable arrow.

Assembly of the actuator is effected by applying the spout member 30 to the stem 26 prior to the button 14 being attached to the shank 12. This latter may involve merely press-fitting the button on the shank, as may be well understood.

It will be seen from the foregoing that I have provided a novel and improved, telescopic spout construction for a dispensing pump actuator, which has the advantage of enabling the dispenser to be more compact and at the same time effecting a locking of the plunger assemblage of the pump.

The actuator construction is seen to be especially simple and foolproof, involving but a single movable part comprising the outer spout member 30. When the spout is retracted, the space required by the dispenser involves merely that taken up by the stationary cap 18 and the container 10 itself. Thus, such dispensers may be conveniently packaged and packed in a compact arrangement, which does not require additional space for the spout. Moreover, there is no likelihood of the spout becoming damaged when in the retracted position, as well as no likelihood of accidental discharge of the contents of the container.

Variations and modifications may be made within the scope of the claims, and portions of the improvement may be used without others.

I claim:

1. In a hand-held dispenser, in combination:
 - (a) a stationary cap having means for mounting it on a container neck,
 - (b) a depress button movable in the cap between extended and retracted positions,
 - (c) a spout member movably carried by said button and shiftable thereon between extended and retracted positions,
 - (d) means on said button, establishing communication between the container and spout, and
 - (e) automatic cooperable locking means on said spout

and button, said means being responsive to movement of the spout member on the button and being automatically rendered operative by positioning the spout member in its retracted position and positively preventing movement of the button to its retracted position on the cap when the spout member is in said retracted position, said means releasing the button for movement when the spout member is in its extended position.

2. In a hand-held dispenser, in combination:
 - (a) a depress button and means for movably mounting the same on a container for movement between extended and retracted positions,
 - (b) a two-part telescopic spout structure comprising two tubular, coaxial mutually telescoping parts carried by the button, one of said parts comprising a radially extending hollow stem affixed to the button and the other part comprising a spout member which is movable axially of the stem between extended and retracted positions on the button, means on said button establishing communication between the container and the spout, and
 - (c) lock means responsive to positioning of said movable spout member in its retracted position on the button, preventing movement of the button on the container from said extended to said retracted button position.
3. A dispenser as in claim 2, wherein:
 - (a) cooperable detent means are provided on the spout member and stationary cap, limiting the extending movement of the member and preventing its removal from the hollow stem.
4. A dispenser as in claim 3, wherein:
 - (a) said detent means comprises an annular flange on the spout member and abutment means on the cap, engageable with the said flange.
5. A dispenser as in claim 4, wherein:
 - (a) said annular flange constitutes a part of the said locking means, and
 - (b) said locking means further comprising shoulders on the cap, engageable with the said flange when the spout member is in its retracted position.
6. A dispenser as in claim 5, wherein:
 - (a) said cap has a notch in its top portion, adapted to accommodate the stem of the button when the latter is in retracted position.
7. A dispenser as in claim 6, wherein:
 - (a) said button when in extended position is substantially flush with the cap, and
 - (b) said spout member when retracted being substantially flush with the cap.

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