

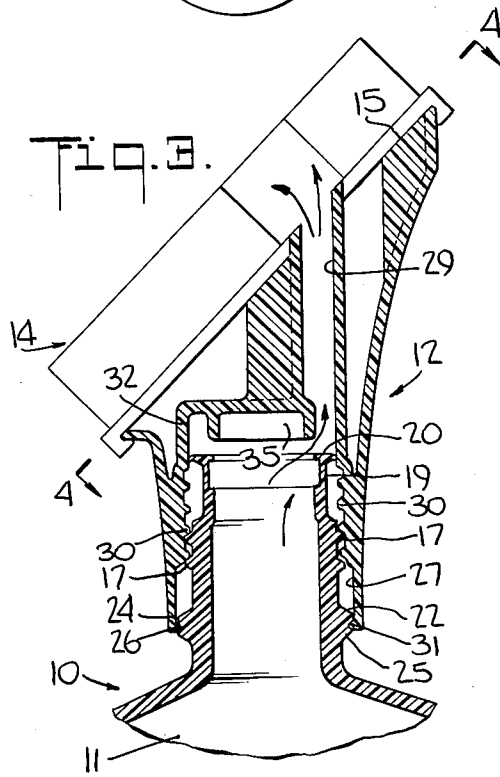
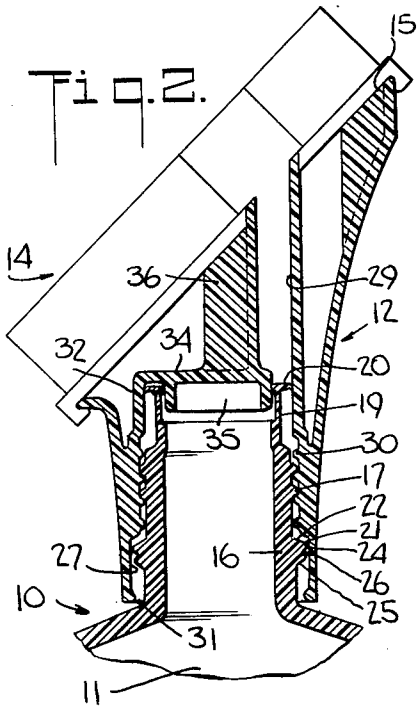
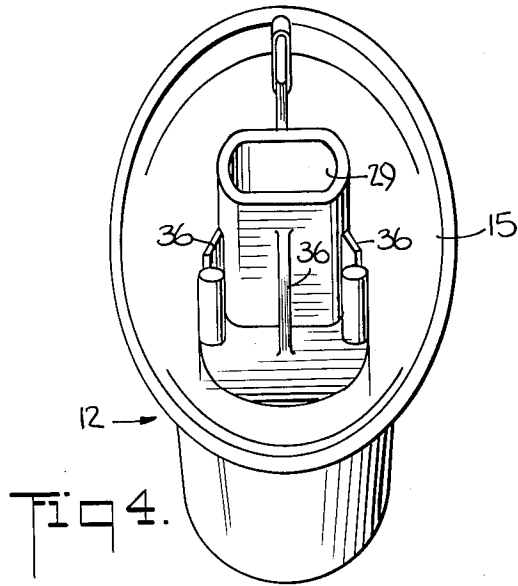
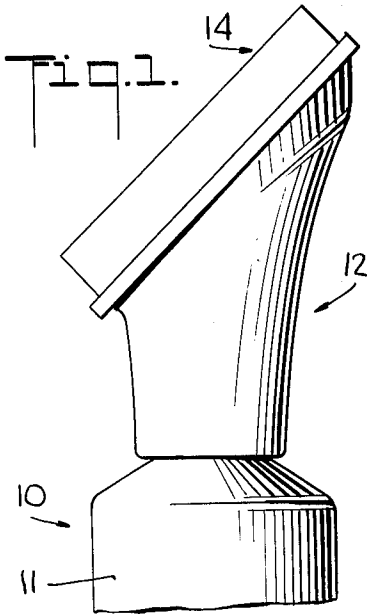
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3,261,515

DISPENSER HAVING A HEAD AND A PLUG DEPENDING THEREFROM

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3,261,515

**DISPENSER HAVING A HEAD AND A PLUG
DEPENDING THEREFROM**

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8 Claims. (Cl. 222—520)

This invention relates to a fluid dispenser, and more particularly to a dispenser of the type combining a reservoir and applicator head so that fluid may be supplied as required to the applicator head.

A number of expedients have been proposed for supplying fluid from a container or reservoir to an applicator head, the structural requirements of which have been dictated by the nature of the fluid. Thus, dispenser units for water, ink, creams such as shaving cream and the like, have been dispensed by such units and these have involved relatively simple structural features since, in such cases, it is only necessary that the fluid flow passages be dimensioned to permit required flow depending upon the viscosity of the fluid. Capping was usually not a problem, but where desired at all, a simple screw-on or friction fit cap was adequate.

In the present case, it is desired to provide a dispenser of the class described which can very well be used to dispense fluids such as those mentioned, but which is also adapted for dispensing of caustic or corrosive products. In this connection, I am not aware of any prior construction which is satisfactory for the present purpose.

Accordingly, I have conceived by my invention a dispenser of the class described in which the head is shiftable relatively to the fluid reservoir and wherein the relative movement seals and reseals the reservoir in a novel way so that when not in use the fluid is positively retained against flow. My construction, while sure in operation, is so simple that the necessary structural elements may be readily molded so inexpensively and assembled so easily that the unit may be either refillable or disposable as desired.

In essence, my invention contemplates a dispenser of the class described comprising deformable means defining a fluid reservoir formed with a discharge neck, a head engaging the outer surface of the neck and moveable relatively thereto, a plug moveable with the head between first and second positions respectively to close and unclog the neck, the head having means adapted to support a fluid applicator and passageway means establishing fluid flow communication between the neck and the applicator support means when the plug is in the second, or neck unclogging position.

Actually, according to the present concept, the neck and head are preferably threadedly engaged with one another so that the movement of these parts with respect to one another is carefully controlled.

As a feature of my invention, I provide the head with a passageway for the flow of a relatively large volume of fluid therethrough; and in this passageway I provide a plug arranged for sealing engagement with the neck when the head and neck are in one relative position and for disengagement from the neck when shifted to another position. In connection with this feature of the invention, I prefer to arrange the threads so that the plug may be moved from sealing to open or unsealing position by turning the head say one revolution relatively to the neck.

A further feature of the invention embodies a novel valving or sealing arrangement between the exterior of the neck and the head and which is effective in all relative positions of the parts to prevent fluid from entering the thread area between the parts to interfere with the smooth operation thereof and possibly to leak out onto the neck or body of the reservoir.

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Yet another feature of the invention resides in the provision of locking means whereby when the neck and head are screwed to unsealing or open position, the parts snap into releasably interlocked engagement whereby the user is made aware that the interval fluid flow passageway is open and will remain open until the locking engagement is positively broken by manual twisting force.

As has already been stated, the parts are readily moldable, and may be formed of certain plastic materials well known in the art. Thus, the head may be formed of polystyrene, for example; while the body defining the reservoir may be molded of polyethylene. The body of course must be deformable and resilient and the parts must be inert to the fluid to be dispensed.

There has thus been outlined rather broadly the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of the invention. It is important, therefore, that the claims be regarded as including such equivalent construction as do not depart from the spirit and scope of the invention.

A specific embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is an elevational view of a portion of a container and applicator head cooperating to form a dispenser according to the present invention, the applicator itself being shown schematically;

FIG. 2 is a cross-sectional view illustrating the essential structural features of the invention when the parts are in closed or sealed position;

FIG. 3 is a view similar to that of FIG. 2 but illustrating the parts in open or unsealed position; and

FIG. 4 is a view taken along the lines 4—4 of FIG. 3.

Referring now to the drawings, and more particularly to FIG. 1 thereof, there is shown a container 10 defining reservoir 11 and an applicator head 12 cooperating therewith to form the dispensing unit of the present invention. The container 10 is formed of a suitable material of plastic or the like which is resiliently deformable so that manual squeezing pressure on the container will force fluid to be dispensed up through the head 12 to the applicator 14 (shown schematically) which may take any desired form such as a sponge, or a sponge surmounted by an abrasive element such as expanded polyurethane, or the applicator may be a brush, for example. It will be seen that the applicator head 12 is provided with a surface 15 which may be secured to the head proper by a suitable adhesive or a mechanical snap fit and is conveniently angulated relatively to the axis of the container so that the container may serve as a handle during application. This feature is particularly desirable if the applicator is intended to brush or scour a surface as where the fluid is an oven cleaner, for instance. For this purpose, a profile angle of about 45° between the container axis and the surface 15 has been found most suitable.

Turning now to FIGS. 2 and 3, it is seen that the container 10 has an upstanding generally cylindrical neck 16 threaded as at 17 on a portion of its exterior surface. The upper region 19 of the neck is slightly reduced in external diameter and has an outwardly projecting an-

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nular ring 20 integral therewith at its upper edge for a purpose later to be discussed.

A second annular ring 21 is provided about the neck and is spaced somewhat below the threads 17. The upper surface 22 of this ring 21 tapers downwardly and outwardly, as shown, and then merges abruptly with a vertical surface 24. Immediately below the ring 21, there is an annular member 25 formed to cooperate with the ring 21 to present an outwardly facing U-shaped groove 26 that is of slightly smaller diameter than is the surface 24 of ring 21. The purpose and function of these elements will be made clear hereinafter.

The applicator head 12 has a bore 27 entering from its lower end and a passageway 29 that communicates with the bore but is offset with respect to the central axis thereof. The passageway extends upwardly from the bore 27 to open out on the surface 15 to which the applicator 14 may be affixed.

The bore 27 is internally threaded as at 30 and has an interrupted locking bead 31 projecting inwardly at its lower edge for cooperation with the U-shaped groove 26 between the ring 21 and member 25 of the neck 16 when in an open position in a manner to be discussed.

As has been noted, the passageway 29 is offset relatively to the axis of bore 27 and extends upwardly therefrom to terminate in a nozzle-opening in the surface 15 (FIG. 4). The bore 27 extends upwardly beyond the threads 30 and merges at one side thereof with the passageway 29. The remaining upper portion of the bore is defined by an annular upstanding wall 32 that merges with a transverse partition 34 that extends across the bore 27 to the passageway 29. An annular skirt-like member constituting a plug 35 depends from the partition 34 and is positioned axially in line with the inner circumference of the neck 16.

In FIG. 2 the parts are shown in closed position, i.e. with the head 12 screwed down on the neck 16 so that the plug 35 is inserted into the neck opening to provide a somewhat pressed fit or seal due to the respective dimensions of the contacting surfaces. In this position, the ring 20 projecting outwardly of the upper edge of the neck is compressed against the inner surface of the annular wall 32 with sufficient force to prevent passage of any fluid in the passageway 29 into the thread area therebelow.

Upon rotation of the head relatively to the neck, the plug is withdrawn from the neck opening providing fluid flow communication between the passageway 29 and the container 10 through the neck. Fluid may then flow from the reservoir 11 to the applicator upon squeezing force exerted upon the container 10. During the opening movement, the ring 20 wipes downwardly against wall 32, maintaining continuous protection of the thread area.

As the parts approach full open position, the bead 31 at the lowermost edge of the head engages annular member 25 and finally snaps up into the groove 26 formed between annular member 25 and ring 21 whereby the groove serves as a detent for bead 31 to retain the parts full open until sufficient manual force is exerted through the threads to overcome the detent or locking cooperation of the bead 31 and groove 26. The snapping action obtained when bead 31 and groove 26 are engaging indicates to the user that the parts are full open. For convenience, the threads are pitched to move the parts axially in a relatively short turning movement; thus, for example, one revolution may be sufficient for full opening or closing action.

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For rigidity, I provide internal ribs 36 extending between the partition 34 and the inclined surface 15 (FIG. 4).

From the foregoing description it will be seen that I have contributed a novel dispenser having a captive head or cap and positive sealing and unsealing so that the unit, while inexpensive enough for use with any number of fluids, is particularly suited for dispensing caustic or corrosive fluids. It will also be seen that means are provided for sealing the thread area against the fluid and that the parts are positively held by detent action in open position.

I believe that the construction and operation of my novel dispenser will now be understood and that the advantages of my invention will be fully appreciated by those persons skilled in the art.

I now claim:

1. A dispenser of the class described comprising, container means defining a fluid reservoir formed with a discharge neck member, a head member threadedly engaging the outer surface of said neck member and moveable relatively thereto, a plug integral with said head member and in telescopic relation to said neck member between first and second positions respectively to seal and unseal said neck member, passageway means in said head member disposed lateral of said plug establishing fluid flow communication between said neck member and the exterior of said head member when said plug is in said second position, a sealing element cooperating with one of said members to seal the thread area against the flow of fluid thereto, and a grooved detent means extending outwardly from said neck member and locking means comprising a rib on said head member, said detent and locking means cooperating releasably to lock said members against relative movement when said members are in said second position.

2. A dispenser according to claim 1 wherein said head member is adapted to support a fluid applicator.

3. A dispenser according to claim 2 wherein said applicator is angulated relative to the axis of the container.

4. A dispenser according to claim 1 wherein said sealing element is an outwardly projecting annular ring integral with said neck at its upper edge.

5. A dispenser according to claim 1 wherein said detent means is a grooved annular ring disposed below the threads on said neck.

6. A dispenser according to claim 1 wherein the groove of said detent means is U shaped.

7. A dispenser according to claim 1 wherein the passageway means in said head member is disposed laterally to the axis of the dispenser.

8. A dispenser according to claim 1 wherein said plug is an annular skirt-like member.

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