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SAMPLER-TYPE TAMPER-PROOF ACTUATOR CAP

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*Fig. 1*

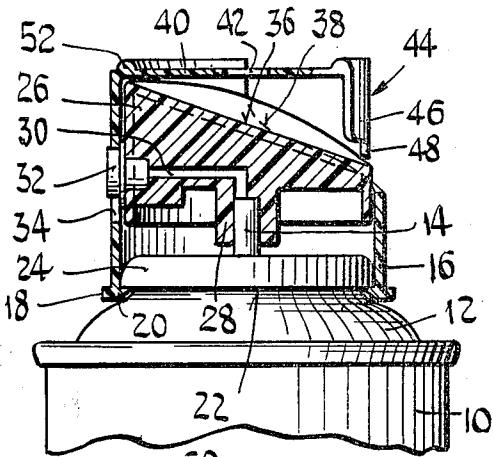


Fig. 2

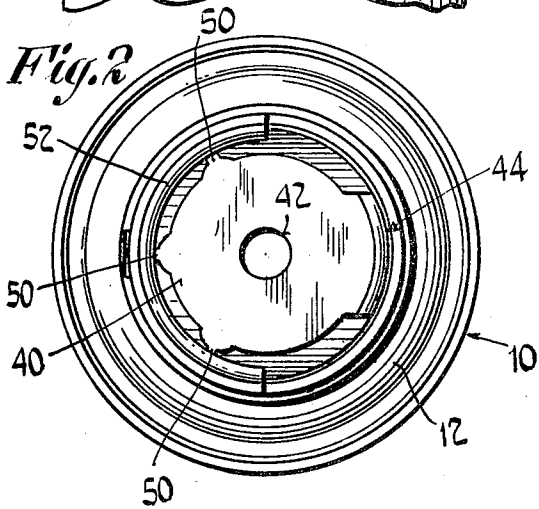


*Fig. 5*

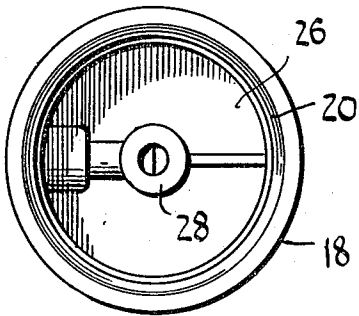


*Fig. 3*

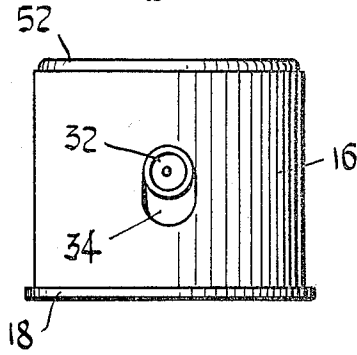
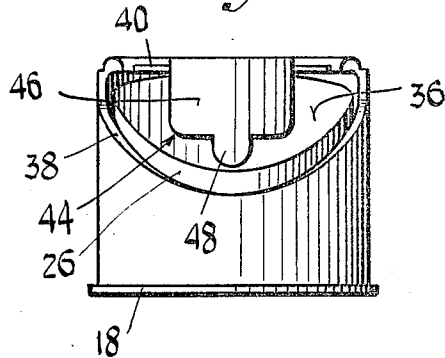


Fig. 4.



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**SAMPLER-TYPE TAMPER-PROOF ACTUATOR CAP**  
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 6 Claims. (Cl. 222-182)

This invention relates to small hand-held dispensers of either the aerosol or the pump type, and more particularly to actuator caps for such dispensers.

The invention concerns improvements in the actuator cap of my copending application, Serial No. 360,394, filed April 16, 1964 and entitled "Actuator Top for Aerosol Devices." In this copending application a stationary cap body part surrounds a vertically movable depress button and is provided with a protective disposable tab or cover piece which is formed as an integral part of the cap body at the time of molding of the latter. The arrangement is such that the protective tab prevents free access from being had to the depress button, whereby unauthorized actuation of the latter is normally prevented or at least discouraged.

Accordingly, the actuator cap of this copending application is of the tamper-proof type, meaning that unauthorized or accidental operation of the push button is prevented, to insure against loss of contents of the dispenser. In order to operate such an actuator cap it is necessary to tear off and remove the protective tab, or else to utilize some special device or instrument by which the tab may be temporarily bypassed. This latter procedure is generally inconvenient. Also, in many cases the idea will not occur nor appeal to persons who lack ingenuity. In consequence, with this prior cap it is not especially feasible to effect a sampling of the contents of the dispenser.

In some circumstances it becomes desirable, however, to enable such sampling to be done, as when a prospective purchaser desires to become acquainted with the properties of the substance of the dispenser.

In accordance with the present invention, this property of the actuator cap of my above identified copending application is obviated, and one object of the invention is to provide a novel and improved tamper-proof actuator cap of the kind referred to, wherein a sampling of the contents of the dispenser may be readily, conveniently effected by the employment of a simple slender tool or depressor stick. Thus, an authorized person having the necessary operating tool may easily temporarily depress the actuator button to obtain a sampling of the contents of the dispenser.

Another object of the invention is to provide an improved sampler-type tamper-proof actuator cap in accordance with the foregoing, which does not require additional parts or pieces but instead may be constituted of essentially the same number of parts as employed in my prior cap, namely a stationary cap body part and a vertically movable depress or actuator button part. In effecting this, the cap body is molded with an integral, tear-away and discardable protective tab piece which is intended to overlie and prevent operation of the depress button, and such tab piece is provided with an access opening of small size or diameter, adapted to admit a slender instrument or depress stick for engagement with the button to enable the latter to be temporarily depressed for effecting a temporary discharge of the contents of the dispenser.

The arrangement of the access opening is such that the possessor of the sampling stick or tool may readily comprehend the necessary procedure, to actuate the depress button. Accordingly, no special skill or ingenuity is required of such an authorized person. However, one

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not having the necessary sampler instrument is still prevented from effecting actuation of the button unless such person employs a certain amount of ingenuity to circumvent the functioning of the protective tab.

As with the actuator cap of my copending application above referred to, the cap body and the protective tab of the cap of this invention is preferably molded in a single operation, as one integral piece or molding. At the time of fabrication or molding the access opening is formed in the protective tab, whereby there is retained the simplicity and economy of manufacture of my referred-to actuator cap while still having the benefit of the possibility of sampling the container contents. This simplicity and economy of manufacture is accordingly an important feature of the present invention.

Another object of the present invention is to provide an improved sampler-type tamper-proof actuator cap as above characterized, wherein the application of force on the depress button by the sampler instrument is at a location calculated to effect a facile depressing movement of the latter, with the least amount of difficulty. In accomplishing this, the access opening of the protective tab is located in alignment with the hollow boss or central portion of the button, in which the vertically movable valve stem of the dispenser is frictionally fitted. Both the access opening and the valve stem receiving boss are thus disposed on the axis of the actuator cap, being thereby in a centralized position.

Another feature of the invention resides in the provision of an improved sampler-type actuator cap as above set forth, wherein the actuator or depress button is of substantially the same size as the stationary cap body while still being effectively protected against inadvertent or unauthorized operation.

Yet another feature of the invention resides in the provision of an improved actuator cap as above set forth, wherein the assemblage of depress button and orifice member or spout after being initially assembled, may be inserted in the stationary cap body from the bottom of the latter, such assemblage being reliably held against separation of the parts during all subsequent handling or during attachment to the container of the dispenser.

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 an axial sectional view of a sampler-type actuator cap as provided by the invention, mounted on an aerosol type dispensing container, the latter being shown in side elevation.

FIG. 2 is a top plan view of the cap and dispenser of FIG. 1.

FIG. 3 is a front elevational view of the actuator cap per se.

FIG. 4 is a back elevational view of the actuator cap, and

FIG. 5 is a bottom plan view of the actuator cap.

Referring now particularly to the drawings, there is illustrated in FIGS. 1 and 2 a pressurized aerosol container 10 of conventional type, having a top closure 12 carrying a control valve assembly (not shown) which is operated by a vertically movable valve stem 14. Pressurized dispensing containers of this type are well known. In the non-discharging condition the valve stem 14 is in the raised position shown in FIG. 1. When it is desired to discharge the contents of the container, the stem 14 is pressed downward, allowing aerosol substance to pass upward through the bore of the stem, for discharge from a suitable nozzle or orifice.

By the present invention an improved sample-type actuator cap is provided, to be mounted on the closure

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portion 12 of the container 10 and to engage the vertically movable valve stem 14. The actuator cap comprises a stationary cap body 16, which, in the illustrated embodiment of the invention is of cylindrical configuration, such cap body having a lower edge or rim 18 provided with an internal annular bead 20 adapted to engage the undersurface 22 of a crimping shoulder 24 normally provided on the top closure 12. The cap body 16 has within it a relatively large vertically movable depress or valve actuator button 26 which is of generally circular configuration, said button having a central depending hollow boss 28 adapted to frictionally receive the vertically movable valve stem 14 and to move therewith, for the purpose of actuating the latter.

The button 26 has a horizontal channel or passage 30, through which the aerosol substance may pass from the bore of the valve stem 14, such substance issuing from an orifice or nozzle piece 32 in the usual manner.

The cap body 16 has a vertical slot 34 to provide clearance for the orifice member 32, as seen in FIG. 1, while still holding the button captive.

Preferably, as shown, the depress button 26 has its top surface 36 extending obliquely with respect to the vertical axis of the container 10 and cap body 16, and the latter has a corresponding oblique top edge or rim 38 which is for all practical purposes flush with the rear half portion of the button 26, as seen in FIG. 1, or almost so.

With the above construction, downward finger pressure on the button 26 will depress the valve stem 14, enabling a discharge of the aerosol substance to be effected from the orifice 32.

In accordance with the present invention, the cap construction as above set forth is provided with a novel sampler-type tamper-proof tab 40 which overlies the button 26 and normally prevents finger contact therewith, thereby to discourage unauthorized or inadvertent operation of the button, said tab also having an access opening for an instrument whereby a sampling operation of the button 26 may be effected by use of a suitable tool or instrument. The tab 40 is intended to be torn or broken away from the cap body 16 and to be disposed of at the time that the consumer desires to place the aerosol dispenser in use.

The tab 40 is molded as an integral part of the cap body 16 at the time of fabrication of the latter, and is of generally circular shape as seen in FIG. 2, conforming to the circular or cylindrical configuration of the body.

By the present invention the disposable tab 40 is provided with an access opening 42, which is preferably centrally located and has a relatively small diameter to prevent access of a finger, yet is sufficiently large to admit a slender instrument, as for example the pointed tip of a pencil, or a small diameter rod or stick. In accordance with the invention, the access aperture 42 is located in alignment with the valve stem 14 so that pressure may be applied to the depress button 26 at the central area thereof, immediately above the valve stem. By such arrangement, canting or tilting of the button 26 is avoided, and instead a facile operation is readily effected.

The tab 40 has a depending finger piece 44, comprising a wide base portion 46 and a narrow projection 48 extending downward from the base portion 46. The finger piece 44 depends from the tab 40 at the location of the greatest spacing of the tab from the button 26, as may be readily seen in FIG. 1. The arrangement is such that the finger piece 44 blocks the space between the tab and the button, and prevents insertion of a finger in the said space, as for the purpose of actuating the button. Also, the finger piece 44 constitutes a convenient grip by which the tab 40 may be grasped with the fingers and pulled upward to tear it away from the

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cap body 16. For the purpose of facilitating such removal of the protective tab 40, the latter is connected with the cap body 16 by a plurality of narrow frangible edge portions or webs 50, said webs joining the periphery of the tab 40 with a semi-circular flange 52 provided on the cap body 16. The flange 52 extends for approximately one-half of a circle or 180°, and is disposed inwardly of the cylindrical outer wall of the cap body, as seen in FIG. 1. The protective tab 40 is thus slightly smaller in size than the diameter of the cap body, and fits inside the cap body, being located so as to closely confine the actuator button 26 and to overlie the latter. This may be seen when viewing the cap from the top, as in FIG. 2.

With the above construction the protective tab 40, finger piece 44 and cap body 16 may all be molded in a single operation, as a single unitary piece. When this is done, the assemblage of the button 26 and the orifice 32 is assembled to the cap body by passing it into the latter from the bottom. The inside diameter of the cap body 16 is sufficiently large to enable the button assemblage to be forced through it to the point where the orifice 36 occupies the vertical slot 34 of the body. Thereafter, the button assemblage will be securely retained in the cap body during subsequent handling, and during application to the pressurized container.

By the provision of the access opening 42 a sampling of the contents of the container 10 may be readily obtained by merely inserting a pointed instrument into the aperture and pressing downward on the button 26. In order to effect such sampling, an instrument must be available and put to use, and it will be understood that sampling cannot be effected merely by the use of the fingers alone, due to the access to the button 26 being blocked by the protective tab 40 and the depending finger piece 44. After the dispenser has been purchased by the ultimate user, it may be readily placed in use by merely grasping the finger piece 44 and pulling off the tab 40, whereupon this will be discarded, leaving the top surface 36 of the button completely accessible and available for finger pressure.

The present improved cap is seen to be extremely simple, and economical to fabricate and mold. The operation is foolproof as regards the prevention of tampering and yet the enabling of samples to be obtained of the container contents.

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. A sampler-type tamper-proof actuator cap for small hand-held dispensers, comprising in combination:

- (a) a stationary hollow cap body adapted to be mounted on a dispenser-type container having a movable valve stem,
- (b) an actuator button movable in the body between discharge and non-discharge positions,
- (c) said button having means engageable with the dispenser valve stem to actuate the same
- (d) a substantially rigid and inflexible disposable tab carried by and completely separable from the cap body in response to force applied thereto, said tab having frangible edge portions connected to and integral with the cap body to effect temporary support of the tab thereby, and having central portions free from the cap body except for the connection of said edge portions,
- (e) said central portions of the tab overlying the actuator button and normally preventing finger pressure thereon, thereby to discourage unauthorized or inadvertent operation of the button,
- (f) said tab having an aperture in its central portions, through which a slender instrument may be passed to engage and actuate the button for the purpose of

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enabling samplings to be made of the substance of the dispenser.

2. A sampler-type tamper-proof actuator cap for small hand-held dispensers, comprising in combination:

- (a) a stationary hollow cap body adapted to be mounted on a dispenser-type container having a movable valve stem, 5
  - (b) an actuator button movable in the body between discharge and non-discharge positions,
  - (c) said button having means engageable with the dispenser valve stem to actuate the same, 10
  - (d) a disposable tab carried by and separable from the cap body in response to force applied thereto,
  - (e) said tab overlying the actuator button and normally preventing finger contact therewith, thereby to discourage unauthorized or inadvertent operation of the button, 15
  - (f) said tab having an aperture through which a slender instrument may be passed to engage and actuate the button for the purpose of enabling samplings to be made of the substance of the dispenser, 20
  - (g) said cap body being tubular,
  - (h) said actuator button moving in the bore of the cap body,
  - (i) said tab comprising a disk extending transversely across one end of the cap body, 25
  - (j) the aperture of the tab being centrally located therein and disposed centrally of the button.
3. A cap as in claim 2, wherein:
- (a) the one end of the cap body has an oblique edge, 30
  - (b) said button having an oblique end adjoining the oblique edge of the cap body,
  - (c) said tab being disposed substantially in a plane normal to the axis of the button and cap body and having a nonuniform spacing with respect to the button end, 35
  - (d) said tab having a depending finger-piece at the location of its greatest spacing from the button,
  - (e) said finger-piece blocking the space between the tab and button and preventing insertion of a finger therein. 40
4. A cap as in claim 3, wherein:
- (a) the finger-piece comprises a wide base portion secured to the disk, and a narrow projection extending downward from the base portion to a point closely adjacent the top edge of the cap body portion, said projection facilitating the grasping of the tab with the fingers. 45

5. A sampler-type tamper-proof actuator cap for small hand-held dispensers, comprising in combination:

- (a) a stationary hollow cap body adapted to be mounted on a dispenser-type container having a movable valve stem, 50

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(b) an actuator button movable in the body between discharge and non-discharge positions,

(c) said button having means engageable with the dispenser valve stem to actuate the same,

(d) a disposable tab carried by and separable from the cap body in response to force applied thereto,

(e) said tab overlying the actuator button and normally preventing finger contact therewith, thereby to discourage unauthorized or inadvertent operation of the button,

(f) said tab having an aperture through which a slender instrument may be passed to engage and actuate the button for the purpose of enabling samplings to be made of the substance of the dispenser,

(g) said valve-stem engageable means of the button and the aperture of the tab being disposed along the axis of the actuator cap and in alignment with each other, thereby to facilitate actuation of the button by the said slender instrument.

6. A sampler-type tamper-proof actuator cap for small hand-held dispensers, comprising in combination:

(a) a stationary hollow cap body adapted to be mounted on a dispenser-type container having a movable valve stem,

(b) an actuator button movable in the body between discharge and non-discharge positions,

(c) said button having means engageable with the dispenser valve stem to actuate the same,

(d) a disposable tab carried by and separable from the cap body in response to force applied thereto,

(e) said tab overlying the actuator button and normally preventing finger contact therewith, thereby to discourage unauthorized or inadvertent operation of the button,

(f) said tab having an aperture through which a slender instrument may be passed to engage and actuate the button for the purpose of enabling samplings to be made of the substance of the dispenser,

(g) said cap body being substantially cylindrical,

(h) said tab comprising a circular disk having a size slightly less than the cap body diameter,

(i) said tab fitting inside the cap body and at its periphery being secured to the walls of the body.

#### References Cited by the Examiner

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