

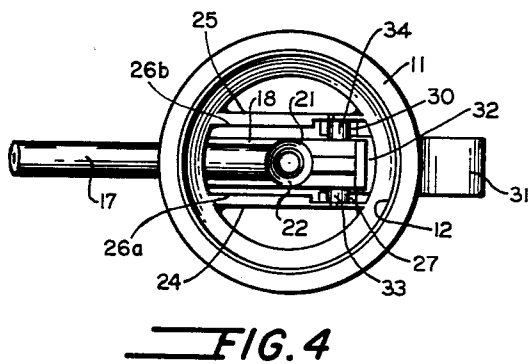
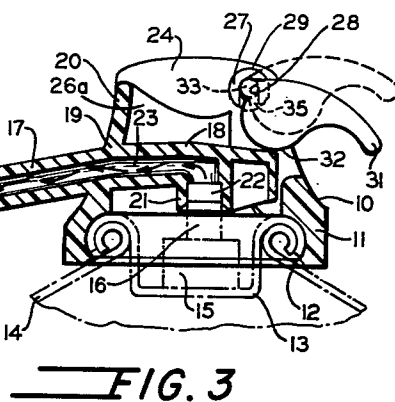
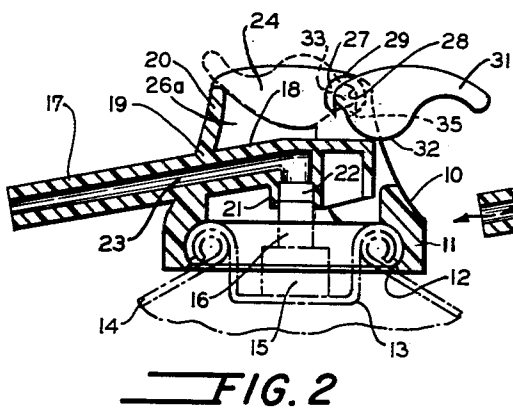
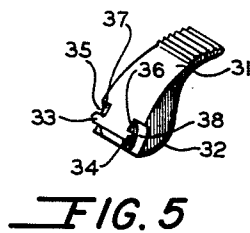
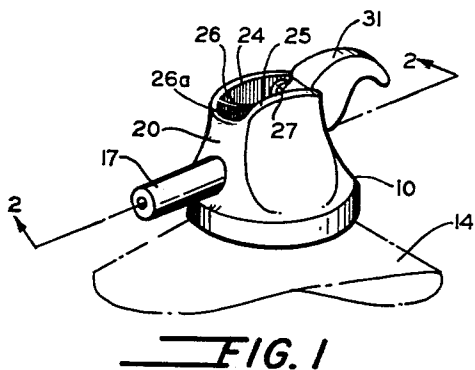
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DISPENSING CAP FOR AEROSOLS

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3,143,254

DISPENSING CAP FOR AEROSOLS

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3 Claims. (Cl. 222—394)

This invention is in the art of dispensing caps for aerosols. More particularly, it relates to a dispensing cap having a lever which is used, in one position, to dispense product from an aerosol container and, in a second position is used as a lock to prevent accidental discharge from the aerosol.

A common type of dispensing cap in present-day use is illustrated and described in U.S. Patent Re. 24,555. The dispensing cap of the aforesaid patent is used on many commercial brands of shaving cream and toothpaste. It is commonly used in combination with a dispensing valve of the type illustrated and described in U.S. Patent 2,631,814. One of the disadvantages of the dispensing cap illustrated in Patent Re. 24,555 is that the actuating tab is moved by a force which is applied almost directly over the valve stem. This means, of course, that the person operating the valve does not have the benefit of any mechanical advantage and must exert a comparatively great force in order to initiate flow from the aerosol container. On the other hand, the valve spring may be manufactured from comparatively weaker material in order to reduce the required actuating force. However, this causes abrupt valve opening action, poor control of product feed rate, sluggish valve closing action and a resultant delay in cut-off when a heavy viscous product such as toothpaste is being dispensed. In addition, the aforesaid actuating cap leaves the actuating tab exposed so that accidental discharge can occur unless a separate protective cover is used. The use of the protective cover adds to the total cost and is also undesirable because it is so easily lost or misplaced.

It is a principal object of the present invention to provide an improved dispensing cap which is conveniently actuated and which requires less force to operate.

It is also an object of this invention to provide a dispensing cap which permits precise control of the start, quantity, feed rate and termination of product discharge from an aerosol container.

Another object of the invention is the provision of a dispensing cap in which a secondary protective cover is unnecessary as accidental discharge of the contents of the aerosol container is prevented by an element incorporated into the dispensing cap itself.

Still another object of the invention is the provision of a dispensing cap which gives greater mechanical advantage to the user when the valve mechanism of the aerosol is actuated, thus allowing the use of a heavier spring in the valve mechanism so that product flow can be cut off abruptly when dispensing viscous products such as toothpaste and the like.

Briefly summarized, the invention contemplates a combination of elements which cooperate to achieve the above listed objects. An aerosol container having a conventional tubular discharge valve stem is provided with a dispensing cap comprised of a plastic body member having a lower annular wall portion and upwardly projecting side walls. The annular wall portion is snapped over the valve cup portion of the aerosol container. A valve operating tab lies between the side walls and is hingedly attached to the inner portion of the dispensing cap. The said tab includes a tubular socket for the tubular valve stem projecting from the aerosol container. A passageway is provided within the tab leading from the socket to

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a product outlet. A lever is pivoted between the side walls so that in its operative position it can be used to depress the tab in order to cause product discharge and in its inoperative position it acts as a lock to prevent access to the tab and thereby prevents product discharge.

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter regarded as forming the present invention, it is believed the invention will be better understood from the following description taken in connection with the accompanying drawing in which:

FIGURE 1 is an isometric view of the dispensing cap embodying the present invention.

FIGURE 2 is a side elevation of the dispensing cap in cross section taken on the line 2—2 of FIGURE 1.

FIGURE 3 is a side elevation in cross section similar to FIGURE 2, showing the relationship of the various elements of the dispensing cap when the lever is depressed to discharge product from the aerosol.

FIGURE 4 is a plan view looking up at the dispensing cap.

FIGURE 5 is an isometric view of the actuating lever forming an element of the dispensing cap.

The invention will now be described in detail with reference to the drawing. The dispensing cap illustrated in FIGURES 1, 2 and 3 includes a body 10 having an annular wall portion 11 which is provided with an internal bead 12. The bead 12 is normally sprung over the peripheral edge of the valve cup 13 which acts as the closure for an open top container 14. The cup 13 supports a valve housing 15 which contains a valve such as shown, for example, in U.S. Patent 2,631,814 including an upstanding tubular valve stem 16. The annular wall portion 11 is provided at one side thereof with a dispensing spout 17 which may project from the annular wall portion 11 at any attitude and for any desired distance depending upon the particular material being dispensed.

A tab 18 is hingedly connected at 19 in an area between the front wall 20 and the annular wall portion 11. The front wall 20 extends upwardly from the annular wall portion 11 as illustrated. The underside of the tab 18 has an integral hub 21 provided therein with a chamber or socket 22 adapted to fit snugly over the upper end of the tubular valve stem 16.

The tab 18 is provided with an internal channel 23 leading from the chamber 22 to the spout 17. Oppositely disposed side walls 24 and 25 project upwardly from the annular wall portion 11 and are integral therewith. The side walls 24 and 25 join the front wall 20 as illustrated. A kerf-like space 26 (FIGURE 1) is formed between the side walls 24 and 25 and the tab member 18 lies in the space so formed. The side wall shelf support 26a is formed integrally with the side wall 24 as illustrated in FIGURES 1, 2, 3 and 4. A similar shelf support 26b is also formed on the wall 25 as seen in FIGURE 4. A lug 27 is formed rearwardly of the front wall 20, beyond the axis of the valve stem 16. The lug 27 includes an internal U-shaped slot 28 and a circular outer portion 29. As seen in FIGURE 4, a similar lug 30 is formed on the opposite side wall 25. The lug 30 has a U-shaped slot and a circular outer portion which are coplanar with the slot 28 and circular portion 29, respectively.

An actuating lever 31 is provided to actuate the dispensing valve and initiate outflow of product from the aerosol container. The lever 31, as seen in FIGURE 5, includes a cam surface 32 and trunnions 33 and 34. The trunnions are surrounded by circular grooves 35 and 36 which are bounded on one side by the surfaces 37 and 38.

The body 10 and the lever 31 are normally molded of plastic materials which can be flexed slightly although the lever is preferably made of a more rigid plastic than

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the body. The parts are assembled by snapping the trunnions 33 and 34 into the U-shaped slots provided by the lugs 27 and 30. Initially, the lever is pivoted in the lugs until it comes to rest in the broken line position illustrated in FIGURE 2. This is called the "lock" position. In the lock position, the lever 31 rests on the shelf supports 26a and 26b and substantially fills the kerf-like space 26 to prevent any forces from acting on the tab 18. As a result, the lever functions to prevent discharge of product by downward pressure on the dispensing cap assembly either accidentally or otherwise.

When the product is to be discharged, the lever 31 is pivoted to the solid line or operating position as illustrated in FIGURE 2. The cam surface 32 contacts the end of the tab 18. By further pivoting the lever 31, the cam surface 32 moves the tab 18 causing it to pivot at the hinged connection 19, thereby depressing the valve stem 16. This opens the valve and permits product to flow continuously out the spout 17 until the lever 31 is released. It will be noted that the travel of the lever 31, as indicated by the dotted and solid line positions shown in FIGURE 3, is such as to give the user substantial mechanical leverage. Thus, the user has greater control of the amount and rate of discharge as compared to direct actuation of the tab of the prior art devices. It will also be noted that the circular grooves 35 and 36 cooperate with the lugs 27 and 30 to prevent the trunnions 33 and 34 from being disengaged. As the lever 31 is swung from the lock position to the operating position, the surfaces 37 and 38 bear on the circular outer portion 29 of the lug 27 and the equivalent surface (not shown) of the lug 30 in order to prevent accidental disassembly.

While particular embodiments of the invention have been illustrated and described, it will be obvious to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the invention and it is intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

What is claimed as new is:

1. A dispensing cap for aerosol containers having a tubular discharge valve stem comprising a body member

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having a lower annular wall portion and a front wall projecting upwardly therefrom, a pair of upwardly projecting side walls on opposite sides of said annular wall portion, said side walls being connected to said front wall at one end and having a kerf-like space therebetween, a valve operating tab resiliently attached to the inner portion of the cap, the operating tab projecting rearwardly in said kerf-like space, a hub projecting from the underside of said tab to form a socket for the tubular valve stem of an associated aerosol container, said socket being in communication with an internal channel extending outwardly through said tab to form an outlet, a pair of lugs mounted in alignment on the inside surfaces of said side walls, an actuating lever including a cam surface, said lever having a pair of trunnions engaged by said lugs, a circular groove surrounding the trunnions on said lever wherein the circular grooves of said lever engage the lugs mounted on said side walls, rotation of said lever to the operating position causing said cam surface to bear against the end of the said tab whereby pressure on the actuating lever can be utilized to operate the valve stem and unseat the valve for the discharge of the contents of the container through said outlet.

2. A dispensing cap as claimed in claim 1 wherein said lugs are formed with an internal U-shaped slot and a circular outer portion.

3. A dispensing cap as claimed in claim 2, including a shelf support projecting inwardly on the inside surfaces of each of said side walls, said lever being rotatable to an inoperative position where it comes to rest on said shelf supports to substantially fill said kerf-like space and cover said actuating lever.

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