

[54] **CHILDPROOF AEROSOL ACTUATOR  
CONSISTING OF TWO MEMBERS,  
OPERATIVE BY RELATIVELY ROTATING  
THE TWO MEMBERS**

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[51] Int. Cl. .... **B67b 5/00**

[58] Field of Search .... **222/153, 402.11,  
222/182, 402.12, 402.13, 552, 402.1, 394**

[56] **References Cited**

**UNITED STATES PATENTS**

2,744,665 5/1956 Carlson et al. .... 222/402.13 X

3,325,054 6/1967 Braun ..... 222/402.11 X  
2,766,913 10/1956 Wilshusen ..... 222/402.11 X

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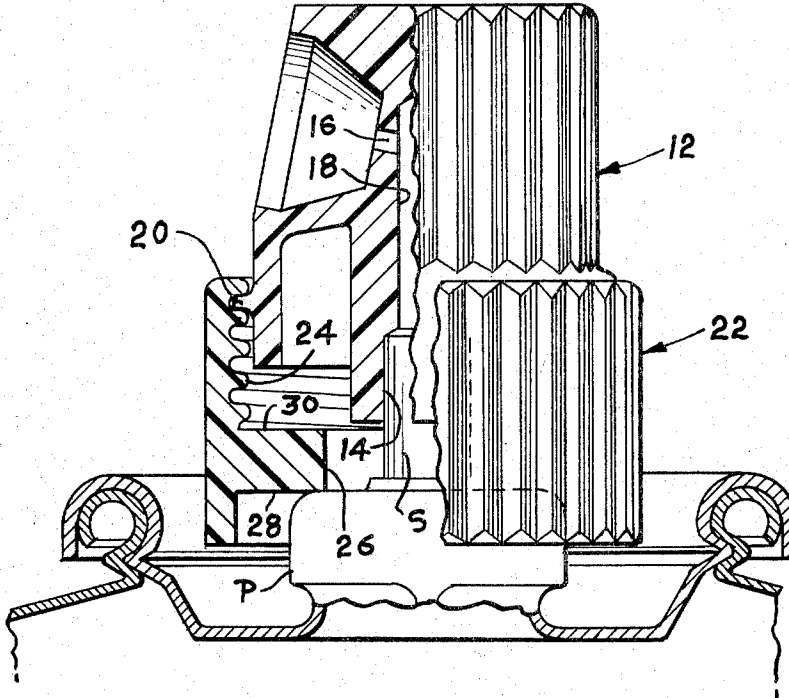
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[57] **ABSTRACT**

A childproof aerosol actuator comprises an actuating button having external threads and a locking collar having cooperating internal threads. In use, the collar is screwed downwardly to abut the aerosol container and block operation of the valve. Two-handed operation is necessary because friction between the threads of the button and collar exceeds friction between the button and stem.

**4 Claims, 4 Drawing Figures**



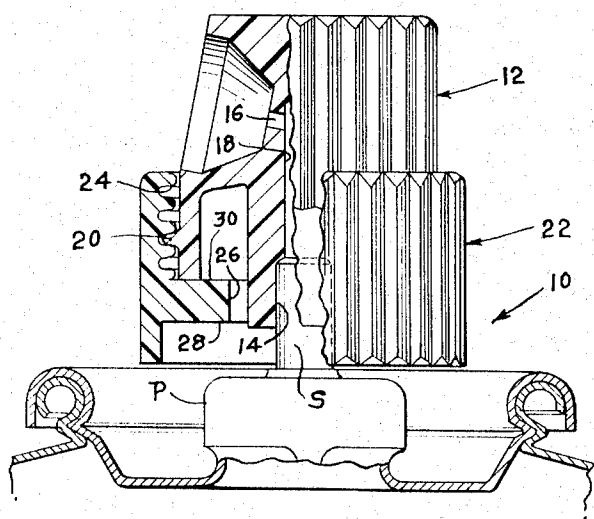


Fig. 1.

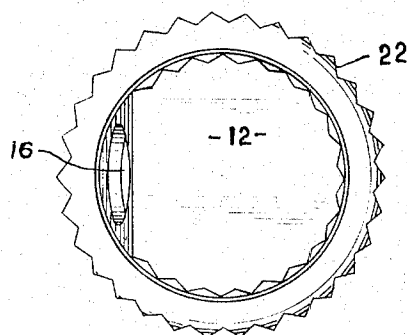


Fig. 2.

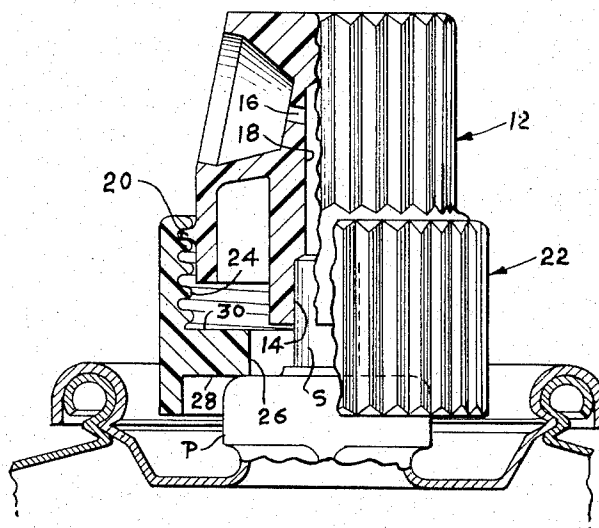


Fig. 3.

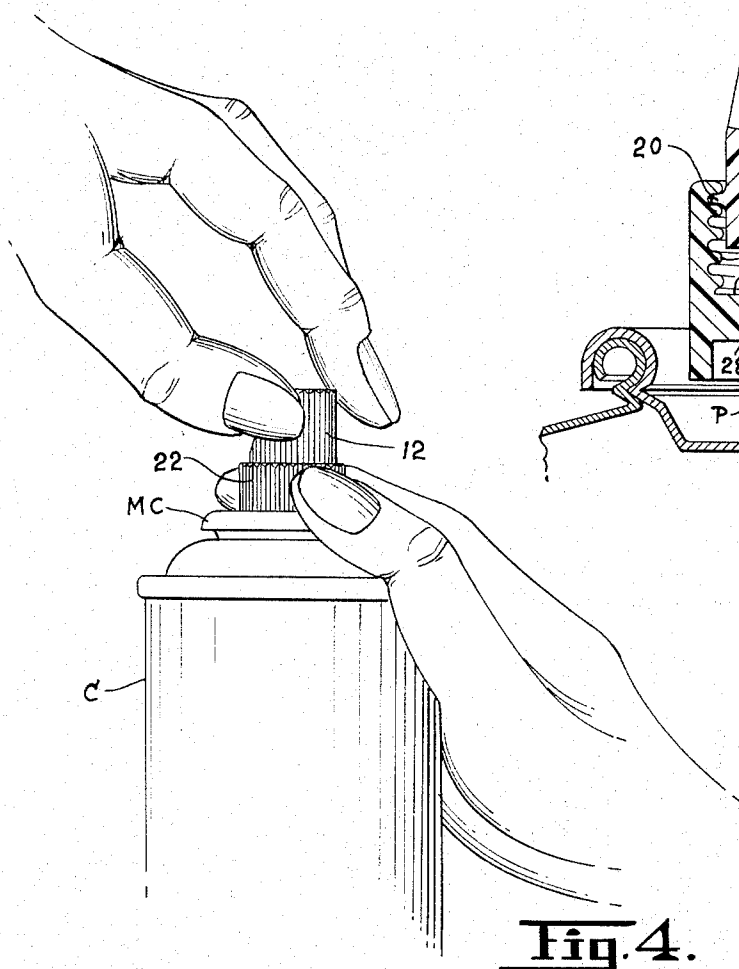


Fig. 4.

# **CHILDPROOF AEROSOL ACTUATOR CONSISTING OF TWO MEMBERS, OPERATIVE BY RELATIVELY ROTATING THE TWO MEMBERS**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

This invention relates to actuators for valves of aerosol containers. More specifically, the invention relates to such an actuator which is intended to be difficult for operation by a child or any person of insufficient mentality.

### **2. Description of the Prior Art**

Many attempts have been made in the past to provide an aerosol actuator which, for safety reasons, is difficult or impossible for children to operate. Examples are shown in U. S. Pat. Nos. 2,715,481 to McGhie et al. and 3,426,948 to Sterling. Such patents have required the rotation of a collar relative to the actuating button to a position in which the button is "unlocked" and can be depressed. A co-pending patent application, Ser. No. 209,125, filed Dec. 17, 1971, now U.S. Pat. No. 3,721,423, by Joseph John Shay and assigned to the same assignee as this application, provides a friction fit between the button and the collar to make the operation more difficult, and to make the structure more truly "childproof."

Also in the prior art have been a number of screw locks for aerosol dispensers. In such dispensers, the upstanding valve stem has been provided with a threaded portion and a threaded ring or head has superposed the stem and been provided with mating threads so that when the head has been screwed down, it has butted against the can structure and blocked the depression of the valve stem. Examples are shown in the U. S. Pat. Nos. 2,704,622 to Soffer and 2,831,608 to Soffer et al.

## **SUMMARY OF THE PRESENT INVENTION**

In the present invention, the aerosol valve stem is provided with a dispensing head having external threads and a superposing collar having internal threads mating with the head threads. By this arrangement, it is possible to screw down the collar to butt against structure of the container to block actuation. Additionally, the frictional resistance to turning between the stem and the head is less than between the head and collar where the threads engage so that it is necessary to use two hands to open the actuator, one hand holding the collar and the other turning the head relatively.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

Objects and features of the invention will be apparent to those skilled in the art upon a study of the following specification, including the drawings, all of which show a non-limiting form of the invention. In the drawings:

FIG. 1 is a side elevational view, partly in section, showing an actuator embodying the invention mounted on the valve stem of an aerosol container;

FIG. 2 is a top plan view of the actuator per se;

FIG. 3 is a view similar to FIG. 1 but with a ring screwed down to block actuation; and

FIG. 4 is a reduced side view of the actuator and container and showing the two-handled operation.

## **DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring more specifically to the drawings, a con-

tainer having an actuator embodying the invention mounted thereon is generally designated 10 in FIG. 1. The container proper C is provided with a mounting cup MC with a valve-mounting pedestal P. Crimped into the pedestal P, as is conventional, is a valve, not shown, having an upstanding stem S.

A head or button 12 is provided in its underside with an inlet bore 14 which receives the stem S. In the upper portion of the head, there is an orifice 16 and channel means 18 connected to the bore 14 and the orifice 16. Disposed exteriorly on the lower portion of the head 12 are threads 20 which may be molded in the unitary plastic head. A collar or thimble 22 is provided, the thimble having in its upper portion internal threads 24 and therebelow an inward flange 26, the underside of which forms an abutting surface 28 and the upper side of which 30 provides a stop for the upward movement of the collar 22.

The fits of the relative parts are such that the frictional resistance to turning of the head 12 on the stem S at bore 14 is less than the frictional resistance to turning of the collar 22 on the head 12 in the threaded area.

The operation of the actuator embodying the invention will be clear from FIG. 4. Two hands are required. To merely turn the collar 22 or the head 12 simply rotates the assembly on the stem S without any relative movement between the collar and head. However, when the head 12 is held in one hand and the collar 22 rotated relative thereto, the condition of the actuator may be changed. For instance, holding of the head 12 and rotation of the collar 22 can screw the collar down to where the surface 28 abuts the top of the pedestal P in FIG. 3, blocking actuation. From this condition, the simple rotating of the collar in FIG. 3 will merely rotate the assembly on the stem S. To turn the actuator "on," again it is necessary to hold the head 12 with one hand and rotate the collar or thimble 22 to screw it upwardly on the threads 20 making actuation thereafter possible.

It should be clear that the actuator of the present invention is useable with either a vertical or "tilt"-type aerosol valve. It should also be clear that the mode of operation will not be apparent to a child or person of insufficient mentality.

While the invention has been shown in only one form, it is susceptible of many reasonable variations, all of which fall within the scope of the following language describing the invention.

I claim:

1. An aerosol container having a valve and a child-proof actuator, the container including a valve-mounting pedestal, and the valve having an upstanding tubular valve stem extending upward from the center of the pedestal, the actuator comprising:

a. a one-piece molded head having a central bore in its underside and a spray orifice connected to the upper portion of the central bore, the bore receiving the stem in friction fit, a portion of the side wall being cylindrical and having thread means thereon; and

b. a one-piece molded thimble surrounding the head, the inside surface of the thimble having threads coacting with the threads on the head, and inward surface means on the thimble underneath the head and adapted, when the thimble is screwed downwardly, to abut a portion of the container to block the movement of the head so as to preclude actuation of the valve,

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the frictional resistance to relative turning between the head and the valve stem being less than the frictional resistance to relative turning between the head and the thimble whereby in order to screw the thimble it is necessary to grip the thimble and the head with two hands.

2. A structure as claimed in claim 1 wherein the surface means comprises an inward flange which, when the thimble is screwed down, abuts the top of the valve pedestal.

3. For an aerosol container having a valve-mounting pedestal and a valve stem extending upward from the center of the pedestal, a safety actuator to preclude operation by children and the like comprising:

- a. an actuator button having a dispensing outlet and an inlet, the inlet being depressed in the underside of the button, the button being adapted to sit on the stem, the inlet receiving the stem in friction fit, the outer circumference of the button having a portion with thread means;

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- b. a locking collar having internal threads cooperating with the threads on the button, the collar having a downwardly facing surface adapted, when screwed down on the button, to abut a portion of the container,

the frictional resistance to relative rotation between the collar and the button being greater than the frictional resistance to turning between the button and the stem when the button is installed on such stem, whereby two hands are necessary to relatively rotate the button and collar.

4. An actuator as described in claim 3 wherein the button has an inward flange at the lower end of the internal threads, the flange adapted to serve as a stop for the upward screwing of the thimble and as the said downwardly facing surface, said surface being adapted to abut the mounting pedestal when the collar is down.

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