May 27, 1952 H. ABRAMS 2,598,482

DISPENSING CAP FOR COLLAPSIBLE TUBES

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Fig. 1.

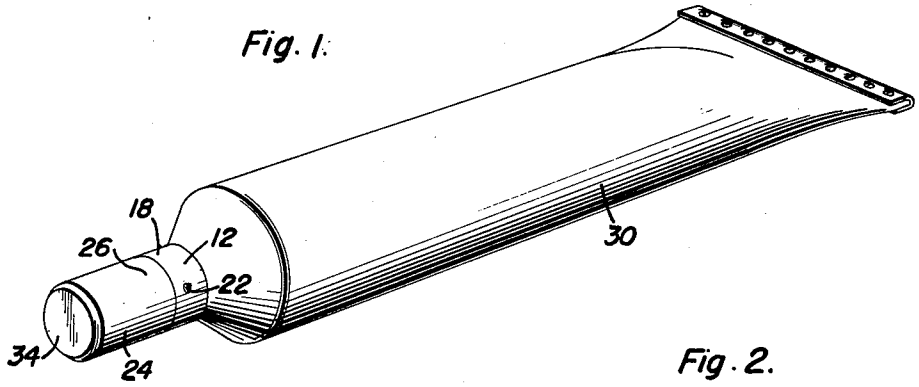


Fig. 2.

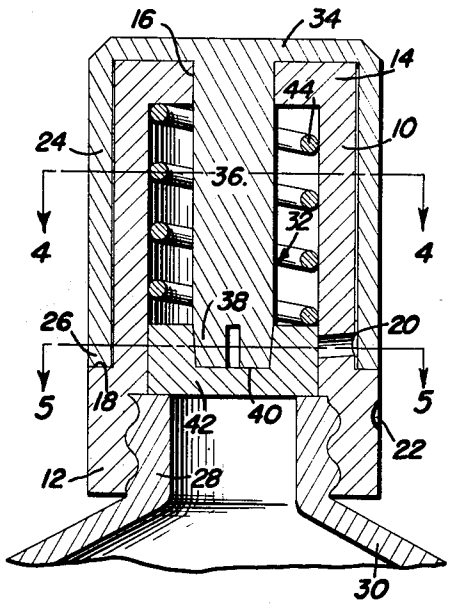
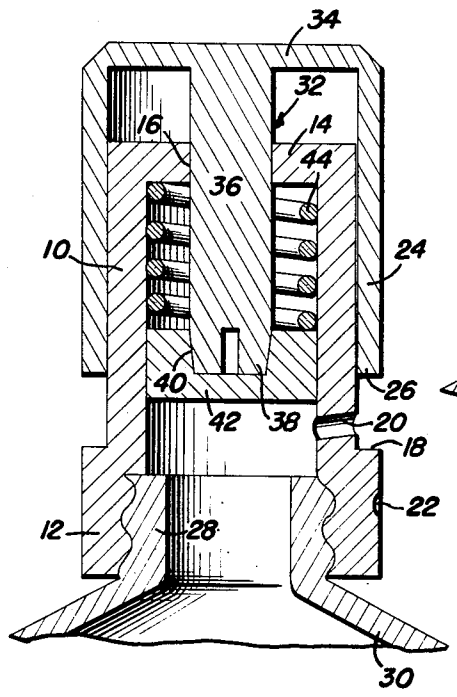


Fig. 3



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Fig. 6

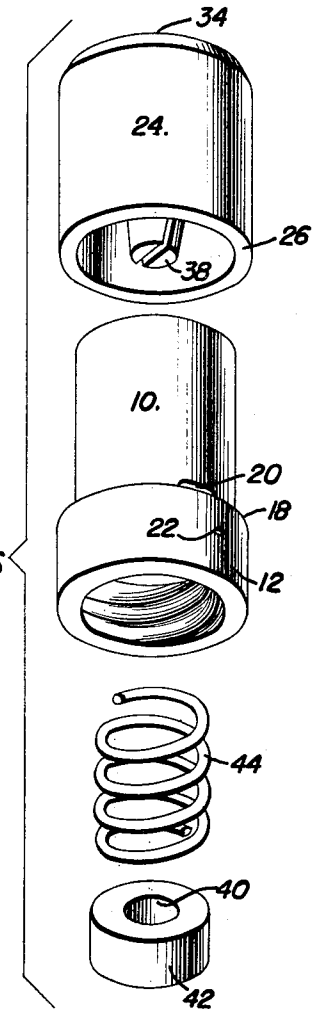


Fig. 4

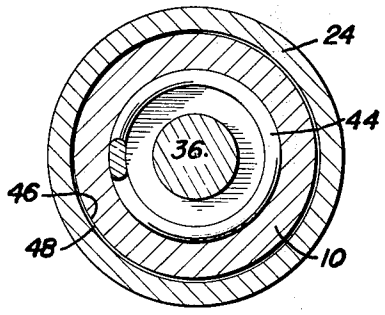


Fig. 5

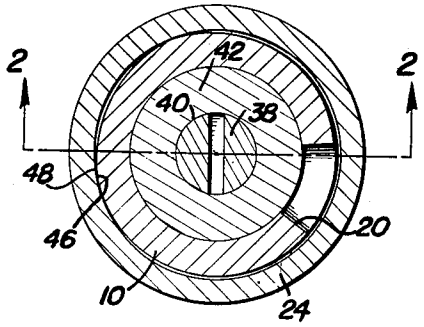


Fig. 8

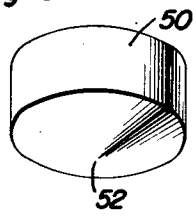
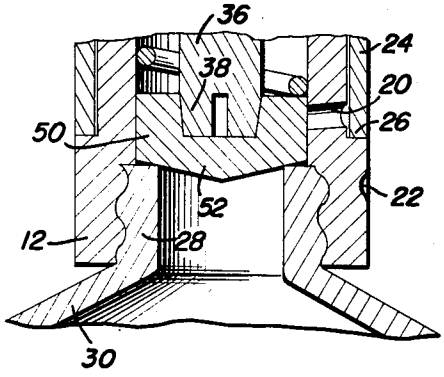


Fig. 7



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Patented May 27, 1952

2,598,482

UNITED STATES PATENT OFFICE

2,598,482

DISPENSING CAP FOR COLLAPSIBLE TUBES

Harry Abrams, Philadelphia, Pa.

Application February 28, 1950, Serial No. 146,734

7 Claims. (Cl. 222—496)

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This invention relates to new and useful improvements in caps for collapsible tubes and the like, and the primary object of the present invention is to provide a novel and improved dispensing cap that is quickly and readily applied to or removed from the threaded neck of a collapsible tube or container in a convenient manner.

Another very important object of the present invention is to provide a dispensing cap including a body member having a dispensing opening therein, and a means slidably carried by the body member for sealing the end of a tube on which the body member is applied and for closing the dispensing opening.

A further object of the present invention is to provide a dispensing cap that is so constructed as to permit the contents of a collapsible tube or container to be removed in a clean, sanitary manner.

A still further aim of the present invention is to provide a dispensing cap that is simple and practical in construction, strong and reliable in use, extremely small and compact in structure, inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of a collapsible tube and showing the present cap applied thereon;

Figure 2 is a longitudinal vertical sectional view of the present cap applied to the neck of a tube and taken substantially on the plane of section line 2—2 of Figure 5;

Figure 3 is a view similar to Figure 2 but showing the plunger and outer sleeve raised;

Figure 4 is a transverse horizontal sectional view taken substantially on the plane of section line 4—4 of Figure 2;

Figure 5 is a transverse horizontal sectional view taken substantially on the plane of section line 5—5 of Figure 2;

Figure 6 is a group perspective view of the present invention;

Figure 7 is a fragmentary view of Figure 2 but showing the plunger head in slightly modified form; and,

Figure 8 is a perspective view of the plunger head shown in use in Figure 7.

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Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents a body member or inner sleeve having an internally threaded attaching neck 12 at one end. The outer end of the inner sleeve 10 is provided with an end wall 14 having a central guide opening 16 therein.

The wall defining the neck 12 is slightly thicker than the wall defining the sleeve 10 proper and the outer periphery of the neck 12 extends radially outwardly from the outer periphery of the sleeve 10 to form an abutment or continuous external shoulder 18.

The sleeve 10 is formed with an inclined dispensing opening or slot 20 that is located just above the shoulder 18. Visual perceptible means, in the form of dent 22, is provided on the neck 12 in alignment with the opening 20 to indicate the location of the opening 20 when the opening is concealed in a manner presently to be described.

An outer sleeve 24 embraces the inner sleeve 10 and is slidably received on the inner sleeve 10. This outer sleeve 24 is sufficiently long as to permit its lower end 26 to seat against the shoulder 18 and close the dispensing opening 20.

Valve means is provided for closing the dispensing opening 20 and for sealing the threaded neck 28 of a collapsible tube 20 or container on which the attaching neck 12 is threaded. This valve means includes a plunger 32 that is attached to or which forms an integral part of the end wall 34 of the outer sleeve 24. The plunger 32 is slidably received in the opening 16.

The body or stem 36 of the plunger 32 includes a slotted lower end 38 that is forced and yieldingly held in a recess 40 provided in a plunger head or valve head 42. The lower face of the head 42 projects beyond the lower end 26 of the outer sleeve 24 to seat against the neck 28 and the head 42 is sufficiently thick to close the dispensing opening 20 when the head 42 is seated against the neck 28, as shown in Figure 2.

A coil spring 44 embraces the body 36 and is biased between the head 42 and the end wall 14 to yieldingly urge the end 26 against the shoulder 18 and the head 42 against the neck 28. Obviously other resilient means could be employed to function as the spring 44, such as a leaf spring or a spongy rubber collar about the body 36. Also, when the cap is used on containers, that set upright, by increasing the weight of the head

42 the same will gravitate to a closed position without requiring the spring means 44.

Means is provided for locking the outer sleeve and the plunger away from the dispensing opening 20. This means comprises a cam or eccentric surface 46 on the outer periphery of the inner sleeve 10 and extending throughout the length of sleeve 10 that will ride against a cam or eccentric surface 48 on the inner periphery of the outer sleeve 24 and which extends substantially the length of sleeve 24, when the sleeve 24 has been manually raised and rotated relative to the inner sleeve.

Figures 7 and 8 show the plunger head in slightly modified form. The plunger head 50 shown in these latest figures, includes a tapered, substantially conical, end 52 to permit material to drain therefrom and reenter the tube 30.

The dispensing cap is constructed from any suitable material that is easily cleaned, such as plastic, and the sleeves 10 and 24 may be circular in cross-section, as shown, or multi-sided.

Obviously, other suitable locking or retaining means could be used for retaining the outer sleeve and the plunger away from the dispensing opening, such as lugs depending from the wall 34 and resting upon the wall 14 with recesses in the wall 14 for receiving the lugs when the outer sleeve is rotated to permit the outer sleeve and plunger to close the opening 20.

Having described the invention, what is claimed as new is:

1. A dispensing cap comprising an inner sleeve having an internally threaded neck at one end and an opening at its other end, an outer sleeve surrounding said inner sleeve and slidably received on said inner sleeve, said inner sleeve having a dispensing opening therein, valve means carried by said outer sleeve and slidably received in the opening in one end of said inner sleeve, means urging said valve means to its closed position, and cam means between said sleeves for locking the outer sleeve against sliding movement on the inner sleeve.

2. The combination of claim 1 and visual perceptible means on said neck for indicating the location of said dispensing opening.

3. A dispensing cap comprising an inner sleeve having an internally threaded neck at one end and an opening at its other end, an outer sleeve surrounding said inner sleeve and slidably received on said inner sleeve, said inner sleeve having a dispensing opening therein, valve means carried by said outer sleeve and slidably received in the opening in one end of said inner sleeve, a spring member disposed within said inner sleeve and yieldingly urging said valve means to a position for closing the dispensing opening, and cam locking means between said sleeves for locking the outer sleeve against sliding on said inner sleeve.

4. A dispensing cap comprising a body member having an internally threaded end for engaging the threaded end of a tube, a plunger slidably received in said body member, said body member having a dispensing opening, means yieldingly urging said plunger to a position for closing the dispensing opening and against one end of a tube on which the body member is mounted, and

cam means for locking the plunger away from the dispensing opening.

5. The combination of claim 4 wherein said means includes an outer sleeve embracing said body member and having a protuberance on its inner periphery, and a further protuberance on the outer periphery of said body member for riding against the first mentioned protuberance.

6. A dispensing cap comprising an inner sleeve having an internally threaded attaching neck at one end, an external shoulder on said inner sleeve, said inner sleeve having a dispensing opening adjacent said shoulder, an outer sleeve embracing said inner sleeve and slidable on said inner sleeve, a plunger slidably carried by said inner sleeve and received within said inner sleeve, said plunger being movable with and rigidly attached to said outer sleeve, and means yieldingly urging said plunger to a position for closing the dispensing opening and also urging one end of said outer sleeve against the shoulder and to a position for closing the dispensing opening, said plunger including a head portion having a diameter greater than the internal diameter of a tube neck on which the inner sleeve is adapted to be mounted, and said means yieldingly urging the head portion against the tube neck on which the inner sleeve is mounted.

7. A dispensing cap comprising an inner sleeve having an internally threaded attaching neck at one end and an end wall at its opposite end, said end wall having a central opening therein, an outer sleeve embracing said inner sleeve and slidable on the inner sleeve, said outer sleeve including an end wall closing one end of said outer sleeve, a plunger integrally formed with the end wall of said outer sleeve and disposed axially of and within said outer sleeve, said plunger being slidably received in the central opening, a plunger head secured to said plunger and slidably received in said inner sleeve, an external rib on said neck forming an abutment for the open end of said outer sleeve, said inner sleeve having an outlet port therein adjacent the rib, and a coil spring surrounding the plunger and biased between the plunger head and the end wall of said inner sleeve, said spring yieldingly urging the open end of said outer sleeve against said rib to close said aperture and also urging the plunger toward the neck with the plunger head closing the aperture, and means within the outer sleeve for retaining the open end of the outer sleeve and the plunger head spaced from the aperture whereby material entering the neck may pass through the aperture.

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