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Beres et al.

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[54] **MASS OR BULK FORMING DISPENSER CAP FOR PRESSURE CANS**

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[52] **U.S. Cl.** **222/205**, 222/402.13

[51] **Int. Cl.** **B65d 83/14**

[58] **Field of Search** 222/205, 402.1, 402.13, 222/537; 128/225, 249; 401/190, 264

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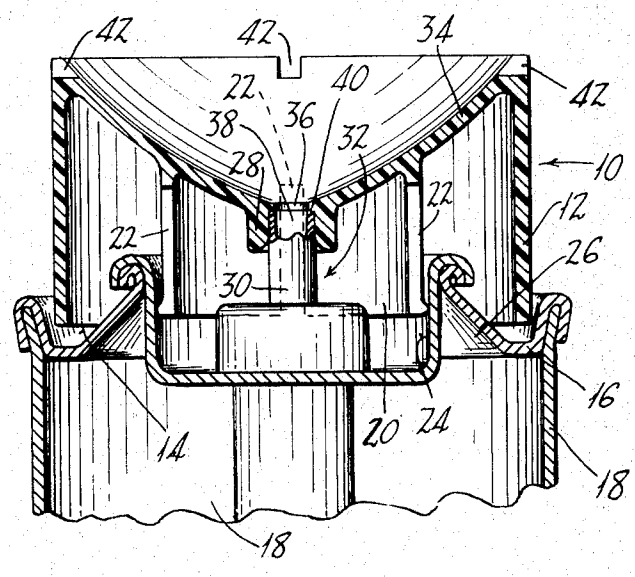
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[57] **ABSTRACT**

A one-piece molded plastic dispenser cap for discharging and collecting foam-producing pressurized substance. The cap comprises a shell-like body having annular concentric inner and outer walls arranged to movably mount the cap on the valve-carrying end closure of a pressurized container for limited axial movement thereon between non-discharging and discharging positions. A hollow boss of the body frictionally fits over the valve stem of the container to provide for actuation of the stem when a discharge is to be effected. The cap body has a concave or recessed transverse top wall which joins together the concentric inner and outer walls and also the hollow boss and which has an opening that communicates with the bore of the boss. Actuation of the cap is effected by placing the palm of the hand over the hollow of the transverse wall, and pressing the cap inward thereby. Vent passages in the form of notches are provided at the periphery of the transverse top wall, to vent air therefrom as the cap is being pressed inward by the palm and as pressurized product from the container is introduced into the hollow of the wall from the valve stem. Such pressurized product is of the foam-producing type which quickly fills the hollow of the wall and thereby forms a relatively large, accessible mass that can thus easily be removed. The product mass, for example, can contain ingredients which result in a hot foam-type shaving lather, or other end products can be had to serve various purposes where a foam-type mass has utility.

5 Claims, 4 Drawing Figures



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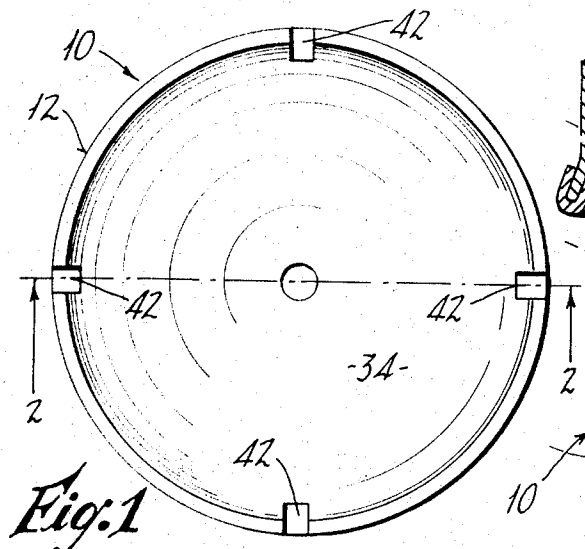
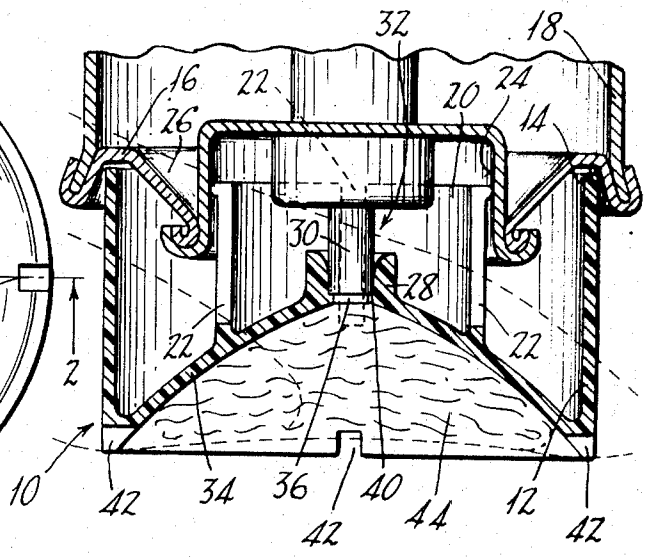


Fig. 1



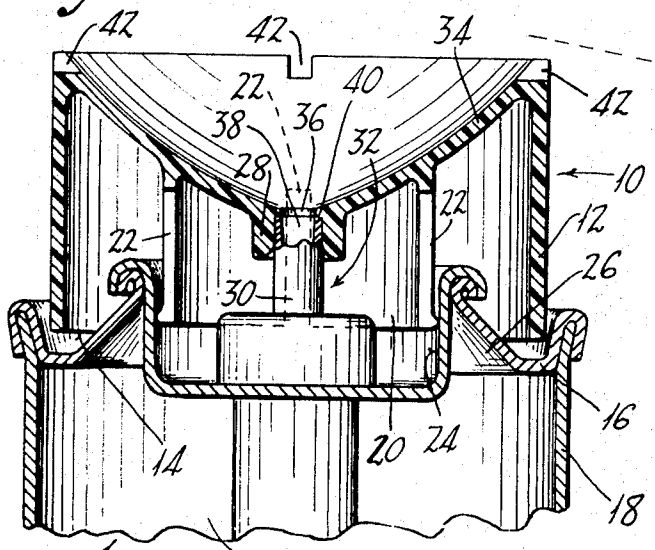


Fig. 2



Fig. 4

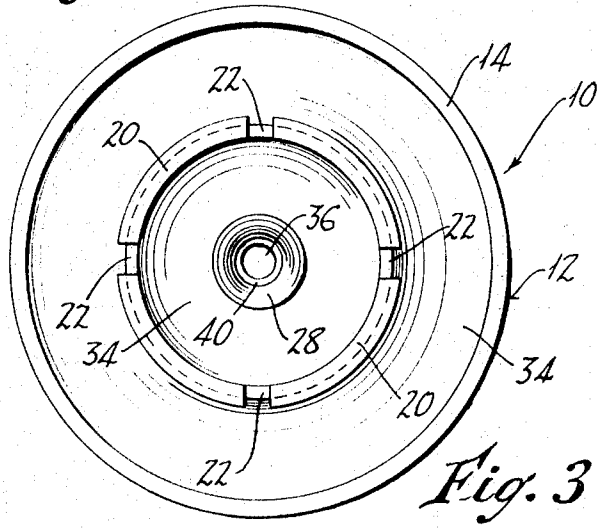


Fig. 3

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MASS OR BULK FORMING DISPENSER CAP FOR PRESSURE CANS

BACKGROUND

This invention relates to pressurized aerosol or other small, hand-held dispensers, and more particularly to a molded plastic cap for such dispensers. It has been common practice in the past to discharge hot shaving lather directly from a nozzle orifice into the hand. Cold lather, skin creams and the like have been likewise dispensed into the hand, in each case from the orifice or opening of a nozzle part. This prior procedure presented a number of problems or drawbacks. The pressurized, foamy or creamy product often dropped from the fingers onto the floor, causing a messy condition. Or, the somewhat great length of the nozzle would stay filled or partly filled with product after a discharge, causing clogging of the passage and deterioration of the dispensed cream, foam, or other substance. Also, this prior procedure necessitated frequent actuation of the dispenser cap and valve, and no indication could be had as to quantity if a fixed amount was specified in the directions. Often there resulted a loss or wastage of the product, in addition to an inconvenience of handling.

SUMMARY

The above disadvantages and drawbacks of prior foam or cream dispenser heads or caps are obviated by the present invention, which has for one object the provision of an improved mass-forming or collecting type dispenser cap for discharging and shaping into a mass foam-like or foam-producing substance which can be sold in pressurized containers such as cans and the like, whereby the discharged product can be collected as a mass and thereafter easily removed by the user for desired purposes. This object is accomplished by the provision of a molded plastic dispenser cap in the form of a shell-like body which has concentric inner and outer annular walls and a central hollow boss all structurally connected to enable the body to be supported for limited axial movement on a valve-carrying end closure of a pressurized can. The shell-like body also has a recessed or concave transverse top wall which joins together the concentric annular walls and also the central hollow boss, and which is so arranged that the hollow of the top wall communicates with the bore of the boss to receive the discharging product therefrom. When a depressing force is applied to the cap body, as by pressing with the palm of the hand covering the hollow top wall, it depresses the valve stem to effect a discharge of the foam-producing substance into the hollow of the wall. Vent passages or notches located at the periphery of the top wall provide for the venting of air as the hollow of the wall fills with the foam-producing substance. The concave top wall thus contains, shapes and collects the pressurized cream or foam substance into an accessible mass which can then be conveniently removed at will by the user. When the discharge is to be terminated, the palm of the hand is immediately removed from the hollow of the top wall of the cap, making the product accessible and available in quantity or as a large mass.

A related object of the invention is to provide an improved mass-forming dispenser cap as above set forth, which is especially simple in its construction, inexpensive to produce, and effective and reliable in its operation.

Still other features and advantages will hereinafter appear.

In the accompanying drawings illustrating one embodiment of the invention:

FIG. 1 is a top plan view of the improved mass-forming dispenser cap as provided by the invention.

FIG. 2 is an axial sectional view of the dispenser cap, taken on the line 2—2 of FIG. 1, this figure also showing portions of a pressurized container carrying the dispenser cap in the non-discharging position.

FIG. 3 is a bottom plan view of the dispenser cap.

FIG. 4 is an axial sectional view similar to that of FIG. 2, but showing dispenser inverted and the cap in the discharging position wherein a mass of product is being formed and collected in the hollow transverse wall thereof.

Referring now particularly to the figures, the mass-forming and collecting dispenser cap of the invention comprises a shell-like body designated generally by the numeral **10**, having an annular outer wall **12** terminating at the bottom rim **14** which is adapted to engage peripheral shoulder portions **16** of a pressurized container or can **18**. The body **10** has bearing portions disposed within the annular outer wall, in the form of a concentric annular inner wall **20** provided with a plurality of through cuts **22**, said inner wall being engageable with cooperable surfaces **24** of a valve-carrying end closure **26** for the container, to support the body **10** thereon for limited axial movement.

The body **10** further has a central hollow boss **28** located inwardly of the bearing portions or wall **20**, said boss being adapted to receive and frictionally seize the projecting end **30** of a conventional depressible hollow valve stem **32** which is movably carried by the closure **26**, thereby to effect the depressing, product-discharging movement of the stem **32** when downward force is applied to the body **10**.

In accordance with the present invention, the body **10** is provided with a recessed transverse top wall **34** which joins together the annular outer wall **12**, the inner annular wall **20** and the central boss **28**. The bore of the boss **28** communicates with the hollow of the transverse top wall **34**, this being effected by the provision of a short passage **36** provided in the center of the wall **34** and communicating with the bore **38** of the valve stem **32**. As shown, the passage **36** has a diameter which is smaller than that of the boss **28** and commensurate with that of the bore **38**, such construction providing an internal annular shoulder **40** which constitutes a stop to position the projecting end part **30** of the stem.

The body **10** is, in accordance with the invention, provided with vent means at the periphery of the transverse top wall **34** to vent air as the palm of the hand applies force to the cap and as the hollow of the wall fills with the cream or foam product which is being discharged through the hollow valve stem **32**. In the illustrated embodiment of the invention, the vent means comprises notches **42** in the periphery of the top wall **34**.

As seen in FIG. **2**, the bearing means or inner wall **20** of the cap is slidable on the inner surface **24** of the end closure **26** of the pressurized can. Normally the cap **10** is maintained in a raised, non-discharging position under the action of the valve return spring (not shown) conventionally provided in the container **18** and acting

on the valve stem **32** to normally bias the latter to the raised, non-discharging or closed position.

The container **28** can be provided with a pressurized foam-producing or creamed foam substance; or it can contain any desired formulation which is best collected or shaped in a sizeable mass before being used.

Referring to FIG. **4**, the operation of the dispenser cap is as follows: With the dispenser inverted, upward or inward pressure is used on the cap by applying the palm **46** of the hand in the manner indicated, to span the concave top wall **34.** The cap body **10** will shift upward or inward a slight extent, depressing the valve stem **32** to enable a discharge of the pressurized product to be effected through the stem from the pressurized container **18.** Such product will pass through the stem bore **38** and through the communicating passage **36** into the hollow of the transverse top wall **34.** Meanwhile, air is being vented through the passages or notches **42** at the periphery of the top wall. The hollow of the wall **34** quickly fills with the discharged substance, which forms into a shaped foam or sponge-like mass designated **44** in FIG. **4.** When the product has filled the hollow of the top wall **34,** depressing pressure is removed from the cap **10** by removing the palm, thus terminating the discharge through the valve stem **32.** The creamy or foamy product **44** is seen to have a sizeable bulk, and can now be readily withdrawn from the hollow of the wall **34.**

It will be noted from FIG. **4** that the bottom rim **14** of the cap **10** can engage the sides or even the bottom of the shoulder **16** of the container to steady or stabilize the cap when it is being depressed, and this is an advantageous feature of the invention in that it prevents distortion or bending of the valve stem, or malfunctioning of the latter and of the cap during the discharging operation.

It will now be readily understood from the foregoing that we have provided a novel and improved mass or bulk-forming or shaping dispenser cap for discharging, collecting and shaping foam-producing or creamy or other substance or product, which cap can be readily applied to existing pressurized containers or cans and which effectively collects and shapes the discharging product. The cap as provided by the invention is especially simple in its construction, and can be quickly and economically molded all in one piece, of plastic material. The cap is easily applied to the pressurized container, and is especially reliable in operation to produce the desired collected and shaped or bulk-available product.

Variations and modifications are possible without departing from the spirit of the invention.

We claim:

1. A mass-forming dispenser cap for discharging and collecting a foam-producing, pressurized substance, comprising in combination:

a. a shell-like body having an annular outer wall with a bottom rim adapted to engage the peripheral shoulder portions of a pressurized container,

b. said body having bearing portions disposed within the annular outer wall and engageable with cooperable surfaces of a valve-carrying end closure of the contianer, for supporting the body for limited axial movement thereon,

c. said body having a central hollow boss located inwardly of the bearing portions to receive and frictionally seize the projecting end of a depressible hollow valve stem on the closure, thereby to effect depressing product-discharging movement of the stem when downward force is applied to the body,

d. said body having a recessed, expansive transverse top wall joining together the annular outer wall, the said bearing portions and the central boss,

e. the bore of the central boss communicating with the hollow of the top wall whereby pressurized product which is being discharged through the valve stem is deposited in said hollow of the wall and collected thereby,

f. said body having a plurality of vent passages at the periphery of the transverse top wall to vent air as the hollow of the wall fills with the said discharging product.

2. A dispenser cap as in claim **1,** wherein:

a. the transverse top wall has a concavo-convex configuration.

3. A dispenser cap as in claim **1,** wherein:

a. the hollow top wall has a passage of smaller diameter than and coaxial with the bore of the central boss, which provides the communication between said bore and the hollow of the wall,

b. said passage diameter being of the same order of magnitude as the bore in the valve stem which is receivable in the boss.

4. A mass-forming dispenser cap for discharging and collecting a foam-producing, pressurized substance, comprising in combination:

a. a shell-like body having an annular outer wall with a bottom rim adapted to engage the peripheral shoulder portions of a pressurized container,

b. said body having bearing portions disposed within the annular outer wall and engageable with cooperable surfaces of a valve-carrying end closure of the container, for supporting the body for limited axial movement thereon,

c. said body having a central hollow boss located inwardly of the bearing portions to receive and frictionally seize the projecting end of a depressible hollow valve stem on the closure, thereby to effect depressing product-discharging movement of the stem when downward force is applied to the body,

d. said body having a recessed, expansive transverse top wall joining together the annular outer wall, the said bearing portions and the central boss,

e. the bore of the central boss communicating with the hollow of the top wall whereby pressurized product which is being discharged through the valve stem is deposited in said hollow of the wall and collected thereby,

f. said body having vent passages at the periphery of the transverse top wall to vent air as the hollow of the wall fills with the said discharging product,

g. said vent passages comprising notches in the periphery of the top wall.

5. A mass-forming dispenser cap for discharging and collecting a foam-producing, pressurized substance, comprising in combination:

a. a shell-like body having an annular outer wall with a bottom rim adapted to engage the peripheral shoulder portions of a pressurized container,

b. said body having bearing portions disposed within the annular outer wall and engageable with cooperable surfaces of a valve-carrying end closure of the container, for supporting the body for limited axial movement thereon,

c. said body having a central hollow boss located inwardly of the bearing portions to receive and frictionally seize the projecting end of a depressible hollow valve stem on the closure, thereby to effect depressing product-discharging movement of the stem when downward force is applied to the body,

d. said body having a recessed, expansive transverse top wall joining together the annular outer wall, the said bearing portions and the central boss,

e. the bore of the central boss communicating with the hollow of the top wall whereby pressurized product which is being discharged through the valve stem is deposited in said hollow of the wall and collected thereby,

f. said body having vent passages at the periphery of the transverse top wall to vent air as the hollow of the wall fills with the said discharging product,

g. the bearing portions of the body comprising an annular inner wall concentrically disposed within said annular outer wall,

h. said inner wall having a plurality of cuts to enable it to yield when in engagement with the cooperable surfaces of the end closure.

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