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3,318,494 5/1967 Porter et al. 222/534
 RE26,318 12/1967 Wilson 222/534X
 3,390,890 7/1968 Kurtz 285/111X
 3,393,817 7/1968 Meierhoefer 215/11.2

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[54] **DISPENSING CLOSURE CAP FOR A CONTAINER**
3 Claims, 7 Drawing Figs.

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 222/536

[51] Int. Cl. **B67d 5/12**

[50] Field of Search 222/536,
 541, 556, 567; 220/(Inquired); 215/74, 11, 11.2;
 285/110, 111; 239/(Inquired); 222/534

[56] **References Cited**

UNITED STATES PATENTS

1,726,315 8/1929 Rose 222/536
 3,265,256 8/1966 Chaber et al. 222/534

ABSTRACT: A dispensing closure cap including a base portion having an annular wall and a top portion formed with a slot together with a spout having an arm portion terminating in a base with a passageway extending through said arm and said base. An insert for said base having an outlet hole formed therethrough together with complementary socket means formed within said top portion and said insert in which the base of said spout is mounted for pivotal movement together with means for securing the insert in the base portion with the arm of the spout extending through said slot, the pivotal movement of the spout causing said passageway of said spout to register with said outlet hole of said insert or to not register whereby the outlet hole is sealed off.

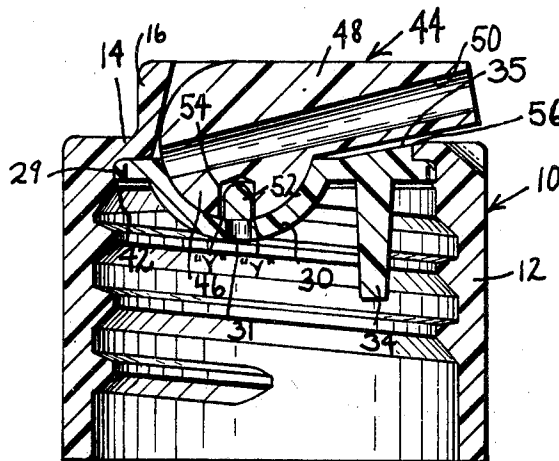


FIG. 1

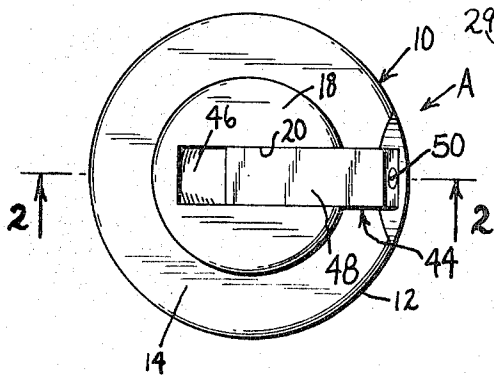


FIG. 1

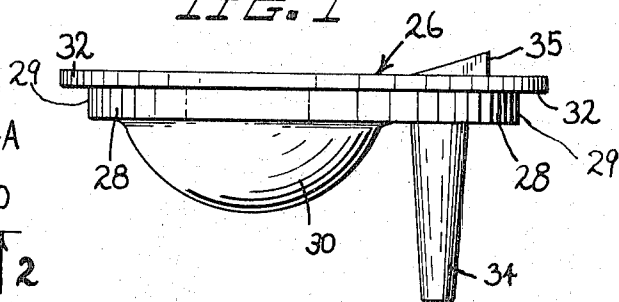


FIG. 2

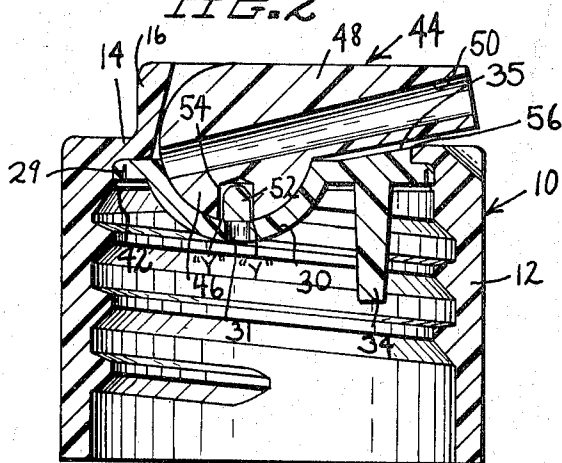


FIG. 3

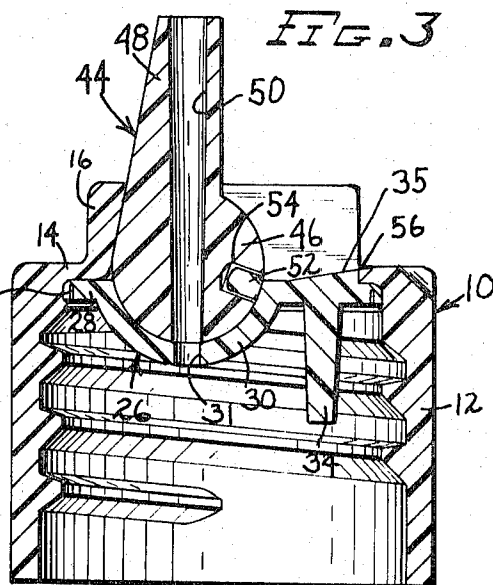


FIG. 7

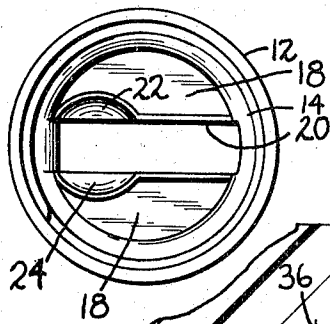


FIG. 5

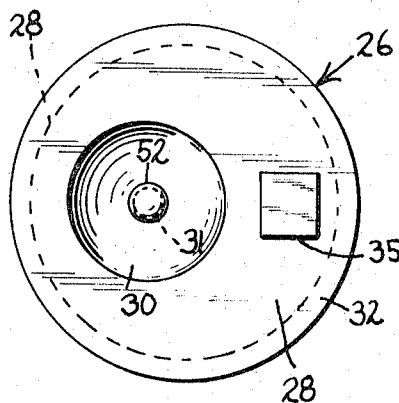
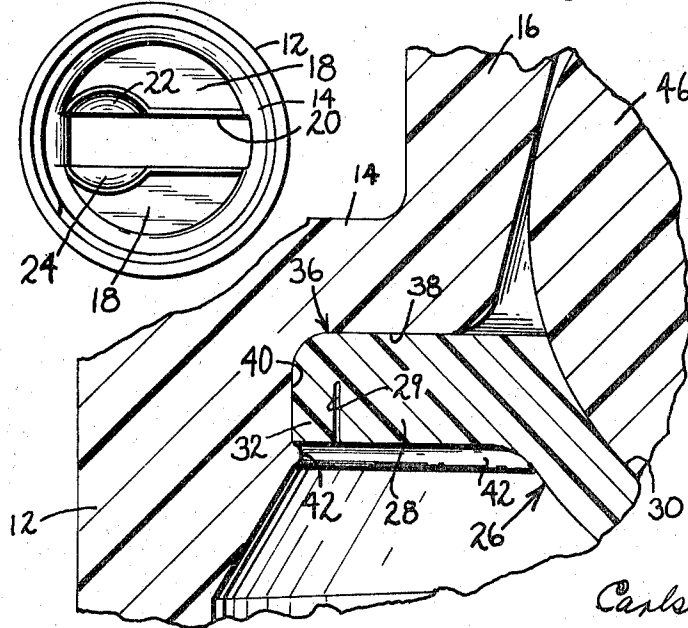


FIG. 6

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DISPENSING CLOSURE CAP FOR A CONTAINER

SUMMARY OF THE INVENTION

The invention relates to an improvement in closure caps for a container including at least one part which may be moved relative to another part in order to obtain a dispensing and a sealing action generally of the type found in U.S. Pat. Nos. 2,793,795 and 3,318,494.

In a plastic closure cap which is screwed onto the neck of a container it is highly preferable to have the outer cap portion made of a relatively hard plastic which resists rupture, which mounts movable parts more effectively, and is easier to grip with the fingers. The outer cap portion is generally screwed onto the neck of a container, and a sealing engagement is made between the inner surface of the top of the cap and the upper edge of the neck of the container. However, with the hard plastic material of the outer cap portion a sealing engagement with the neck of the container is not completely effective. If the outer cap portion is molded of a softer material to give better sealing contact with the neck of the container, it is with a loss of the benefits of the harder plastic outer cap as mentioned above.

It is an object of the invention to provide a dispensing cap having an outer cap portion which may be formed of a relatively hard plastic and an insert formed of a softer and more pliant plastic which allows an effective sealing contact with the upper edge of the neck of a container and which carries partial socket means for the base end of a pivotable spout, the partial socket means complementary to partial socket means formed in the outer cap portion. The partial socket means of the insert being pliant provides effective sealing engagement with the base end of a pivotal spout constructed of a material of less pliancy. It is a further object to provide an insert having an outlet hole with which the passageway of the spout is aligned for dispensing or misaligned to accomplish a sealing function of the outlet hole.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which:

FIG. 1 is a top plan view of a container cap embodying the invention;

FIG. 2 is a sectional view on the line 2-2 of FIG. 1;

FIG. 3 is a sectional view identical to FIG. 2 but with the spout moved to an open position and the frangible sealing member removed;

FIG. 4 is a side elevational view of the insert removed from the cap;

FIG. 5 is an enlarged sectional view of a portion of the insert and the cap;

FIG. 6 is a top plan view of the insert; and

FIG. 7 is a bottom plan view of the cap with the insert and spout member removed.

Referring to the drawings in detail, the cap A includes the base portion 10 which includes the internally threaded circular wall 12. The top peripheral edge of the wall 12 terminates in the annular right angularly disposed partial top wall 14 which terminates radially inwardly in the circular wall 16 concentric with the wall 12. The upper edge of wall 16 terminates in the top 18 parallelly disposed to the partial top wall 14. The top 18 is formed with the slot 20 extending on a diameter thereof. Formed on the underside of the top 18 and adjacent the edge of the slot 20 is the first partial annular socket portion 22 and opposite the partial socket portion 22 is the companion or second partial annular socket portion 24. The base portion may be made from a relatively hard plastic such as polypropylene which resists rupture and effectively mounts the movable spout hereinafter described.

The numeral 26 designates an insert which includes the main disc body 28. The disc body 28 has formed therein the semispherical socket formation 30 which is offset from the center of the main disc body. The axis of the socket portions 22 and 24 is common with the axis of the companion socket 30 when the insert 26 is in operative position within the base

portion 10 as hereinafter described. Formed in the center of the socket 30 is the outlet hole 31.

The insert 26 further includes the annular peripheral relatively thin flange 32 extending radially outwardly from the main disc body 28. Depending from the underside of the insert 26 is the orienting pin 34. The insert 26 also includes the upstanding lug 35 the width of which is substantially the width of the slot 20.

The insert 26 may be formed of a plastic which is more pliant than that of the base portion 10 such as polyethylene whereby an effective sealing contact is made with the neck of a container threadedly engaged with the threads of the base 10. The annular top wall 14 has formed in the underside thereof the annular recess 36 formed of the bottom surface 38 and the right-angularly disposed edge surface 40. The lower edge of the annular edge surface is formed with the annular bead 42 which has a relatively small cross-sectional dimension. The diameter of the annular edge surface of the recess 36 is equal to the diameter of the insert 26 with the thin flange folded down upon and parallel with the annular edge 29 of the disc body 28. The insert 26 is secured in the recess 36 by forcing the flange 32 over the annular bead 42 and causing the thin flange to be folded upon the edge 29 with the edge of flange 32 into engagement with the bead 42. As a result the insert 26 is securely mounted in the cap body 10. The area between the bead 42 and the surface 38 forms a recess for the flange 32 of the insert.

The numeral 44 designates a spout which includes the substantially spherical base portion 46 from which extends the arm portion 48. Extending through the base portion 46 and the arm portion 48 is the outlet passageway 50. The spout 44 may be made of a material of less pliancy than the insert whereby effective sealing is made between the base 46 and the socket 30 of the insert. The outlet hole 31 of the insert 26 is sealed by means of the plug 52. The plug 52 is attached at its lower end at the periphery thereof as at y by a thin frangible connection. Thus with the plug 52 in place material cannot flow through the spout and sealing is not dependent on contact of the spherical base portion with the socket 30.

The spherical base portion 46 of the spout 44 is formed with the recess 54 into which the plug 52 fits. The recess 54 is positioned in the base 46 so that when the spout 44 is in its lowermost or closed position as in FIG. 2, the plug 52 is in the recess 54. In assembly of the cap the arm 48 of the spout is positioned upwardly through the slot 20 with the semispherical base 46 up against the partial socket portions 22 and 24 with the arm portion 48 positioned upon the corner end edge 56 of the slot 20 as in FIG. 2. The insert 26 is then forced into the inside of the cap inwardly to a point against the bottom surface 38 of the recess 36 with the annular flange 32 folded over and urged upon the edge 29 with the lower outer edge of the flange abutting the annular rib 42. With the insert 26 forced into place over the bead 42, the semisocket 30 is forced into pressure engagement with the base portion 46 of the spout thus holding the spout up against the socket portions 22 and 24. The flange 32 also tends to urge outwardly upon the annular surface 40.

As the insert is inserted into position as above, the plug 52 is extended up into the recess 54 as in FIG. 2. When the insert 26 is moved up into position, the lug 35 fits up into the slot 20 thereby aligning the insert relative to the slot.

When the spout 36 is initially pivoted from the position of FIG. 2 to that of FIG. 3, the plug 52 is broken from its frangible connection upon the hole 31 by means of the wall of the recess 54 contacting and being forced against the plug. As the plug is severed, it is carried captive and away from the outlet hole 31 and within the recess 54 by the turning movement of the wall of the recess upon the plug. The recess 54 may be positioned so that it opens upon the slot 20 whereby the severed plug may be removed from the recess. The recess 54 is so positioned, relative to the outlet hole 31 that when the recess 54 is in the position of FIG. 3, the passageway 50 is in alignment with the outlet hole 31 whereby the contents of a

container (not shown) attached to cap A can flow outwardly through the spout 44. The cap A is closed by returning the spout 44 to the position of FIG. 2 whereby the passageway 50 and hole 31 are out of alignment. With the aforementioned construction the cap is easily and securely assembled by first positioning the spout in place and then inserting the insert which maintains the spout in place. The small annular rib 42 adequately maintains the insert in locked operative position and additionally the bead is capable of being molded as part of the cap base portion 10 due to its small cross-sectional dimension.

I claim:

1. A dispensing closure cap comprising:

- a. a base for securement to the neck of a container including an annular wall;
- b. a top portion;
- c. said top portion having a slot;
- d. a spout including an arm portion terminating at its inner end in a base;
- e. said arm and base having a passageway extending therethrough;
- f. an insert for said base including a substantially flat body having:
- g. an outlet hole extending therethrough;
- h. means for pivotally mounting said base of said spout between said top portion and said insert with said arm portion of said spout extended through said slot;
- i. means for securing said insert within said base whereby said spout may be pivoted from a position with said passageway out of alignment with said outlet hole to seal said outlet hole to one of alignment with said outlet hole to allow flow through said outlet hole and said passageway;
- j. said base of said spout being spherical in formation;
- k. said means for pivotally mounting said spout base between said top and said insert including a socket formation in said top portion of said base;
- l. said means for securing said insert within said base includ-

ing recess means formed on the inner surface of said base in which the edge of said insert body is positioned; and
m. said insert body having a thin flange extending from the edge thereof and foldable upon the edge of said insert body when said insert body is positioned within said recess means.

2. The device of claim 1 in which said means for pivotally mounting said spout base further includes a socket formation in said insert complementary to said socket formation of said top portion and in which said base of said spout is positioned.

3. A dispensing closure cap comprising:

- a. a base for securement to the neck of a container including an annular wall;
- b. a top portion;
- c. said top portion having a slot;
- d. a spout including an arm portion terminating at its inner end in a base;
- e. said arm and base having a passageway extending therethrough;
- f. an insert for said base including a substantially flat body having:
- g. an outlet hole extending therethrough;
- h. means for pivotally mounting said base of said spout between said top portion and said insert with said arm portion of said spout extended through said slot;
- i. means for securing said insert within said base whereby said spout may be pivoted from a position with said passageway out of alignment with said outlet hole to seal said outlet hole to one of alignment with said outlet hole to allow flow through said outlet hole and said passageway;
- j. said means for securing said insert within said base including recess means formed on the inner surface of said base in which the edge of said insert body is positioned; and
- k. said insert body having a thin flange extending from the edge thereof and foldable upon the edge of said insert body when said insert body is positioned within said recess means.