Aug. 8, 1944. P. A. DERHAM ET AL 2,355,583

DECORATIVE CONTAINER CAP

Filed Nov. 25, 1940

Fig. 1.

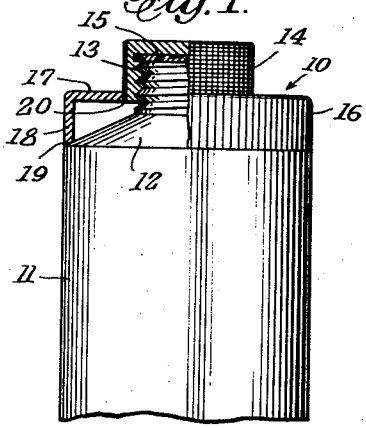


Fig. 4.

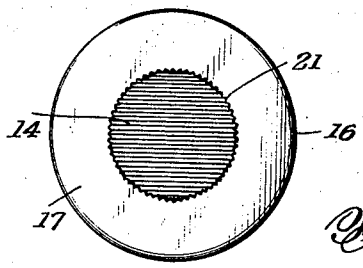


Fig. 5.

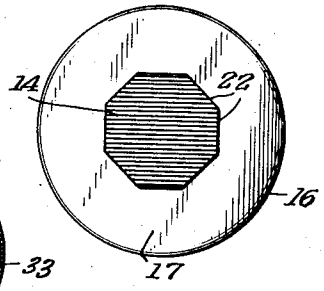


Fig. 6.

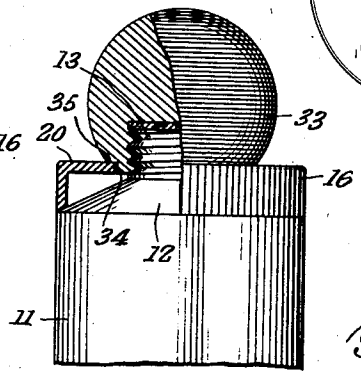


Fig. 2.

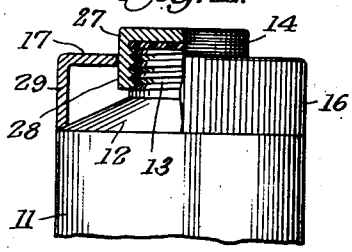


Fig. 3.

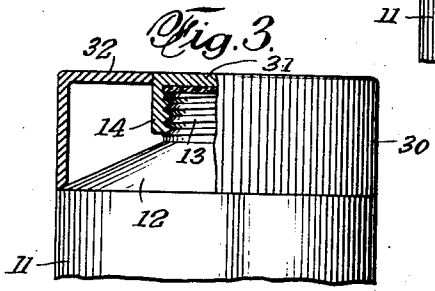


Fig. 7.

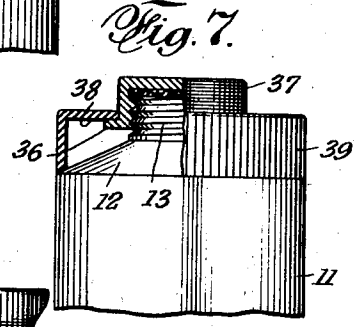


Fig. 9.

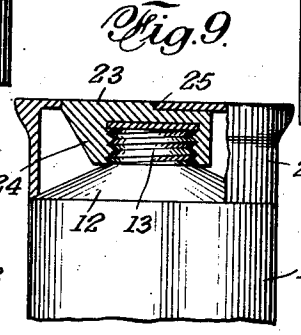
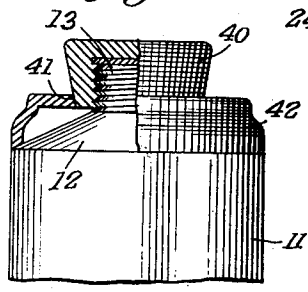


Fig. 8.



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DECORATIVE CONTAINER CAP

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Application November 25, 1940, Serial No. 366,996

4 Claims. (Cl. 220—39)

This invention relates to collapsible tubes and particularly to the removable closure caps therefor. Collapsible tubes are generally made of metal such as tin, aluminum, or the like and are customarily provided with a reduced externally threaded neck joined to the cylindrical body of the tube by a conical shoulder. It being understood that the good appearance of the package is of importance in promoting sales of goods, it will also be understood why much effort has been expended in designing tubes which look well and are attractive. Attempts to improve the appearance of the tube have heretofore been confined largely to the decoration of the cylindrical surface of the tube body and to changes in the design or configuration of the tube cap. Since the introduction of moldable synthetic plastics such as resins moldable under heat and pressure into various forms, and also adapted to be colored or pigmented to produce caps of various colors, the attempts to improve the appearance of collapsible tubes has shifted from changes in the surface decoration of the body to changes in the shape of the tube cap and the color effects produced therein. The cost of the collapsible tube caps must necessarily form a small part only of the cost of the entire tube and its contents constituting the package sold to the consumer. Consequently, any cap construction having decorative possibilities must be adapted to be inexpensively manufactured and also must be designed for the commercial production of the caps in large quantities.

Our invention thereofore contemplates the provision of a collapsible tube cap made of suitable moldable plastic and in two parts preferably of different colors, one part being intended to be screwed on to the neck of the tube to effect the closure and the other part being a decorative part resting on and concealing the conical shoulder and forming with the central part a new and highly decorative appearance at the neck end of the tube.

Our invention further contemplates the provision of a two piece cap wherein the inner piece may be made in a considerable variety of different shapes and designs and the outer piece is provided with an outer surface of the same diameter as the cylindrical body of the tube and thereby presents the appearance of a continuation of the outer surface of the tube body in a matching color or in a contrasting color as desired.

Our invention further contemplates the provision of an inexpensive cap readily made in two parts and readily assembled by known methods and when in place on the tube, forming a continuation of the surface of the tube body and a contrasting decoration at the central part of the cap and thereby gives a novel and pleasing appearance to the neck end of the tube without detracting from the efficiency of the cap closure, but making it easier to put on and to remove the cap.

The various objects of the invention will be clear from the description which follows, and from the drawing, in which,

Fig. 1 is a front elevation partly in section of one form of our new cap as it appears in place secured to a collapsible tube.

Fig. 2 is a similar view of a modified form of the cap.

Fig. 3 is a similar view of another modified form of the cap, wherein the outer end surfaces of both parts of the cap are made flat and flush so that the tube may stand up vertically on said surface as a base.

Fig. 4 is a top plan view of our improved cap showing one form of connection between the two parts thereof preventing relative rotation.

Fig. 5 is a similar view of another modified form of the same, wherein the connected parts of the two cap portions are of polygonal outline to prevent relative rotation.

Fig. 6 is a fragmentary elevation and vertical section showing how the shape of the inner cap part may be modified, as for example, by the use of the general form of a ball.

Fig. 7 is a similar view of another modified form of the cap, wherein the inner cap part is provided with a shoulder to resist separation of the cap parts when the cap is screwed into place.

Fig. 8 is a similar view of another modified form of the invention, wherein the cap parts are connected by a tapered joint to resist separation.

Fig. 9 is a similar view of another modified form of the invention, wherein the connected portions of the two cap parts are arranged in an eccentric position to resist relative rotation of the cap parts when the cap is secured into place and unscrewed from the tube.

In the practical embodiment of the invention which we have shown by way of example, the cap is made of two separate pieces properly assembled, one being an outer part in the general form of a cup having a central opening, and the other part being an inner part set in the opening of the outer part and suitably secured thereto. Since both inner and outer parts may be made of a great variety of different shapes and in a great variety of different colors, it will be seen that the number of combinations of desired colors and the number of combinations of shapes possible are large, and afford a wide range from which to select color and

shape combinations to meet different conditions and different tastes.

It will also be seen that the inner part of the cap which is the part that screws on to the neck of the tube, may be made of substantially standard shape and size to fit the standard necks of tubes of all sizes and by means of a single set of dies or molds, while the size of the outer part of the cap may be varied for tubes of different sizes.

In the form of the invention shown in Fig. 1, the cap 10 is applied to a collapsible tube having a cylindrical body 11, a tapered or conical part 12 and an externally threaded neck part 13. The cap consists of the inner part 14 and the outer cap part 16. Said inner part is internally threaded to screw on to the neck 13 and is provided with the usual yieldable sealing liner as 15. It may be made of any desired shape and color, but as shown, is of a different color from that of the outer cap part 16. Said outer cap part comprises the circular end wall 17 and the cylindrical flange 18 depending from the outer periphery of said wall. The outer diameter of the flange 18 is the same as that of the tube body 11 whereby the outer surface of the flange appears to be a continuation of the outer surface of the body, the line of demarcation therebetween being reduced to a minimum by bevelling the lower free edge of the flange at the same angle as that of the shoulder 12 of the tube. Centrally of the wall 17 is provided the opening 20 into which a portion of the inner part 14 is forcibly fitted. If desired, the contacting surfaces of the parts 14 and 16 may be cemented together or mechanical means may be used to hold said parts together against separation and relative rotation.

As shown in Fig. 4, in the outer cap part 16, the wall surrounding the opening 20 is serrated at at 21 and the lower portion of the outer surface of the inner part 14 correspondingly serrated so that when the inner part 14 is forced into the opening into which it fits tightly, it will be held against rotation relatively to the part 16. Since the outer part 16 is more conveniently grasped by the fingers of the user than the inner part of the cap, said outer part is the one which is manipulated to tighten the cap on to the fitted neck of the tube or to remove it therefrom. If the inner cap part sticks in place on the tube neck, such manipulation tends to cause relative rotation of the cap parts which it is desired to prevent. If desired, as shown in Fig. 5 the opening in the outer part 16 for the reception of the inner cap part may be made of polygonal shape as shown at 22, and the lower portion of the inner part 14 made of a similar shape to fit the opening, or the entire inner part may be made in the form of a polygonal prism to prevent the undesirable relative rotation of the cap parts.

Other means may be used to prevent relative rotation of the inner and outer parts under the pressure on the outer part required to unscrew the cap from the tube or to screw it tightly thereon. For example, as shown in Fig. 9 the upper portion 23 of the inner cap part 24 may be arranged eccentrically of the neck 13 of the tube to fit into the correspondingly eccentric opening 25 of the outer cap part 26. Rotation of the cap part 26 forces the cap part 24 to rotate therewith as a unit due to the eccentric connection therebetween.

It will be understood that, as has been hereinbefore indicated, the inner part 14 may be made of a standard size and shape for use with various outer parts 16 of different sizes, shapes and colors. Consequently, the same die or mold may be used in producing identical inner parts 14 in large quantities and a different die or mold is needed only for each of the various outer parts 16. It also becomes possible to obtain different designs by arranging the inner part 14 in different axial positions relatively to the outer part 16. As shown in Fig. 1, the lowermost surface of the part 14 is coplanar or flush with the inner face of the wall 17 of the outer part. However, the part 14 being shown as prismatic, it may be forced partway through the opening 20 so that a portion 27 projects above the opening and a portion 28 projects below the opening as shown in Fig. 2. The concealing effect of the flange 18 which conceals the shoulder 12 remains unimpaired and the threaded engagement of the inner part with the tube neck 13 remains the same. However, a different design is attained by the difference in the amount which the inner part 14 projects past the surface 17. To compensate for this difference, the flange 29 of the outer cap part may be somewhat increased in height or width over that of the flange 18, presenting a band at the end of the tube body of substantial width and preferably of contrasting color.

As shown in Fig. 3, the width of the band 30 resulting from the still further enlargement of the height of the flange is still more greatly increased and the inner part 14 of the cap is arranged with its uppermost surface 31 coplanar or flush with the outer surface 32 of the outer cap part. When the cap parts are made in contrasting colors, the surface 31 presents the appearance of an inset or inlay of contrasting color in the flat top surface 32 of the cap. Furthermore, the surface 32 may serve as a base on which the tube may stand up in a medicine cabinet or closet if desired, thereby saving considerable space in the storage of collapsible tubes in such cabinets.

In the form of the invention shown in Fig. 6, the outer cap part 33 is made in the general form of a ball having a reduced shoulder 34 entering the central opening in the outer cap part 16 and also having a shoulder 35 resting on the upper surface of said outer part. It will be understood, however, that the shape of the cap part 33 may be varied almost indefinitely in the same manner as the shapes of plastic bottle caps are now varied and that a great number of different designs may be used therefor provided that the cap is made with a connecting portion to secure it to the outer part 16 or the like.

In the form of the invention shown in Fig. 7, the cap may be screwed down tightly on to the neck 13 of the tube without danger of the cap parts being separated by the forcible passage of the inner cap part completely through and out of the opening of the outer cap part under the axial stresses thereon. For this purpose, a shoulder 36 is provided at the lower end of the inner cap part 37, said shoulder engaging the inner surface 38 of the end wall of the outer cap part 39.

In the form of the invention shown in Fig. 8, the inner cap part 40 also cannot be forced downwardly through the opening 41 of the outer cap part 42. Said opening 41 is made conical and of less outermost diameter than the greatest diameter of the outer conical surface of the cap part 40. Consequently, no matter how tightly the cap is screwed on to the neck, the inner part of the

cap cannot be separated by upward pressure from the outer cap part **42**, which is more firmly secured thereto, the more tightly the cap is screwed down.

In this form of the invention, the assembled cap is screwed into place preferably by the rotation of the inner cap part **40**.

It will be seen that we have provided a cap structure capable of producing a great variety of different designs in different combinations of colors and shapes which greatly improves the appearance of the discharge end of a collapsible tube as by concealing the conical shoulder thereon, and also by providing a continuation of the surface of the tube body in contrasting color and that we have also made it possible to form the caps in contrasting colors and different shapes by economical quantity production means.

While we have shown and described certain specific embodiments of our invention, we do not wish to be understood as limiting ourselves thereto, but intend to claim the invention as broadly as may be permitted by the state of the prior art and the scope of the appended claims.

We claim:

1. A two-part cap for a collapsible tube having a cylindrical body and having a conical shoulder and an externally threaded neck, said cap comprising a cup-shaped outer part having a flat circular end wall of uniform thickness, and having a peripheral generally cylindrical flange of substantially uniform thickness, an inner internally threaded cap part frictionally secured in and axially slidable to a limited extent in said opening and projecting past the end wall a selected distance in at least one axial direction to expose to view when the cap is in use a predetermined area of the surface of said inner part, said outer part being of a selected outer diameter to correspond to the diameter of the body of a selected collapsible tube and covering and concealing the shoulder of the tube with the end edge which is remote from said end wall in pressed contact with the shoulder of the tube when the cap is in place on the tube, and a yieldable liner in the inside of the inner cap part at the outer end of the threaded portion thereof, said liner engaging the extreme end of the tube neck when said neck is screwed into the inner cap part, said inner part sliding downwardly relatively to the tube neck and to the outer cap part when the inner part is screwed further on to the neck after the outer part is in contact with the tube shoulder, to insure sealing contact of the outer end of the tube neck with said liner, said inner part comprising the sole means supporting the outer part.

2. A two-part collapsible tube cap comprising an outer part provided with a continuous uninterrupted and flat end wall of uniform thickness having an opening therein and a flange depending in one direction from the extreme periphery of the end wall, and a separately formed internally threaded inner part projecting in the opposite direction from the end wall and frictionally fitted into the opening to slide to a limited extent in an axial direction in said opening under sufficient axial pressure, said inner part having a yieldable liner in the inside thereof at the outer end of the threaded part, said liner being forcibly engaged by the end of the neck of a collapsible tube on which the cap is screwed regardless of the contact of the outer part with a shoulder of such tube to form sealing contact with the tube, said inner part sliding axially of the outer part when screwed into place after such contact.

3. A two-part collapsible tube cap comprising an outer part having an end wall having a central opening therein and having a depending skirt terminating in a bevelled edge contacting the shoulder of a collapsible tube when the cap is in use, an internally threaded inner part having a closed end and frictionally fitted in the opening to slide therein under sufficient axial pressure thereon, and a yieldable liner in said inner part at said closed end engaging the neck end of the tube to seal the tube, said inner part sliding in the opening to effect the seal when the cap is screwed into place after the bevelled edge is in engagement with the tube shoulder.

4. A two-part container cap comprising a generally cup-shaped outer part having an end wall provided with an opening and a depending skirt engaging the shoulder of a collapsible tube when the cap is in use, an internally threaded inner part frictionally fitted in the opening and projecting above the upper surface of the end wall and below the lower surface of the end wall and forming the sole means for supporting the outer part, and a yieldable liner in the inner part engaging the neck end of the tube to seal the tube when the cap is in use, said inner part sliding in the opening to effect the seal when the cap is screwed into place after the bevelled edge is in engagement with the tube shoulder and axial movement of the outer part is prevented by said shoulder.

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