Sept. 4, 1934. J. A. GRAY 1,972,481

CAP MOUNTING MEANS

Filed March 10, 1933

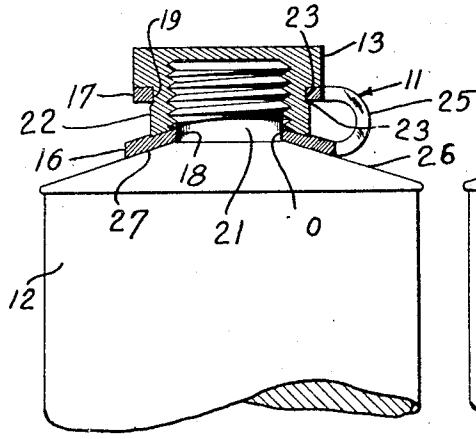


FIGURE 2.

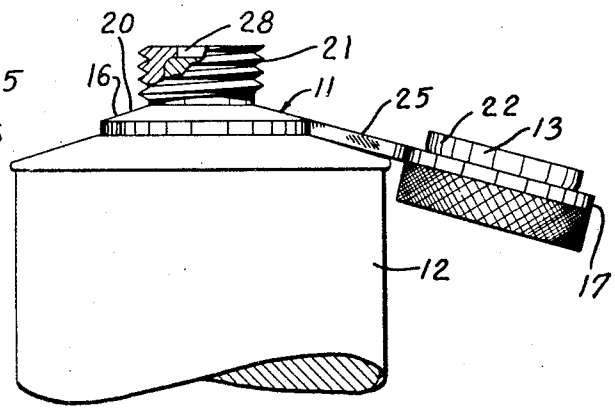


FIGURE 3.

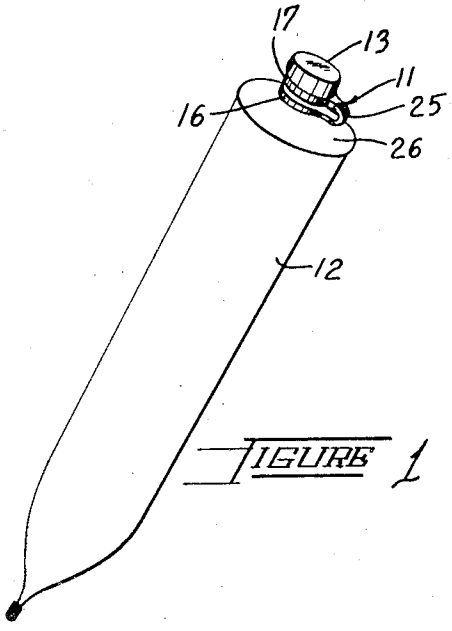


FIGURE 1.

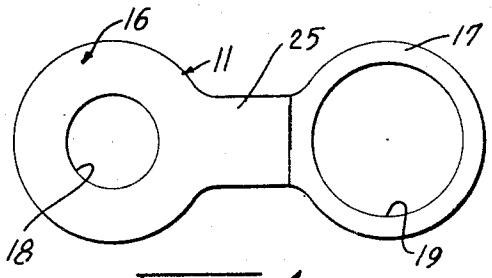


FIGURE 4.

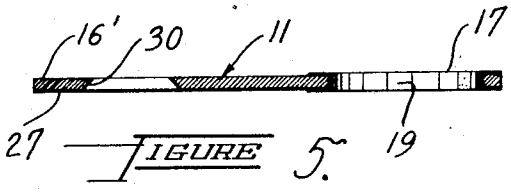


FIGURE 5.

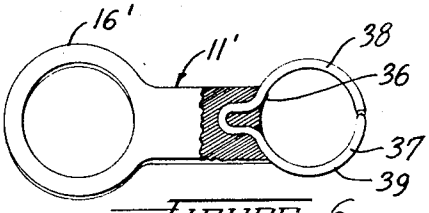


FIGURE 6.

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CAP MOUNTING MEANS

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5 Claims. (Cl. 221—60)

The invention relates to a cap mounting means, particularly of the type used for providing an auxiliary support for the cap or closure member of small containers such as collapsible metal tubes, medicine bottles, jars and the like.

An object of the invention is to provide a means of the character described which will serve both as an auxiliary supporting means for the cap to prevent the latter's disassociation with the container upon being removed therefrom and as a guiding means for effecting a proper replacement of the cap on the container.

Another object of the invention is to provide a means of the character described which avoids the necessity of using metal for any of the portions thereof and permits of the attachment of the means to the container without the requirement of any special attaching parts on the container.

A further object of the invention is to provide a means of the character described which may be easily and readily applied to a collapsible tube container or dispenser and is so designed that it will harmonize with the container form and add to the appearance of the article when applied thereto.

A still further object of the invention is to provide a means of the above mentioned character, wherein the number of parts used is reduced to an absolute minimum and the arrangement of the means is one of ideal simplicity and provides for a very low cost of manufacture and production.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing:

Figure 1 is a perspective view of a collapsible tube dispenser having provided thereon the mounting means of my invention.

Figure 2 is an enlarged fragmentary view partly in section of the parts as shown in Figure 1 and illustrating the cap of the discharge tube in closed position over the end of the tube.

Figure 3 is a view similar to Figure 2 but with the cap of the tube released from over the discharge opening of the latter.

Figure 4 is an enlarged plan view of the mounting means of my invention.

Figure 5 is a sectional view of the mounting means taken substantially on the plane of the longitudinal center line of the device shown in Figure 4.

Figure 6 is a plan view of a modified form of the invention.

The invention resides, in brief, in a novel connector means 11 associated with a discharge tube 12 and a cap 13 therefor and provides for an auxiliary attachment between the tube and cap which serves to guide the latter to and from engaging relation with the discharge orifice of the tube and to prevent disassociation of the cap and tube in the disengaged relationship. In the preferred embodiment of the invention, the means as illustrated in Figures 1 to 5 inclusive comprises a strip of resilient material such as rubber, preferably with plain flat sides and with the end portions 16 and 17 formed for attachment with the tube and cap respectively. As here shown these ends are in the form of loops having openings 18 and 19 and arranged respectively for encircling the stem portion 21 of the tube and the outer periphery 22 of the body of the cap. To prevent disconnection of the strip 11 from the periphery of the cap, the latter is preferably provided on the outer side thereof with an annular depression 23 in which the loop 17 is seated, it being understood that the loop 17 at the opening 19 is normally of less diameter than the periphery of the cap so that the loop must be stretched in placing it in position on the cap, the engagement however between the loop and cap being such that while the one is securely connected to the other, the cap may be freely rotated in the loop.

Connection of the loop 16 of the strip with the stem 21 of the tube is arranged to be effected in a particularly efficacious manner. As will be clear from the drawing, the tube is provided at the lower end of the stem 21 with a conical portion which diverges toward the body of the tube. It is on such portion 26 that the loop 16 is arranged to be set, and accordingly the under side 27 and preferably the entire loop is formed cone-shaped so that the latter may fit snugly and smoothly on such tube portion with the sides of the opening 18 engaging the threaded sides of the stem at the base thereof. In this manner not only will the loop be unobtrusively disposed on the container and be in full harmony with the design thereof, but by providing, as I prefer, for a tight fit between the loop and the stem, practically the entire face 27 of the loop will be forced to grip the portion 26

and thereby cause the loop to be rigidly held against accidental rotation about the stem. Preferably the edge face 30 of the loop 16 at the opening 18 is beveled so that the circumference of the opening at the upper side of the strip is smaller than the circumference at the under side of the strip, thereby increasing the downward pressure of the loop against the portion 26 and at the same time insuring complete contact of all parts of the face 27 with the portion 26. It may be also mentioned in connection with the foregoing that each of the circumferences aforesaid is less than the circumference of the stem. Should it be desired to actually lock the loop 16 to the container, a suitable adhesive may be applied on the abutting faces of the loop and portion 26. It is also to be noted that the loop 16 may be engaged by the lower rim of the cap when the latter is screwed down over the stem to thus add to the effectiveness of the seal between the cap and container when the orifice of the container is closed.

Since the connection between the cap and the stem 21 of the tube is generally as here shown of a threaded type, rotation of the cap with respect to the loop 17 of the strip is necessarily effected in securing the cap to the tube. In order that the frictional resistance to such rotation between the cap and the strip may be reduced to a minimum, the loop 17 is preferably treated with a suitable surface coating such as a cellulose substance or lacquer or the like, to provide on the portion of the loop in contact with the cap a low resistance friction bearing surface. The coating further serves at the same time to provide the loop with a substantially non-elastic shell which prevents the accidental stretching of the loop from the depression 23.

It will now be clear that with the loop secured to the end of the tube and cap respectively, the strip will upon operative engagement of the cap and tube, be forced to assume a folded position as shown in Figures 1 and 2. Upon disengagement of the tube and cap, the latter will be moved, due to the strain in the rubber strip urging the same to assume its inherent form, to a position substantially laterally adjacent the end of the discharge tube. A desirable feature of the arrangement is that the intermediate portion 25 of the strip is reduced in width from that of the end or loop portions so as to facilitate the flexing of the strip. Also the length of the intermediate portion 25 is such, relative to the size and thickness of the end portions, that the strip when bent to permit engagement of the cap and tube will tend to fold in such manner as to correctly and precisely position the ends of the tube and cap for engagement. Of importance in contributing to the effectiveness of this arrangement is that the center of the openings 18 and 19 are aligned transversely along a line at right angles to the bending axis of the strip. Due to this alignment and the alignment of the cap and stem when operatively connected, the cap upon movement from an open to a closed position will be guided and urged to move along a path radially disposed to the axis of the tube to thereby make the return of the cap to a position over the end of the tube the course of least resistance.

A modified form of the invention is disclosed in Figure 6. As here shown the mounting means comprises a flat strip 11' of rubber or other suitable material having an end 16' formed as in the first embodiment for connection to the stem, or suitable receiving portion of a container, and being provided adjacent the other end 36 thereof with a spring wire loop or ring 37 for connection to the cap or closure of the container. Preferably the loop 37 is formed with opposed concave jaw portions 38 and 39 which are open at the outer end so as to permit enlargement of the loop against the spring resistance. The inner portion of the loop is embedded or molded directly in the end 36 of the strip 11'. While the provision of a wire loop is here shown at but one end of the strip, it will of course be evident that in other instances the strip may be provided with such loops at each of its ends for attachment to both the container and closure therefor.

It will now be clear that the mounting means of my invention, while herein shown as particularly adapted to the retention of a closure cap on a collapsible tube, is readily and equally well adapted to caps or closures of other containers such as medicine bottles, jars, etc. It will also be clear that the mounting means is one of ideal simplicity and that due to its general configuration lends itself to ready manufacture. Due to the normally flat contour of the exposed surface of the means the same may be easily kept in clean and sanitary condition throughout the use of the container on which the means is used.

I claim:

1. In combination with a collapsible tube dispenser having an inclined end wall and a stem extending from said wall and a cap releasably engaged on said stem, a blank of rubber provided with opposite end portions formed for engagement with the stem and cap, the end of the blank arranged for engagement with said stem being provided with an opening therethrough for encircling said stem and with the sides of said opening tapered convergently towards the outer end of the stem to cause said end portion to be urged against aforesaid end of the tube.

2. In combination with a container and a cap releasably secured thereto for covering the discharge opening thereof, a blank of rubber secured adjacent an end thereof to said container, the other end of said blank being provided with an opening for encircling the periphery of said cap, and means comprising a smooth hard shell provided on said last named end surrounding said opening for engaging said cap periphery and providing a low frictional resistant bearing therefor.

3. In combination with a collapsible tube dispenser and a cap releasably secured thereto for covering the discharge opening thereof, a blank of rubber secured adjacent an end thereof to said tube, the other end of said blank being provided with an opening for encircling the periphery of said cap, and a smooth substantially inelastic surface coating on said last mentioned end for reducing the bearing friction between said end and cap and preventing accidental expansion of said end and removal thereof from said cap.

4. In combination with a collapsible tube dispenser having an end wall and a stem portion extended from said end wall and a cap releasably mounted over said stem, a blank of flexible compressible material secured to said cap and around said stem and against said end wall and positioned on disposition of said cap over said stem to engage and form a sealing means between the end of said cap and said end wall.

5. In combination with a collapsible tube dispenser or the like having a stem about the discharge opening thereof, a cap engageable with said stem for closing said opening and provided

with a reduced peripheral portion between the ends thereof, a strip of rubber secured at one end to said dispenser adjacent said stem and provided at the other end with an opening arranged to fit around said cap within said reduced peripheral portion and being of a diameter normally less than that of the unreduced cap periphery, and means comprising a substantially inelastic smooth hard shell provided on said last named end about said opening and serving to engage with and provide a low frictional resistant bearing for said cap and maintain said end against accidental expansion and removal from said reduced cap portion.

JOHN A. GRAY.