

Sept. 10, 1935.

C. J. TERRILL

2,014,093

CLOSURE CAP

Filed Feb. 25, 1930

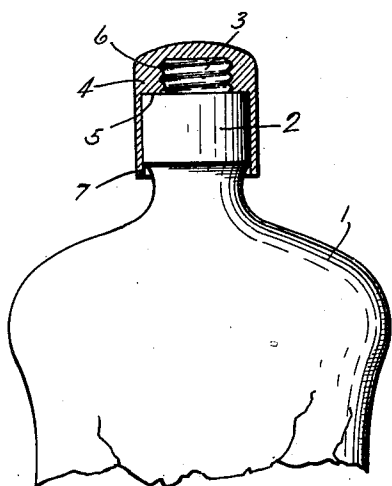


Fig. 1.

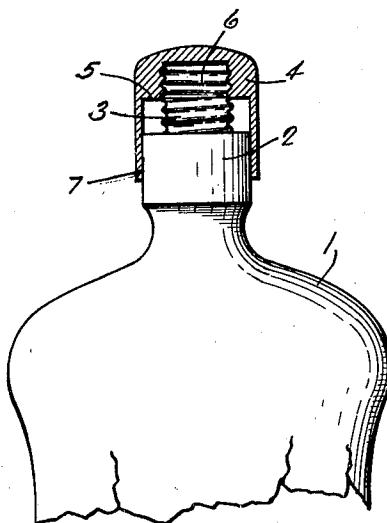


Fig. 2.

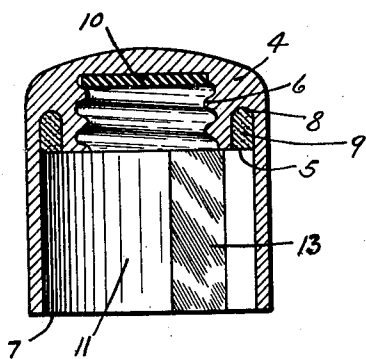


Fig. 3.

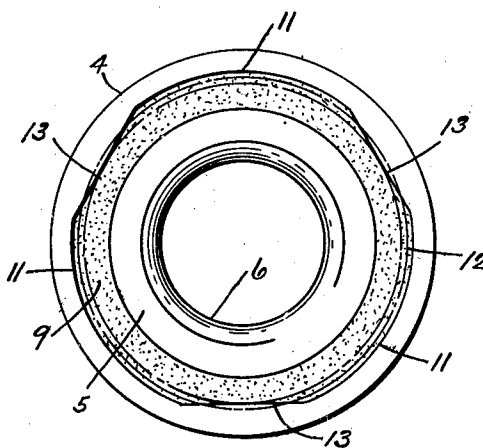


Fig. 4.

Inventor
Clair J. Terrill
By *J. L. Walker*
Attorney

UNITED STATES PATENT OFFICE

2,014,093

CLOSURE CAP

Clair J. Terrill, Dayton, Ohio, assignor to The Kurz-Kasch Company, Dayton, Ohio, a corporation of Ohio

Application February 25, 1930, Serial No. 431,127

3 Claims. (Cl. 215—43)

This invention relates to receptacle closures and more particularly to a duo-type cap adapted for both slip and screw threaded engagement with a receptacle.

5 The purpose of the invention is to provide in a single closure cap both slip and positive engagement features, which will be neat in appearance, simple in construction, easily applied and detached, adapted to form a tight joint, and unlikely to get out of repair.

10 It is desirable that bottles and other containers employed for toilet preparations, chemicals, pharmaceutical preparations, and the like, be provided with an easily removable closure cap when frequently used, and yet equally desirable that the closure cap be locked or positively engaged with the receptacle for storage or shipment or when used only at long intervals.

15 The present invention provides a single closure cap which may be used at will either as a temporary closure slidably engageable with the receptacle or employed as a more permanent closure by screw-locking it in engagement with the receptacle. The present closure cap, which is preferably, though not necessarily, molded from phenolic condensation or other plastic molding material, is provided with a counterbore forming an interior shoulder beyond which the bore is screw threaded for engagement with a threaded terminal extension upon the receptacle while the outer portion of the bore of larger diameter is unthreaded and is of greater axial extent than the threaded portion whereby it is enabled to have a slip fit engagement with an enlarged portion of the receptacle beyond the screw threaded terminal prior to the engagement of such terminal with the smaller threaded portion of the bore. In the event that it is desired to interlock the closure cap with the receptacle, it is merely necessary to rotate the cap thus effecting interengagement of the respective threaded portions of the cap and receptacle. To insure a tight slip fit, the interior wall or skirt of the cap is slightly deformed from true circle formation, thus necessitating a slight distortion of the wall of the cap in its engagement with the corresponding portion of the receptacle.

20 With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof and the mode of operation or their equivalents as hereinafter described and set forth in the claims.

25 Referring to the accompanying drawing where-

in is shown the preferred but obviously not necessarily the only form of embodiment of the invention, Fig. 1 is a sectional view of a closure cap embodying the present invention, applied to a receptacle with which it is interlocked by the screw threaded engagement of the receptacle terminal within the inner end of the counterbore of the cap.

Fig. 2 is a similar view of the cap in its temporary or slip engagement relation with the receptacle.

Fig. 3 is an enlarged detail sectional view of the closure cap forming the subject matter hereof.

Fig. 4 is a greatly exaggerated bottom plan view of the cap illustrating diagrammatically its relation to the engaged surface of the receptacle.

Like parts are indicated by similar characters of reference throughout the several views.

Referring to the drawing, 1 indicates a bottle or receptacle such as is employed for pharmaceutical or toilet preparations, hand lotions, and the like, the neck of which is provided with a cylindrical head 2 surmounted by a screw threaded terminal extension 3.

25 The closure cap for engagement with such receptacle comprises a cap 4, the interior of which is counterbored to form a shoulder or transverse annular seat 5. Beyond this shoulder or seat 5, the smaller portion of the interior bore is screw threaded as at 6 for engagement with the screw threaded terminal extension 3 of the receptacle. The outer and larger portion 7 of the bore of the cap 4 approximately agrees in diameter with that of the head portion 2 of the receptacle and is of greater axial extent than such screw threaded terminal extension 3 of the receptacle whereby the larger portion 7 of the cap will extend into overlapping relation with the cylindrical head 2 prior to the engagement of the threaded extension 3 within the inner threaded bore 6 of the cap. Such relation of the cap and receptacle is illustrated in Fig. 2. The dependent side walls or skirt of the cap 4 has sliding or slip fit upon the cylindrical head 2, enabling the cap to be easily and quickly applied and removed from the receptacle for temporary closure thereof. When it is desired to permanently close the receptacle, either for shipment or for storage or when it is to be undisturbed for a considerable period of time, the cap is positively engaged with the receptacle by rotation whereby the threaded terminal extension 3 is projected within the interior threaded bore 6 of the cap. In this adjustment the shoulder or seat 5 is brought into bearing contact with the upper face of the cylindrical

head 2 thus making a sealing contact as is illustrated in Fig. 1. To insure a tight sealing contact, the shoulder 5 may be grooved or recessed as indicated at 8 in Fig. 3 to receive a sealing gasket 9 of rubber or other yielding sealing material. As a further precaution against leakage, a second sealing gasket 10 may be seated within the inner end of the screw threaded portion 6 of the bore of the cap, which gasket 10 in the final adjustment of the cap makes sealing contact with the terminal end of the screw threaded extension 3. While in some cases both of these sealing gaskets 9 and 10 may be found desirable, for ordinary use one or the other may be omitted.

Ordinarily the dependent side walls of the cap are of circular contour agreeing with the contour of the head 2. This permits the cap to engage such head with an axial sliding movement when the cap is to be only temporarily applied, as in Fig. 2, and also to engage the head 2 with rotary movement when the screw threaded portions of the cap and receptacle are to be interengaged as in Fig. 1. However to insure a tight gripping slip engagement of the cap with the cylindrical head 2, the wall of the cap may be slightly distorted out of a true circular form thus requiring a slight deformation of the cap in its application to the head 2 of the receptacle. A cap molded from phenolic condensation or other commercial plastic molding material will possess sufficient resiliency to permit the necessary distortion.

In the exaggerated end view Fig. 4, the side wall of the cap is shown as comprising a series of alternating arcuate and flat faces. The arcuate portions 11 are of slightly greater radius than that of the cylindrical head 2 which is indicated by the dot and dash line 12 in Fig. 4. The intermediate flat faces 13 are radially spaced slightly less than the radius of the cylindrical head 2. This necessitates a distention of the cap at points coincident with the flat faces 13, which distention is compensated for by a slight inward distortion of the arcuate faces 11. Thus the cap is under tension at all times while engaged with the cylindrical head 2. The outward distention of the cap coincident with the flat faces 13 and inward distortion of the wall coincident with the arcuate faces 11 causes the cap to conform throughout substantially its entire circle with the contour of the head 2. The gripping pressure thus afforded is sufficient to prevent accidental displacement of the cap, but is not sufficient to cause any difficulty in removing or replacing the cap upon the receptacle.

Obviously the disposition of the male and female threaded portions may be reversed with the male portion interiorly of the cap and the female portion within the neck of the receptacle without departing from the spirit of the invention. Such mere reversal being so apparent and obvious is deemed not to necessitate illustration.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific details shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect and the invention is, therefore, claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. The combination with a receptacle including a threaded extremity and a contiguous unthreaded portion of greater diameter, of a closure cap having threaded and frictional slip engagement with the receptacle, said cap being formed from resilient material and having therein a counterbored recess, the inner portion of which is screw threaded, the outer portion of which is unthreaded and of greater axial extent than the threaded portion, and of non-circular contour.

2. A closure for use with a container having a threaded extremity and a contiguous unthreaded portion of greater diameter, comprising a frictional slip cap for the container having therein a counterbored recess, the inner smaller portion of which is internally screw threaded, the outer portion of which is unthreaded and of greater axial extent than the threaded portion and adapted for slip engagement with a container throughout its path, and relatively spaced flat frictional surfaces within the outer portion of the recess, engageable with the unthreaded portion of the container, and a sealing gasket seated in the inner end of the threaded portion.

3. The combination with a receptacle including a threaded extremity and a contiguous unthreaded portion of greater diameter, of a closure cap for the receptacle formed from resilient material and having a plurality of arcuate interior faces arranged in circular sequence and intermediate flat faces extended inwardly beyond the circular line of the arcuate faces for sliding frictional engagement with a substantially circular portion of the receptacle, the diameter of which is slightly greater than that of the cap between said flat faces, thus necessitating distortion of the cap, the cap having a smaller screw threaded portion at its inner end to engage the threads of the extremity of the receptacle.

CLAIR J. TERRILL.