Jan. 2, 1940. R. W. WILSON 2,185,284

CLOSURE FOR CONTAINERS

Filed Feb. 16, 1934 2 Sheets-Sheet 1

Fig. 1

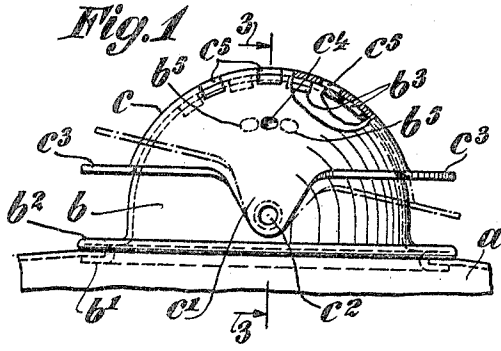


Fig. 4

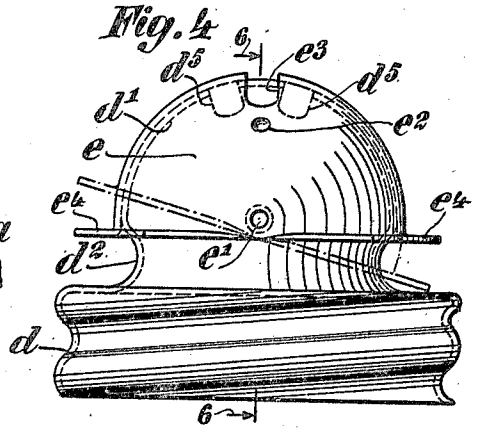


Fig. 2

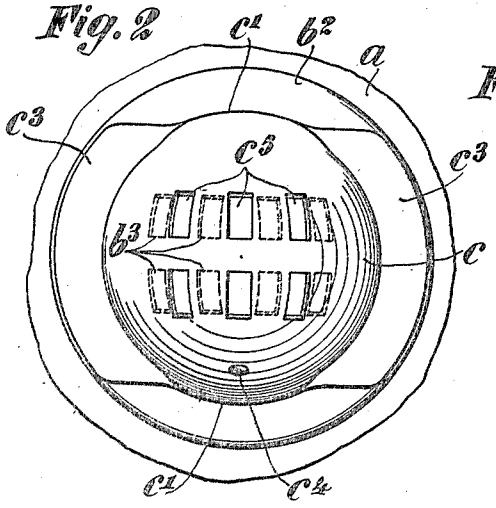


Fig. 5

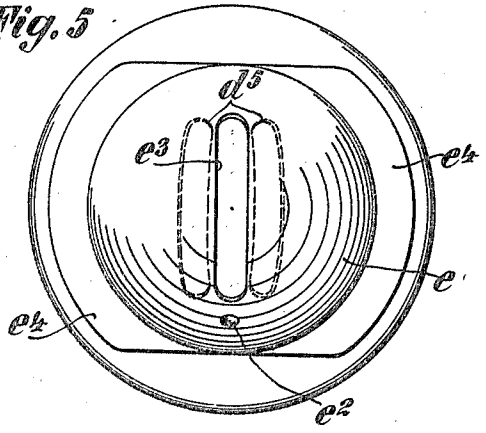


Fig. 3

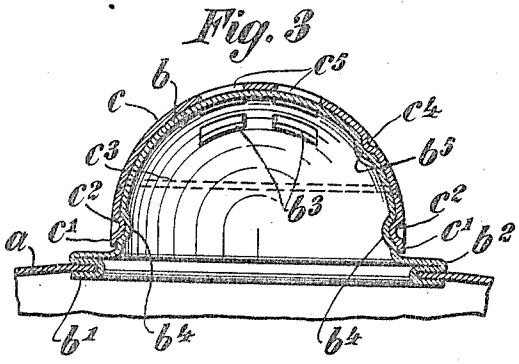
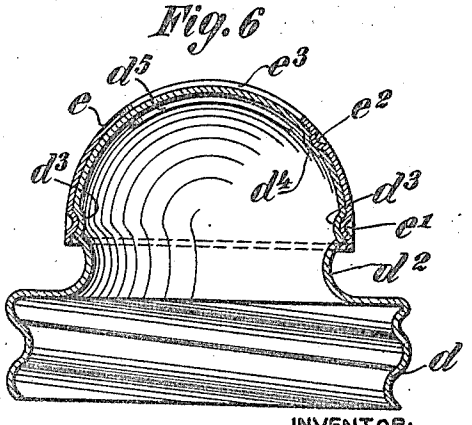


Fig. 6



INVENTOR:
Ralph W. Wilson,
BY
Redding, Greeley, O'Shea and Campbell
HIS ATTORNEYS

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Fig. 10.

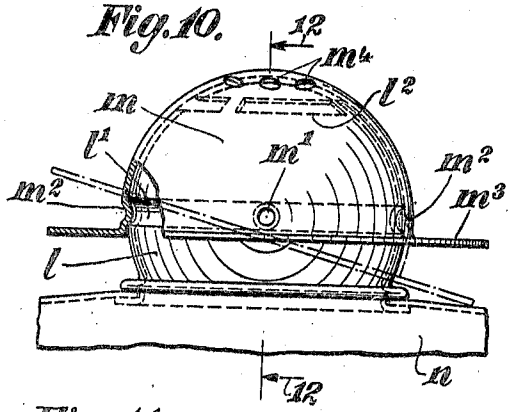


Fig. 7.

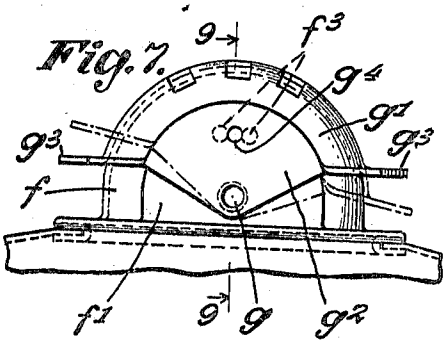
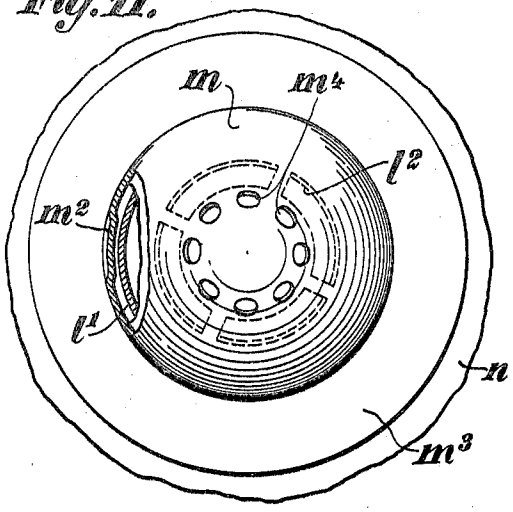


Fig. 11.



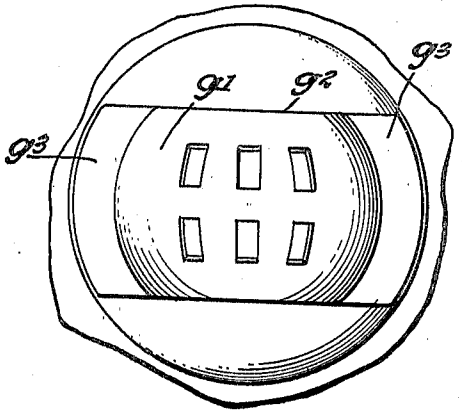
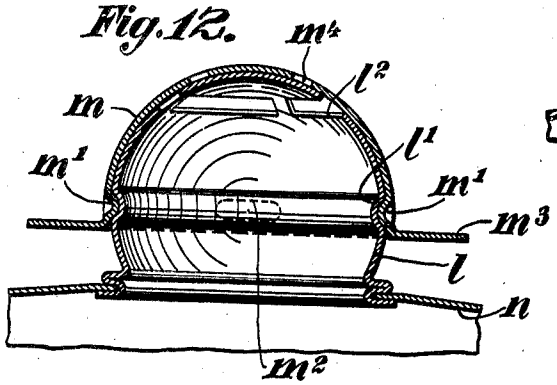


Fig. 8.

Fig. 12.



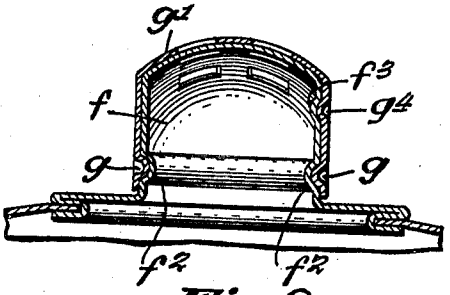


Fig. 9.

INVENTOR:
Ralph W. Wilson,
BY
Redding, Greeley, O'Shea & Campbell
HIS ATTORNEYS

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UNITED STATES PATENT OFFICE

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CLOSURE FOR CONTAINERS

Ralph W. Wilson, New York, N. Y.

Application February 16, 1934, Serial No. 711,475

7 Claims. (Cl. 221—62)

This invention relates to a simple and inexpensive closure for containers particularly useful in the cosmetic and pharmaceutical field, of the type in which a movable cap is permanently affixed to the container but is readily manipulable to open or close the orifices or slots through which the contents are dispensed. More particularly, the invention is concerned with the type of closure in which means are provided to retain the cap yieldingly in predetermined positions. The type of closure with which the improvements are concerned is to be distinguished broadly from the so-called slip caps which are slidable on the neck to open or close the dispensing opening and which are widely used because of their inexpensive construction. Contrariwise, the improvements are to be likened broadly to a popular type of closure in which a slidable shutter is mounted in the neck-shell of a container to control the dispensing opening. The improved closure offers substantially all of the advantages in use of such last-named device but by reason of its simpler construction is much less expensive to manufacture costing practically no more than the slip cap, the users' objections to which are generally recognized.

A further object of the invention is to provide in closures of the character indicated a cap which is readily manipulable by one hand when the container itself is supported by that same hand thereby contributing greatly to the convenience in use, as is known.

In accordance with the invention, the neck-shell is formed with a closure formed as a portion of a sphere in which are provided the usual dispensing openings of any desired number, area, and shape, depending somewhat on the character of the contents of the container. With this neck-shell is nested a similar cap engaged with the neck-shell by means which permit it to be moved thereon so that openings formed in the cap may be brought into registry with one or more of the openings in the neck-shell when the contents are to be dispensed. A detent is embodied in the construction so as to maintain the cap yieldingly in at least one predetermined position with respect to the shell as, for instance, when the openings in the two members are out of registry. Reference is now to be had to the embodiments illustrated in the accompanying drawings wherein:

Figure 1 is a view in side elevation, parts being broken away, and showing a hemispherical cap nested on a hemispherical shell and adapted to be rocked about diametrically opposed pivots, detents being provided to restrain the cap in position where the dispensing openings are closed and opened, respectively.

Figure 2 is a view in plan of the construction illustrated in Figure 1.

Figure 3 is a view in vertical section taken on the plane indicated by the line 3—3 of Figure 1 and looking in the direction of the arrows.

Figure 4 is a modified construction showing the improved closure applied to a screw-top with the fixed pivots substantially on the equator of the nested hemispheres instead of, as in Figure 1, somewhat below the equator.

Figure 5 is a view in plan of the closure shown in Figure 4 and indicating by contrast with Figure 2 different forms of dispensing openings.

Figure 6 is a view in vertical section taken on the plane indicated by the line 6—6 of Figure 4 and looking in the direction of the arrows.

Figure 7 shows in side elevation a further modification differing essentially from that shown in Figure 1 only in that the walls of the nested hemisphere adjacent the pivot pins are flattened.

Figure 8 is a view in plan of the closure shown in Figure 7.

Figure 9 is a view in vertical section taken on the plane indicated by the line 9—9 of Figure 7 and looking in the direction of the arrows.

Figure 10 is a view in side elevation of a further modification in which the diametrically opposed pivot pins rest in a circumferential groove, a part of the cap being broken away to show the engagement of a suitable detent with the groove.

Figure 11 is a view in plan of the closure shown in Figure 10, a part of the cap and shell being broken away to show the relation of a detent with the groove.

Figure 12 is a view in vertical section taken on the plane indicated by the line 12—12 of Figure 10 and looking in the direction of the arrows.

It is to be understood that the improved closure may be formed for attachment to containers of any type and of any material although, at the present time, the widest field of usefulness is offered for association of the closure with tin containers. As shown in Figures 1 and 3 the breast of a conventional tin container is indicated at a and the improved neck-shell at b, this shell being engaged with the breast of the container in accordance with known practice by means of a flange b', a beading b^2 being formed to present a sightly finish. The neck-shell b is of hemispherical form and provided adjacent its end with openings b^3 which may be of any desired number, area and form depending upon the particular requirements. In nested relation

to the hemispherical shell b is an outer cap c, the inner surface of which embraces snugly the outer surface of the hemispherical shell so as to give a contact closure of sufficient tightness for commercial purposes. The contents of the container may be powder, paste or liquid. In the forms illustrated in Figures 1–3 the cap c is formed with downwardly extending lugs c' at diametrically opposed points, these lugs extending below the equator of the hemispherical cap. The lugs c' at opposite sides of the cap have punched therein dimples or nibs c^2, the convex exterior surfaces of which are received in dimples or recesses b^4 punched in the shell b at diametrically opposite points. The engagement of the nibs c^2 with the dimples b^4 provides the cap c with opposed fixed pivots about which the cap may rock on the shell b. The cap c has formed thereon along its edge, extending away from the lugs c', horizontal flanges c^3 which are not only sightly but afford convenient finger pieces to facilitate rocking of the cap about the pivots c^2 in one direction or the other. In constructions where such members as the flanges c^3 do not serve readily as stops to limit the rocking movement of the cap it is advisable to provide detents so that such rocking movement of the cap will be checked when the dispensing openings are aligned. For instance, as shown in Figures 1–3, the cap may be provided with a dimple c^4 preferably at a point between one of the pivots c^2 and the pole of the cap and this dimple will engage yieldingly any one of three juxtaposed cooperating recesses b^5 stamped in the shell b. Engagement of the dimple c^4 with the middle recess b^5 will hold the cap in its normal position with the flanges c^3 substantially horizontal and at this time the openings c^5 in the cap will be out of alignment with the openings b^3 in the shell. When the cap is rocked to the right as indicated by dotted lines in Figure 1 the detent c^4 will be brought into engagement with the recess b^5 which is placed at the right. Similarly, if the cap is rocked to the left as viewed in Figure 1, the detent c^4 will be brought into engagement with the recess b^5 at the left. Thus, when the cap is rocked to the right its openings c^5 will be brought into registry with openings in the shell and if the cap is rocked to the left from its normal position the openings c^5 will be brought into alignment with other openings in the shell, the closure in either event being in condition for dispensing of the contents.

In Figures 4–6 a closure embodying the invention is shown as incorporated in a screw-cap d which, as will be understood, may be threaded onto the screw-neck of a container. In this form, as in the previous embodiment, there is provided a hemispherical neck-shell d' which may be formed integral with the screw top d and connected therewith by a neck d^2 of any desired sightly configuration. The cap e is not provided with downwardly extending lugs but is formed with diametrically opposed dimples e' located substantially on the equator of the hemisphere and adapted to be received, as heretofore explained, in diametrically opposed recesses d^3 formed in the shell d'. A dimple e^2 is struck in the cap e for cooperation with a recess d^4 in the shell to hold the cap in its median position wherein its dispensing slot e^3 is out of registry with the slots d^5 in the shell. In this embodiment the flanges e^4 by which the cap may be conveniently rocked on the pivots e' are adapted to engage the screw top d when the cap is rocked to a sufficient extent to bring the slot e^3 into registry with one or the other of the slots d^5 in the shell d'. Since the flanges thus act as limit stops it is unnecessary to provide additional detent means when the dispensing openings are aligned. The user, of course, need give no thought to their alignment since the cap will automatically be checked in its travel at the appointed place.

The embodiment illustrated in Figures 7–9 is essentially similar to that shown in Figures 1–3 except that the shell f has its sides f' flattened in proximity to the diametrically opposed recesses f^2 which receive the pivot members g of the cap g'. Similarly, the cap g' has its side walls flattened as at g^2 in proximity to the pivot members g so as to nest snugly with the flattened walls of the shell f. The remainder of the construction is in all respects similar to that illustrated in Figures 1–3 and fully described hereinbefore. Flanges g^3 on the cap facilitate its rocking movement to the right or left from its median position on the pivots g. A detent g^4 formed as a dimple in one of the flattened walls g^2 of the cap may engage any one of three recesses f^3 in the juxtaposed flattened wall f' of the shell, as heretofore described.

In the embodiment illustrated in Figures 10–12 the hemispherical shell l is formed with a circumferential groove l' substantially at the equator. The cap m is formed with diametrically opposed nibs m' constituting the pivot pins. In this embodiment assembly of the cap on the shell is greatly facilitated because when it is pressed down into nested relation the nibs m' spring into the groove l' thereby retaining the cap on the shell and affording a pivotal axis on which the cap may be rocked. It is evident that the angular relation of the cap to the shell in this initial assembly, about the vertical axis, is immaterial. To hold the cap in predetermined relation to the shell, that is to say, in what will be called its normal position with the flange m^3 substantially horizontal, a detent m^2 of any suitable form may be pressed in the cap in proper relation to the groove l' with which it cooperates. A similar detent m^2 indicated in dotted lines in Figure 10 may be provided at the other side of the cap in diametrically opposed relation to the detent m^2. These detents are formed on an axis of the shell substantially at right angles to the axis of the pivot points m'. The shell l may be formed with segmental openings l^2 with which may align openings m^4 in the cap when the cap is rocked on the pivots m', all as described with reference to the embodiment illustrated in Figures 10 and 12. However, when the detents m^2, m^2, rest in the circumferential groove l' the openings m^4 in the cap are out of alignment with the openings l^2 in the shell. The circular flange m^3 affords a convenient finger piece to facilitate rocking of the cap on its pivots m'. This flange may serve as a stop to limit the rocking movement of the cap, through its engagement with the breast n of the container.

While the caps illustrated herein are shown as rocking on a pivotal axis in either direction it will be understood that in some forms it might be preferably to provide for a rocking movement in one direction only and such a condition is contemplated.

It will be clear to one skilled in the art that changes in mere matters of design may be made without departing from the spirit of the invention, the underlying principle of which resides in the provision of an inexpensive, simple and

highly useful closure which will meet the rigid requirements of the manufacturer as well as the convenience of the user.

I claim as my invention:

1. A closure for containers comprising a neck-shell having its end formed as a portion of a sphere in which is provided a dispensing opening, a cap of similar form having a dispensing opening therein mounted in nested relation to the shell, means to engage the cap with the shell with capacity for relative movement therebetween to bring the openings into or out of alignment as required, and a flange on the edge of the cap constituting a finger piece to facilitate movement thereof and engageable with a portion of the container to serve as a stop for limiting movement of said cap.

2. A closure for containers comprising a hemispherical neck-shell having dispensing openings therein and formed with diametrically opposed recesses, a hemispherical cap of similar form having dispensing openings therein mounted in nested relation to the shell, diametrically opposed nibs formed in the cap and engaged with said recesses to constitute a pivotal mounting for the cap on which it is rockable to bring the openings into or out of alignment as required, a detent interposed operatively between the cap and shell to hold the cap yieldingly in a predetermined position with relation to the shell, and finger pieces carried with the cap to facilitate movement thereof.

3. A closure for containers comprising a neck-shell having its end formed as a portion of a sphere in which is provided a dispensing opening and formed with diametrically opposed recesses, a cap of similar form having a dispensing opening therein mounted in nested relation to the shell and diametrically opposed nibs formed in the cap and engaged with said recesses to constitute a pivotal mounting for the cap on which it is rockable to bring the openings into or out of alignment as required, the walls of the shell and the cap in proximity to the said pivots being flattened.

4. A closure for containers comprising a neck-shell having its end formed as a portion of a sphere in which is provided a dispensing opening, a cap of similar form having a dispensing opening therein mounted in nested relation to the shell, means to engage the cap with the shell with capacity for relative movement therebetween to bring the openings into or out of alignment as required, and a detent interposed operatively between the cap and shell to hold the cap yieldingly in predetermined relation to the shell, flanges formed on the edge of the cap movable with said cap into and out of engagement with a portion of the container and constituting limit stops to check the relative movement of the cap with respect to the shell.

5. In combination with a container, a hemispherical dome carried by the neck of the container and being apertured at its top and inset to form a shoulder which surrounds the dome, a hemispherical closure superimposed on the dome and having an aperture which in one position registers with that of the dome and having a pair of diametrically opposed outwardly extending finger grips which are engageable with the shoulder, said dome and closure having diametrically opposed integral interengaging parts providing a pivotal mounting for the closure, and the dome and closure having integral parts which have snap-like interengagement with one another whereby to latch the dome in either open or closed positions.

6. In combination with a container, a dome formed as a portion of a sphere carried by the neck of a container and being apertured at its top and inset to form a shoulder which surrounds the dome, a closure superimposed on the dome and similar in form thereto, and having an aperture which in one position registers with that of the dome and having a pair of diametrically opposed outwardly extending finger grips which are engageable with the shoulder, said dome and closure having diametrically opposed integral interengaging parts providing a pivotal mounting for the closure, and the dome and closure having integral parts which have snap-like interengagement with one another whereby to latch the dome in either open or closed positions.

7. A closure for containers comprising a neck-shell having its end formed as a portion of a sphere and in which is provided dispensing openings and formed with diametrically opposed recesses, a cap of similar form having dispensing openings therein mounted in nested relation to the shell, diametrically opposed nibs formed in the cap and engaged with said recesses to constitute a pivotal mounting for the cap on which it is rockable to bring the openings into or out of alignment as required, a detent interposed operatively between the cap and shell to hold the cap yieldingly in a predetermined position with relation to the shell, and finger pieces carried with the cap to facilitate movement thereof.

RALPH W. WILSON.