May 20, 1969 D. SEIDLER 3,445,171

LIPSTICK CONTAINER WITH SELF-CONTAINED CLOSURE

Filed Oct. 16, 1967 Sheet 1 of 2

FIG. 2

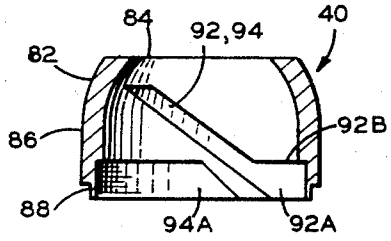


FIG. 2A

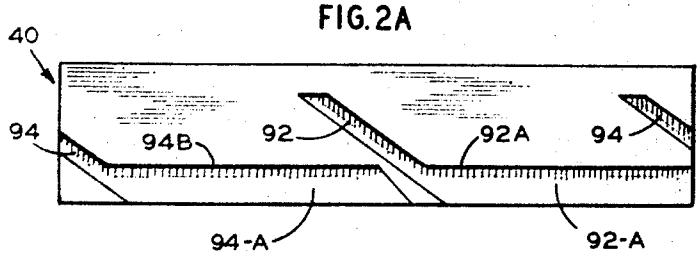


FIG. 3

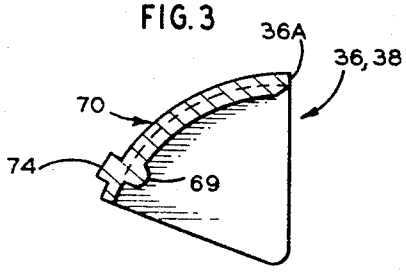


FIG. 3A

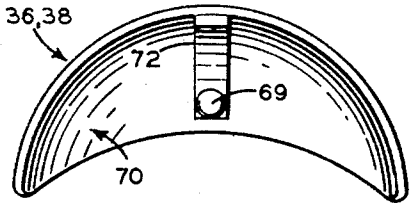
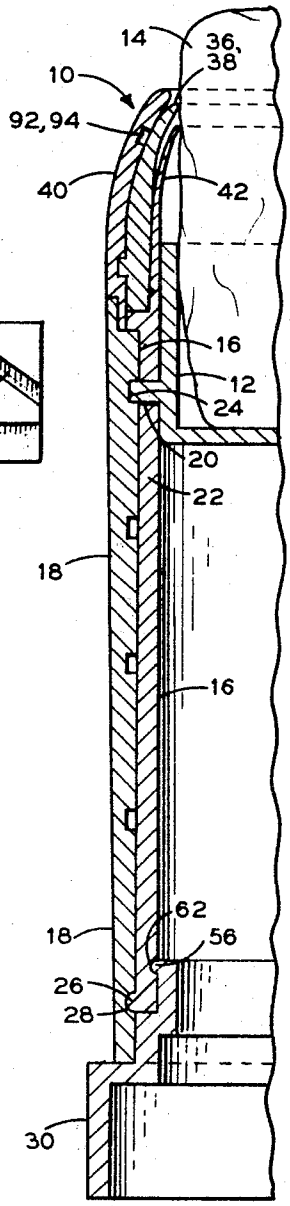


FIG. 1



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LIPSTICK CONTAINER WITH SELF-CONTAINED CLOSURE

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FIG. 4

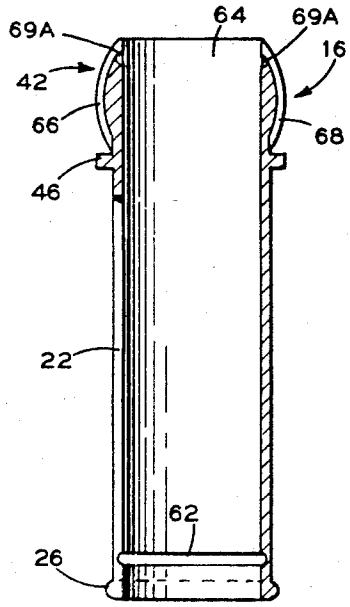


FIG. 5

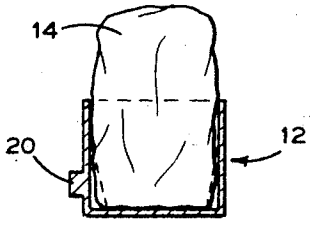


FIG. 6

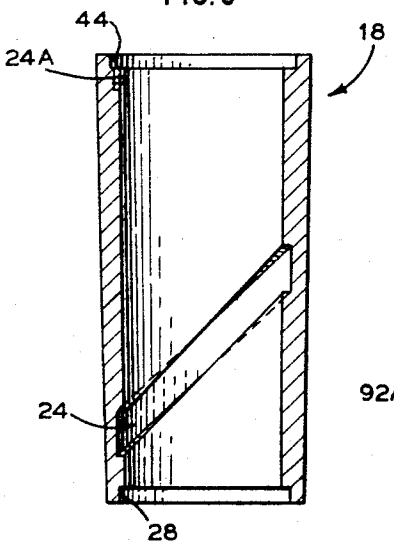


FIG. 7

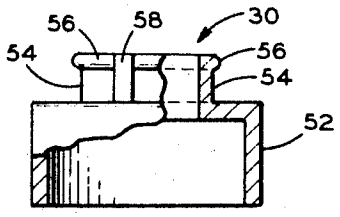
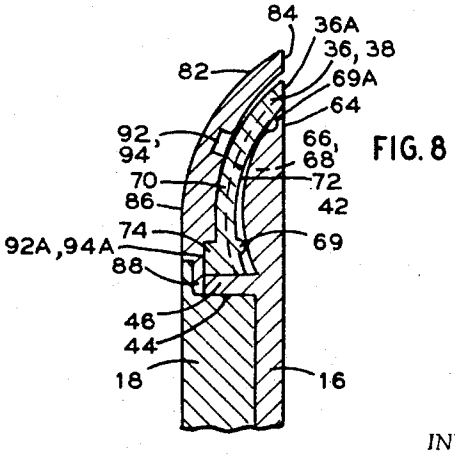


FIG. 8



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3,445,171

LIPSTICK CONTAINER WITH SELF-CONTAINED CLOSURE

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Int. Cl. A45d *40/06, 40/22*
U.S. Cl. 401—59 8 Claims

ABSTRACT OF THE DISCLOSURE

A container for a lipstick, or the like, designed for manufacture in plastic, is arranged to propel and extend the lipstick, or the like, through a front opening, to forward or projected position for use, and, in the reverse operation, to retract the lipstick for concealment in the closed container which is provided with two front cover door elements that are movable to a closure position over the front opening of the container when the lipstick is retracted to storage position.

This invention relates to a container for lipsticks and the like.

A primary object of this invention is to provide a lipstick container which may be easily manipulated to project a lipstick out of the container to make it available for use, and then to easily retract the lipstick back into the container, while at the same time closing the front end of the container to prevent the admission of dust or dirt into the container that would affect the surface or purity of the lipstick.

Another object of the invention is to provide a lipstick container that may be easily and readily assembled.

Another object of the invention is to provide a plastic container which lends itself to aesthetic effects by manufacture in different colors.

Generally, the container of this invention comprises an outer cylindrical member within which an inner cylindrical member is supported and held for relative rotary motion, while being restrained against axial motion. A cup is disposed within the inner cylinder to hold one end of the lipstick, and is operated to project or to retract the lipstick. The cup has a side pin, similar to a trunnion, which extends through a longitudinal slot in and along the wall of the inner member and thence into a spiral guide groove along the inner wall surface of the outer member. An actuator snap-fitted to the lower end of the inner cylinder serves to rotate said inner cylinder in either direction to cause the slot edges to drive the cup pin as a follower in the path of the helical groove on the inner surface of the outer cylinder. Thus, depending upon the direction of the rotation of the inner cylinder, the cup is advanced or retracted, and the lipstick correspondingly projected outwardly for use, or retracted and withdrawn into the container as a protective shell.

To protect the container against entry of any dust or dirt when the lipstick is retracted, the front end of the container is provided with an outer dome-shaped cover with a central bore or opening for passage of the lipstick, and with two sliding doors or cover elements, under said dome cover, that are moved to closing position at the end of the retracting stroke of the lipstick, and that are shifted to open position to expose the opening in the cap and to clear the way for the lipstick during forward

movement of the lipstick when the lipstick is projected for use.

At the end of the retracting stroke of the lipstick, when the two doors are moved to full closed position, or to full open position, those two doors are snapped into such terminal position by a small dimple on each door snap-fitting into a small receiving recess in a surface area on the front part of the inner cylinder. The doors are thus held against casual undesired movement out of full open or out of full closed position, until intentional manual force is applied for desired closing or opening of the doors by manipulation of the container elements.

In order to provide for easy floating adjustment of such doors, they are formed as sections of a spherical shell, and are supported between the inner surface of said dome cover, and an inner spherical section on the front end of the inner cylinder. The floating doors move about a virtual center that is also the virtual center for the outer and inner spherical sections between which the floating doors move.

Conventionally, the use of two such floating doors has introduced a tolerance problem, and a skewing problem.

In the prior art, in certain cases, such closure doors have been supported on and actuated by a single pin, and skewing of the floating doors has resulted.

Another object of this invention, therefore, is to provide a cosmetic stick container, of the kind here involved, in which the closure doors are supported and controlled in a way to overcome any skewing tendencies.

In this invention, such skewing tendency is overcome by providing a two-position-support for each door, while maintaining concentric disposition and operation of each door about its virtual center. One position of support serves as the point of application of an actuating force, while the other position of support is a relatively linear region that serves as a free guide with minimum frictional restraining action on the movement of the door.

The construction of the individual elements of the container and the manner in which they are assembled to provide the container of the present invention, are described in more detail in the following specification, taken in connection with the accompanying drawings, in which:

FIG. 1 is a longitudinal view partially in section and partially in elevation, of the assembled container, with the lipstick cup in fully elevated or advanced position;

FIGS. 2 to 7 are arranged as separate views showing the several elements that enter into the combination that constitute the invention;

FIG. 2 is a vertical sectional view of the dome cap;

FIG. 2A is a development of the internal surface of the dome cap of FIG. 2 to show the spiral guide grooves and lost-motion tracks for the two closure doors;

FIG. 3 is a sectional view through one closure door;

FIG. 3A is an elevational view of the underside of the door in FIG. 3;

FIG. 4 is a vertical, longitudinal sectional view of the inner cylindrical member;

FIG. 5 is a vertical longitudinal section of the cup for the cosmetic stick;

FIG. 6 is a vertical longitudinal section of the outer cylindrical member;

FIG. 7 is a longitudinal sectional view of the actuating ring for the inner cylindrical member; and

FIG. 8 is an enlargement for clearer showing of the details of the dome cap and door assembly in relation to the outer and the inner cylinders.

As shown in FIG. 1 of the drawings, the lipstick container **10** of this invention comprises a cup **12** that is to support a lipstick **14**, and is to move forward or backward in an inner cylindrical member **16** that is to be assembled for rotary motion within an outer cylindrical member **18**. When assembled, the cup **12** will be inserted in the inner cylindrical member **16** with a laterally projecting follower pin **20** extending radially outwardly from the cup **12**, and through a longitudinal slot **22** in the side wall of the inner cylindrical member **16**, into a helical guiding groove **24** in the inner wall surface of the outer cylindrical member **18**. The details that permit such assembly are shown in the other figures of the drawings.

When assembling the inner cylinder **16** into the outer cylinder **18**, they are relatively rotated until the cup pin **20** can enter the top opening **24**–*a* of the helical guiding groove **24** on the inner surface of the outer cylinder **18**.

The inner cylindrical member **16** will then be assembled in the outer cylindrical member **18** to snap fit to hold the two cylindrical members **16** and **18** together against undesired axial displacement or separation by a peripheral bead **26** at the end of the inner cylinder **16** that snap fits into an annular groove **28** around the inner surface of the outer cylinder **18**. An actuator ring **30** is then snap-coupled and keyed into the inner cylindrical member **16** in order to be able to rotate that inner member **16** in either direction within the outer cylinder **18**, to cause the side edge surfaces of slot **22** to act on pin **20** and move cup **12** axially in desired direction, as guided by spiral groove **24**.

In order to close the front end of the assembled container **10**, two folding spherical sector doors **36** and **38** are provided, which are supported in position by a dome cap **40** in cooperation with a truncated spherical section **42** formed on the front end of the inner cylinder **16**.

Referring now to the remaining figures, the construction details of the several component elements of the lipstick container assembled are shown. In order to achieve the final assembly shown in FIG. 1, it will help to consider the elements as they are shown separated in FIGS. 2 to 7.

First, the cup **12**, FIG. 5, is axially inserted into the bottom of the inner tube **16**, FIG. 4, with the pin **20** of the cup **12** extending into and through the slot **22**, which extends to the end of the inner cylinder **16** to permit pin **20** to be inserted. The cup **12** is now free to move along the full length of the slot **22**, to achieve forward projection position, or, upon return, to achieve full retracted position toward the lower end of the tube **16**.

The next step in the assembly is to insert the inner cylindrical tube **16**, containing the cup **12**, into the outer cylindrical tube **18**. Now certain details of construction of those two tubes may be considered.

The outer tube **18**, FIG. 6, is internally recessed at its upper end to provide an annular shoulder or seat **44**, that is to serve as a stop or a rest surface for a flange **46** on, and adjacent the upper end of, the inner tube **16**, in FIG. 4. The lower end of the outer tube **18** is provided with a shallow peripheral recess **28** on the inner surface at the lower end of the outer tube **18**. The purpose of this recess **28** is to receive the bead **26** on the outer peripheral surface of the inner tube **16** at the lower end of that tube **16**, as previously mentioned. Since the slot **22** is extended the full length of the tube **16** at the lower end, the bead **26** is, of course, discontinued at the edges of the slot **22**. By forming the slot **22** open at its lower end, to permit entry of cup pin **20**, the inner tube **16** has sufficient resiliency to permit the tube **16** to be slightly diametrically compressed so the bead **26** will ride down easily as the inner tube **16** is pressed axially downwards into the outer tube **18**. When the inner tube **16** is pressed home in the outer tube **18**, the flange **46** near the top of the inner tube will rest on its seating shoulder **44** in the outer tube **18**, and the bead **26** at the lower end of the inner tube **16** will snap into recess **28** at the bottom of the outer tube **18** to snap lock the inner tube **16** into position in the outer tube **18** and thus prevent casual undesired axial displacement of the inner tube **16** and separation of the two tubes **16** and **18**. Nevertheless, when it is desired to remove the inner tube **16** from the outer tube **18**, a small amount of pressure to overcome the resiliency of the inner tube **16** will be sufficient to press the inner tube **16** outward from the tube **18**.

The relative dimensions of the outer diameter of the outer tube are such as to permit free relative rotation of the inner tube within the outer tube **18**.

Reference may now be made to a spiral provided on the inner surface of the outer cylinder **18**, as shown in FIG. 6. In the sectional view of FIG. 6, the lower portion of the spiral groove **24** is shown. The upper portion has an open inlet port **24A**, at the top, to permit cup pin **20** to enter the spiral groove **24** for guidance during axial movement.

The function of the spiral groove **24** is to control the axial movement of the cup **12**. The manner in which that is done is as follows. When the inner tube **16** is axially inserted into the outer tube **18**, the pin **20** from the side of the cup **12** will be placed to be projecting radially outward through the slot **22** and the pin **20** is then caused to enter the port **24**–*a* at the top end of the helical groove **24** by appropriately turning the inner tube **16** so the open end of the slot **22** will be in alignment with the open port **24**–*a* of the helical groove **24**. The pin **20** of the cup **12** will then be positioned at the region that represents the inter-section between the slot **22** and the helical groove **24**. Thus when the inner tube **16** is to be assembled into the outer tube **18**, it will be necessary to slightly rotate the inner tube **16** to cause the pin **20** of the cap **12** to ride downward in the helical groove **24** to the end of its path in that groove **24**. In that position the cup **12** is in its innermost retracted position. Also, the inner sleeve **16** is in its innermost assembled position within tube **18** with the locking bead **26** of the inner tube **16** snapped into position in the positioning and retaining groove **28** near the bottom of the outer tube **18**.

Relative turning movement between the inner tube **16** and the outer tube **18** thus axially controls the position of the cup **12** according to the loation of the intersection of the slot **22** and the helical groove **24**.

Since the inner tube **16** will be relatively enclosed when it is assembled in the outer tube **18**, an external actuator will be necessary to rotate the inner tube **16**. For that purpose the actuator **30** is provided, and is appropriately shaped to be easily assembled into the inner tube **16** to serve as an actuator therefor.

As shown in FIG. 7, the actuator **30** is shown as provided with and constituting an outer ring **52**, a radial hub-type extension **54** with a peripheral bead **56** at the outer end of such extension **54**, and an axially extending key **58**, all of whose functions will now be described.

The actuator **30** is adapted to be fitted into the lower end of the inner cylinder **16**. The bead **56** on the actuator **30** fits into an internal groove **62** in the inner surface of the inner tube **16** in order to snap lock the actuator **30** to that lower end of the inner tube **16**. As previously mentioned the slot **22** provides a certain amount of resiliency to the inner tube **16** so that the actuator **30** may be readily and easily inserted without too much pressure. When the bead **56** drops into the groove **62**, the actuator **30** is locked to the inner tube **16**. The key **58** is of an appropriate width to fit into the slot **22**. Consequently, when the actuator **30** is fitted into the lower end of the tube **16**, the actuator key **58** is fitted into the slot **22**, and the actuator may then be turned, as necessary, so as to turn inner tube **16**, and, since the actuator **30** is now held against axial displacement by bead **56** in groove **62**, the key **58** serves as an eccentric to rotate the inner tube **16**, in

either direction, as desired, for the purpose of controlling the movement and position of the cup **12**. The outer diameter of the ring **52** of the actuator **30** may be the same as the outer diameter of the outer cylinder **18**, or it may be made of different diameter. Similarly it may be made of the same color as the outer cylinder **18**, or it may be made of different color, to provide any desired aesthetic contrast.

The elements of the container thus far described are those which control the positioning of the cup from its forward projected position of use, back to its retracted position of storage and cover. The internal spiral groove in the outer cylinder **18** may be provided with a closed terminus to determine the lowermost or innermost position of the cup **12**.

In order to close the container, to prevent the entrance of dust, dirt, or other foreign articles, that would contaminate the working surface of the lipstick, the top front end of the lipstick container is appropriately provided with a dome type cover that closes the container after the lipstick is retracted to stored position. Conversely, the cover is opened when the lipstick container is initially manipulated to project the lipstick to forward or exposed position for use.

Referring again to the drawings, it will be seen that the inner cylinder **16** is provided with the extension **42**, formed externally as of truncated spherical shape. The truncated spherical section **42** has a central axial bore **64** that is coextensive with the central bore of the inner cylinder **16**, to provide clear passage space for axial forward or backward movement of the lipstick. The outer surface of the spherical section **42** is provided with two longitudinal slots **66** and **68**, one of which, for example, the slot **66**, is in direct axial alignment with the slot **22** in the body of the cylinder **16**. The other external slot **68** is diametrically oppositely disposed on the outer surface of the spherical head section **42**.

The function of each of the two slots **66** and **68** is similar to the function of the slot **22**. Whereas slot **22** acts on the cup pin **20** to apply a force to move the pin **20** in its spiral groove **24**, the slots **66** and **68** apply a force to each associated closure door **36** or **38**, previously mentioned. At the upper part of each slot **66** and **68** is a dimple-receiving cavity **69A** for receiving a dimple **69** on each cover door **36** and **38** when those doors are moved to closed position, as will be described later.

Each of the two cover doors **36** and **38**, respectively, consists of an arcuate spherical body section **70**, having an inner elongated actuating key **72**, to fit into the associated slot **66** or **68** on spherical head **42**, and an outer guide pin **74**, to fit into one of two grooves **92** or **94** formed on the inner surface of the dome shaped cap **40**. Each cover door **36** and **38** is also provided with a dimple **69** to hold the cover door in terminal position.

When the two cover doors **36** and **38** are seated in position with their respective actuating keys **72** seated in the slot **66** or the slot **68**, their outer guide pins **74** will seat in the respective spiral groove sections **92** or **94**, in dome cap **40**, in FIGS. 2 and 2A.

As shown in FIGS. 2 and 2A, the dome cap **40** has a top or front spherical portion **82** with a central co-axial opening or bore **84**, and a rear cylindrical portion **86** having a co-axial extension or apron **88** which serves as a pilot element in fitting the dome cap **40** onto the top end of the outer cylinder **18**, in assembly.

The inner surface of the dome cap **40**, on spherical portion **82**, is provided with two short grooves **92** and **94** closed at their respective upper ends, and open at their respective lower ends which lead into and communicate with separate track passages **92-*a*** and **94-*a***. Those two track passages are disposed annularly, and each occupies part of an inner circle of periphery, as shown in more detail in FIG. 2A. The two track passages provide lost-motion space in which the respective guide pins **74** of the two cover doors may move during portions of the axial motion of the cup, when the cover doors are to be kept out of the path of movement of the lipstick, in either forward projecting, or backward retracting, motion.

When the two cover doors **36** and **38** are closed, their respective front spherical section edges **36A** engage as contacting congruent circular arcs. Each cover door is held in such closed position by the relative positions of the inner and the outer cylinders **16** and **18**, which have moved pin **74** of each door to extreme upper position. In addition each door is held against causal displacement that could result from mere vibration, by the additional locking action of its dimple **69** fitting into the recess **69A** at the end of respective slot **66** or **68**. At that time the cup is, of course, at its lowermost position, with the lipstick fully retracted.

When the lipstick is to be projected forward for use, the actuator **30** is rotated to rotate inner cylinder **16**. The cup starts moving upward, or forward, and the two doors **36** and **38** are moved downward to open position to expose bore **84** in the dome cover.

Referring again to FIGS. 2 and 2A, the door pins **74** will move downward along spiral sections **92** from the uppermost position in those spiral sections **92** to the related track sections **92A** and **94A**. During the downward movement of pins **74** in spiral sections **92**, the two doors **36** and **38** will be moved quickly away from bore **84** to expose and clear the path for the lipstick. Since further axial movement of the lipstick is required, to move to its extended position of use, continuing rotation of inner cylinder **16** is necessary. But such continuing rotation will also move the two doors **36** and **38**. Lost motion must therefore be provided, and the two tracks **92A** and **94A** provide the space for such lost-motion movement of the two doors. The two tracks **92A** and **94A** are formed as annular recesses on the inner surface of, and along the lower edge of, dome **40**. Each track has a limiting upper edge as the shoulder **92B** or **94B**, but open at the bottom, for ease or removal from a forming mold.

However, to provide a limiting lower edge to each track **92A** and **94A**, to confine each door pin **74** within its track, the flange **46** just under spherical section **42** of inner cylinder **16** has been provided. In assembling the dome cover **40** at the upper end of the outer cylinder **18**, and over the spherical head section **42** of the inner cylinder **16**, the pilot apron **88** of the dome cover fits into the end recess of outer cylinder **18** and fits around and concentrically encircles the flange **46**, and seats onto shoulder seat **44** of outer cylinder **18**, as shown more clearly in FIG. 8.

In the assembling of the elements of this container, the cover dome cap **30** is suitably secured to the outer sleeve **18** by a dot of cement, or by a short burst of heat from an ultrasonic field.

The invention is not limited to any of the specific details that are shown, since these details primarily are functional and show merely a preferred physical positioning, and therefore various changes may be made in the dimensions, design, arrangement or disposition of the functional elements, without departing from the spirit and scope of the invention as defined in the claims.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent, is as follows:

1. A cosmetic stick container, comprising

a main outer tubular member, having a spiral groove on its inner wall surface;

an inner hollow cylindrical member concentrically disposed within said outer tubular body, and having a longitudinal slot along part of its wall length and extending to its back end;

means for confining said inner member within said outer body to prevent axial translation while permitting relative rotation of said inner member;

actuator means for releasably snap-locking into said

inner cylindrical member to serve as an actuator to rotate said inner cylindrical member;

a cup disposed within said inner member to be co-axially reciprocable therein, said cup having a base and a tubular wall to serve as a holder for a lipstick, and said cup having an actuating pin extending radially outward from said wall at a region intermediate the top and the bottom of said cup, and

said pin extending through said longitudinal slot along the inner cylinder and extending into said spiral groove in said outer tubular body, so rotation of said inner cylinder causes its slot edges to push said cup pin along the path of said spiral groove to move said cup axially, forward to project said cosmetic stick out of its container for use, or backwards to retract said cup and stick for covered storage in said container in which

said outer tubular member is slightly axially recessed internally at its top or front end to provide an annular seating shoulder, and is slightly radially recessed internally adjacent its bottom or rear end to provide a shallow annular retention groove;

and said inner cylindrical member has an annular flange adjacent its front end, to seat on and against said annular seating shoulder at the front end of said outer tubular member, and said inner cylindrical member also has an annular bead at its back end, to seat in said shallow retention groove at the bottom end of said outer tubular member when said annular flange seats on said annular seating shoulder, thereby to snap-lock said inner and outer cylindrical members against causal undesired axial separation while permitting relative rotation between said outer and said inner members.

2. A cosmetic stick container, as in claim 1 in which

said inner cylindrical member has an annular groove in its internal wall surface adjacent its back end, and terminating at the edges of said longitudinal slot;

and said actuator means includes

an outer cylindrical ring having an outer diameter corresponding to the diameter of said outer tubular member, and having a co-axially inwardly extending ring to extend into the back end of said inner cylindrical member, with an annular external bead on the end of said co-axially extending ring to fit into said annular groove in the internal well of said inner cylindrical member, thereby to snap-lock said actuator ring to said inner cylindrical member, and said co-axially extending ring having also a key element to fit into the open end of the longitudinal slot of said inner cylindrical member, whereby said key may serve as an eccentric actuator to rotate said inner cylindrical member to act on the pin on said cup and thereby cause advance movement or return movement of said cup in said inner cylindrical member.

3. A cosmetic stick container, as in claim 2, in which

said cup is free floating in said inner cylindrical member and held in position by the interaction of said slot and said spiral groove,

and all of said parts may be assembled and disassembled by direct manual positioning without external devices.

4. A cosmetic stick container, comprising

a main outer tubular member, having a spiral groove on its inner wall surface;

an inner hollow cylindrical member concentrically disposed within said outer tubular body, and having a longitudinal slot along part of its wall length and extending to its back end;

means for confining said inner member within said outer body to prevent axial translation while permitting relative rotation of said inner member;

actuator means for releasably snap-locking into said

inner cylindrical member to serve as an actuator to rotate said inner cylindrical member;

a cup disposed within said inner member to be co-axially reciprocable therein, said cup having a base and a tubular wall to serve as a holder for a lipstick, and said cup having an actuating pin extending radially outward from said wall at a region intermediate the top and the bottom of said cup, and

said pin extending through said longitudinal slot along the inner cylinder and extending into said spiral groove in said outer tubular body, so rotation of said inner cylinder causes its slot edges to push said cup pin along the path of said spiral groove to move said cup axially, forward to project said cosmetic stick out of its container for use, or backwards to retract said cup and stick for covered storage in said container including

a hollow axial extension on said inner cylindrical member, said axial extension having an outer contour surface of truncated spherical form, with two external longitudinally extending grooves on said outer contour surface, one groove being in substantial alignment with said slot in said inner cylindrical member and the other groove being diametrically opposite on said outer contour surface;

a top cap to fit over said truncated spherical section of said axial extension and having an annular surface to seat conformably against the front end edge of said outer cylindrical member,

said cap having an axially extending annular apron to extend internally and fit closely into said front end of said outer cylindrical front end against which the cap seats,

said cap also having an internal contour surface of truncated spherical section, with its internal surface slightly radially outwardly displaced from the outer surface of said spherical section of said axial extension of said inner cylindrical member, and said cap also having two diametrically oppositely disposed spiral path grooves on its internal contour surface;

and two thin floating covers each having its inner and outer surfaces as sections of spherical contour to fit loosely in the space between the inner surface of said cap and the outer contour surface of said spherical section extension, and each cover having an inwardly extending key to ride in one slot in the outer contour surface of said spherical extension, and each said cover having an outwardly extending pin to ride in one spiral groove in said cap to move each of said covers to forward covering and closing position or to retracted open position, according to the direction of rotation of said inner cylindrical member.

5. A cosmetic stick container, as in claim 4, including

means for locking the top cap in position on said outer cylindrical member, whereby rotary movement of the actuator ring in one direction at the back end of said container will rotate the inner cylindrical member to move said floating covers to open position and will move said cup and any stick therein to projected position, and rotation of said actuator ring in the opposite direction will rotate the inner cylindrical member in opposite direction to retract the cup and stick carried thereby and move said floating covers to closing and covering position at the front end of said container.

6. A cosmetic stick container, as in claim 5, including

means providing a lost-motion path for said pins of said floating covers during a part of the motion of a cosmetic stick in said cup through the center front bore of said front closure cap.

7. A cosmetic lipstick container, as in claim 4, in which

each of said spiral path grooves, on the inside surface of said cap continues into a section of annular track on the internal surface of said cap to provide a path

of lost-motion of said floating covers while said cup is being moved axially.

8. A cosmetic lipstick container, as in claim 7, in which said outer cylindrical member has an annular internal shoulder at its upper end;

and said inner cylindrical member has an annular peripheral flange with the bottom surface of said flange to seat against said shoulder, and the top surface of said flange to serve as a lower limit edge surface for said lost-motion annular track on the inner surface of said cap.

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