United States Patent

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[54] **COSMETIC CONTAINER**
7 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **401/86**
[51] **Int. Cl.** **A45d 40/06**
[50] **Field of Search** 401/61, 68, 78, 86

[56] **References Cited**

UNITED STATES PATENTS

3,323,641	6/1967	Landen	401/86
3,335,854	8/1967	Landen	401/68 X

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ABSTRACT: The invention contemplates an improved refill cartridge and insert-sleeve construction for use in lipstick or the like containers having outer decorative casings, the sleeve being permanently assembled into the bore of the base part of the outer decorative casing. The particular feature of the invention resides in provision of such circumferential uniformity of the sleeve fit in the outer decorative casing that inherently weak plastic outer casings are smoothly cylindrically supported and permanently engaged, without imposing such circumferential stress as to rupture the casing. At the same time, improved detent and locking structure coacts between removably fitted parts of the cartridge and casing to assure smooth detent action without damage to keyed parts or surfaces.

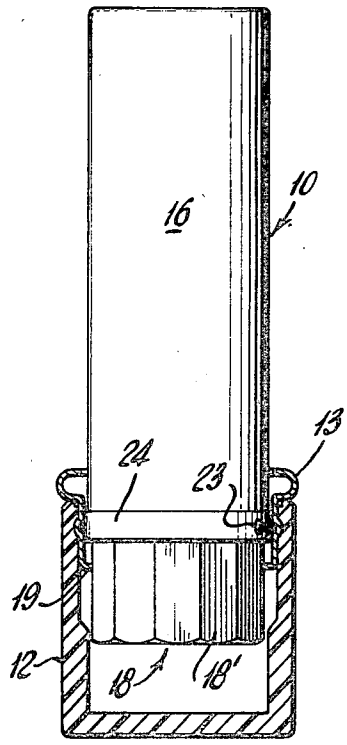

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Fig. 1.

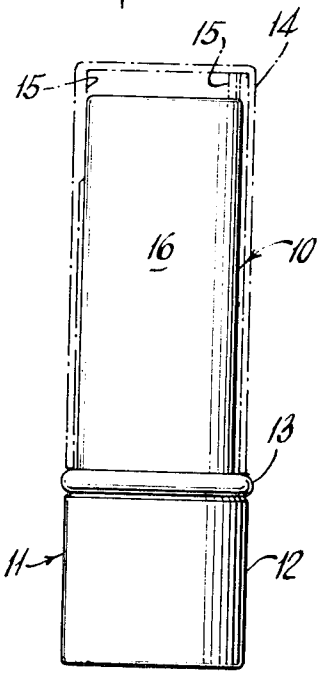


Fig. 2.

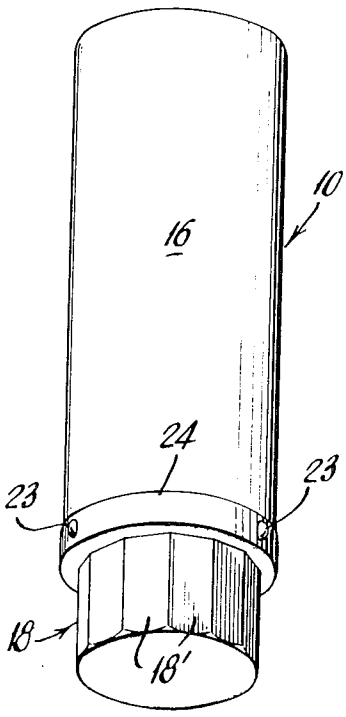


Fig. 3.

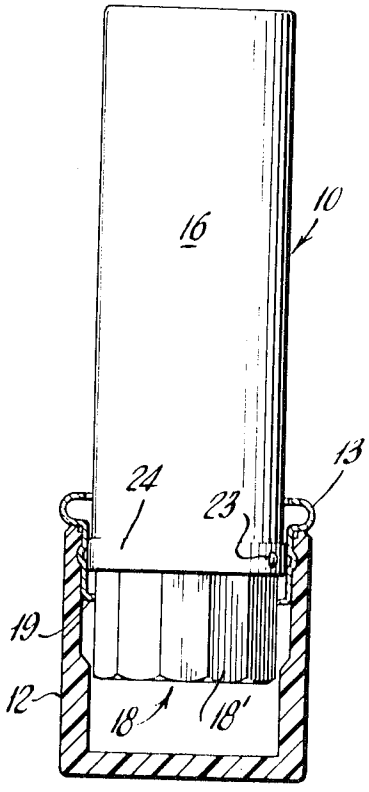


Fig. 4.

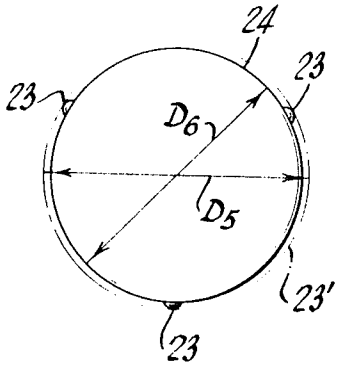
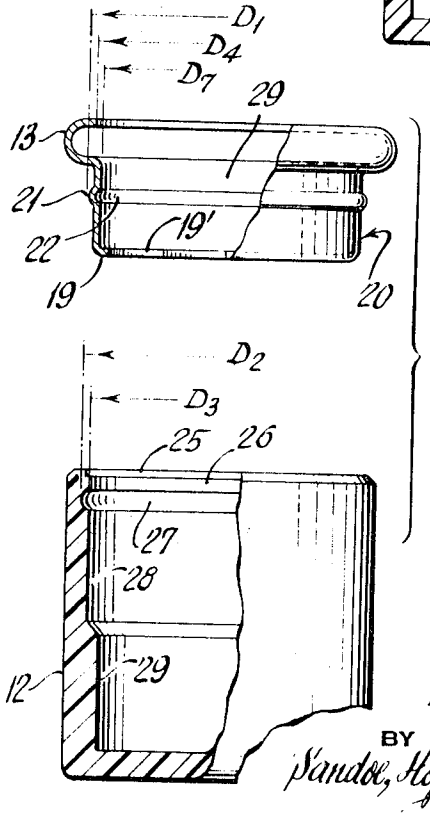


Fig. 5.



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COSMETIC CONTAINER

This invention relates to an improved lipstick or the like container construction of the removable-cartridge type wherein the cartridge assembly is removably received in an outer decorative casing, and in particular when the outer decorative casing is of molded plastic.

In catering to today's market for lipstick containers of the character indicated, it is important that the manufacturer shall be able to offer great variety in the design of outer decorative casings which utilize the same basic internal mechanism. This is ordinarily achieved by providing a standard cartridge and by providing a custom-designed outer casing to receive the cartridge. Competition forces further economies through standardizing of an insert for the base-receiving part of the outer casing, the insert being specially formed for reception of an inserted standard cartridge; Landen U.S. Pat. No. 3,323,641 is illustrative of such an insert. But the said Landen construction has been found to present intolerable difficulties when the outer decorative casing is of molded-plastic construction and especially when the plastic casing parts are locally weakened by decorative relief or intaglio formations. The difficulties are believed to be attributable in part to lack of circumferentially complete internal support of the casing plastic, in part to the rough nature of detent action, and in part to detent peening of keying surfaces.

It is an object of the invention to provide an improved device of the character indicated.

Another object is to provide a cartridge-type refill-container construction featuring improved locking engagement between the parts when the cartridge is received in the housing.

A further object is to meet the above objects with a device in which adequately positive locking action is assured as long as the parts are assembled, and yet they may be unlocked by simple manipulation.

A still further object is to meet the above objects with a basic insert construction for an outer decorative casing so as to render the cartridge and insert structure universally applicable to a plurality of outer casing configurations, and so as also to inherently receive and secure a plurality of types of refill-cartridge construction.

A specific object is to meet the foregoing objects with a construction which inherently supports the plastic casing without noticeable local deformation, and which is not only smooth in its detent action upon cartridge insertion and removal but is also incapable of damaging the keying relation of rotated parts, regardless of the number of cycles of insertion and removal of the cartridge base in the casing base.

Other objects and various further features of novelty and invention will be pointed out or will be apparent to those skilled in the art from a reading of the following specification in conjection with the accompanying drawings.

In said drawings, which show, for illustrative purposes only, a preferred form of the invention:

FIG. 1 is a view in elevation of an assembly according to the invention with a cartridge refill received in the base-housing member of the outer decorative housing, the closure cap being suggested in phantom outline;

FIG. 2 is a perspective view of a refill cartridge used in the container of FIG. 1;

FIG. 3 is an enlarged view in elevation, with base-housing parts shown in section, to reveal coaction of the parts in assembled relation;

FIG. 4 is a bottom view of the cartridge of FIG. 2 on a further enlarged scale, to identify a dimension; and

FIG. 5 is an exploded sectional view, on the enlarged scale of FIG. 4, to permit identification of dimensional relationships in casing parts of FIG. 3.

Briefly stated, the invention contemplates an improved refill cartridge and insert-sleeve construction for use in lipstick or the like containers having outer decorative casings, the sleeve being permanently assembled into the bore of the base part of the outer decorative casing. The particular feature of the invention resides in provision of such circumferential uniformity of the sleeve fit in the outer decorative casing that inherently weak plastic outer casings are smoothly cylindrically supported and permanently engaged, without imposing such circumferential stress as to rupture the casing. At the same time, improved detent and locking structure coacts between removably fitted parts of the cartridge and casing to assure smooth detent action without damage to keyed parts or surfaces.

Referring to FIG. 1 of the drawings, the invention is shown in application to a cartridge-refill container designated generally **10**, removably received within the lower or base half of an outer decorative housing member, designated generally **11**. The housing member is shown to be generally cylindrical and to comprise a lower cylindrical end **12** and an upper cylindrical end or bead **13**. The bead **13** constitutes a stop when the container is closed by application of a closure cap **14** having internal friction ribs **15** to grip the cartridge **10** when cap **14** is driven to abutment with the bead **13**. The cap **14** may be cup shaped, of molded plastic, with external decorative relief or intaglio designs, and with a smooth bore in which the friction means **15** is integrally formed.

The cartridge refill **10** may be of the type employing two relatively rotatable parts to produce propel-repel action of a lipstick carrier therewithin, and it suffices for present purposes to identify the upper or application end **16**, which may be cylindrical, having an opening through which the lipstick is selectively projected, and in addition, to identify a lower or base operating end **18** received and concealed within the base-housing member **12**.

When the closure cap **14** is removed and with the parts then as shown in solid outline in FIG. **1**, the lipstick within the cartridge **10** is projected and retracted in accordance with relative rotation of the exposed cartridge part **16** and the base-housing member **11**. This is done by means of a keyed engagement between the base end **18** of the cartridge and suitable formations within the bore of the base-housing member **11**. These formations characterize the profile of the inner edge of a radially inwardly directed flange **19** (see FIGS. **3** and **5**) carried by and forming part of the base-housing member **11**. In the form shown, the keyed engagement involves a circumferentially spaced plurality of elongated noncircular formations or flats **18'** on the cartridge base **18**, and a corresponding plurality of straight edges or short flats **19'** (see FIG. **2**) on the radially inward flange **19**.

In accordance with the invention, an inserted refill cartridge is retained within the base-housing member **11** by detent action until it is desired to remove and replace the cartridge. This is achieved by relying primarily upon local resilient deformation of an insert sleeve **20** at an axial location spaced from the keyed engagement at 18'–19'. In the form shown, the insert sleeve **20** is press fitted and snapped into permanent assembly with the outer decorative plastic cup **12**, to complete the base-housing member **11**.

As best seen in FIG. **5**, the insert sleeve **20** is a thin metal shell formed with the bead **13** at its upper end and with the flange **19** at its lower end. A cylindrical body between these ends is continuous except for a circumferentially continuous bead formation **21**. The convex mature of bead **21** on the outside is matched by a corresponding circumferentially continuous concavity or groove **22** in the bore of sleeve **20**. The convex bead **21** serves permanently to hold sleeve **20** in assembled relation to cup **12**, while the concavity or groove **22** provides insertably removable detent-retaining action with detent means on the cartridge. As already indicated, the axial locale of detent action is spaced from the keyed engagement 18'–19'; as shown in FIGS. **2** and **3**, angularly spaced plural radially outward bumps **23** are formed on a circumferentially continuous cylindrical or bead portion **24** of the base **18**. Conveniently, the bumps **23** may be formed in bead **24** as one of the automatic steps of fabricating the inner tubular propulsion member of the cartridge **10**, the base **18** (including bead **24** and flats **18**) being merely the externally exposed lower end of

such member, all of which is preferably made on a so-called eyelet machine.

The cooperating functions of the described parts will be better understood from a description of preferred dimensional relationships, starting with press-fit assembly of the sleeve **20** to the cup **12**, which, to match or esthetically complement the decorative scheme of cap **14**, is shown to be of molded-plastic construction. The bore of cup **12** is preferably formed with circumferentially continuous smooth surfaces, involving an end counterbore **25**, a land **26**, a groove **27**, and a further land extension **28**; the inner end **29** of the cup **12** is thickened for added strength.

For press-fit assembly of sleeve **20** to cup **12**, the bead **21** is of diameter D_1, to clear the diameter D_2 of the end counterbore **25** but to interfere with the reduced diameter D_3 of the land **26**. The sectional curvature of the groove **27** substantially matches the sectional curvature of the bead **21**, but preferably the outer diameter of cylindrical sleeve surfaces axially adjacent bead **21** (and including bead **21**) are such as to have slight residual interference (in the order of 1 to 5 mils) with the corresponding bore surfaces **26–27–28** after bead **21** registers with and snaps into groove **27**. Then thus assembled, the end bead **13** defines the upper end of base housing member **11**, with the upper end of cup **12** snugly adjacent thereto, and the engaged sleeve and cup surfaces provide circumferentially uniform reinforcement to the plastic cup.

For smooth snap-acting detent assembly of the cartridge to the base member **11**, the inside-rim diameter D_4 at the mouth of the sleeve **20** exceeds the diameter D_5 of the included circle **23'** of detents **23**, and the keying prismatic flats **18'** are within confines appropriate to engage the cutout flange **19**, with a section reduced from the diameter D_6 of the cylindrical surface or bead **24**. Preferably, the interference between the detent-circle diameter D_5 and the diameter D_7 of the detent land **29** adjacent groove **22** is such as to develop transient resilient chordlike deformations in sleeve **20** (at and near the land **29**) as this interfering region is traversed prior to detent-engagement in groove **22**, and the extent of such deformations is so slight as (a) not to cause interference between the bead surface **24** and the land surface **29** (at angular locations between detents **23**) and (b) not to impair the structural integrity of the plastic cup, however embrittled or weakened for decorative purposes.

Typically, for a cartridge size in which the base bead **24** is of about 0.6 inch, the detents **23** rise radially from the bead diameter D_6 to the extent of about 0.006 to 0.011 inch. The detent-circle **23'** has an undeformed interference of about 0.008 to 0.014 inch with the sleeve land **29**. For the force-fit lock of sleeve **20** to the mouth of cup **12**, the parts have the 1 to 5-mil interference already described for the final position, and the interference of bead **21** with land **26** upon assembly may be in order of 5 to 15 mils.

It will be seen that the invention provides an improved construction particularly suited to the employment of delicate decorative outer casing parts. The detent action is smoothly cammed, positive and long lasting, without damage to keyed elements, regardless of the number of recycled cartridge insertions and removals. Also, detent-action distortions are well within the tolerance capability of sleeve-reinforced plastic caps, even when the plastic is of the nonuniform section which results from deep intaglio contouring of outer surfaces.

While the invention has been described in detail for a preferred form, it will be understood that modifications may be made within the scope of the invention.

What is claimed is:

1. In combination, a lipstick or the like container cartridge having a base end and an applicator end for exposing lipstick or the like to be applied, a cup-shaped housing member having an opening removably receiving the base end of said cartridge; said cup-shaped housing member including an outer decorative cup with a bore having an internal circumferentially continuous groove, and a metal insert sleeve supported by the bore of said cup near the open end thereof and including a circumferentially continuous radially outward bead having initial press-fitting interference with the bore of said cup upon axial insertion therein but having lesser press-fitting interference plus axially locating snap engagement with said bore upon bead registry with said groove, the bore of said sleeve having a circumferential groove at the axial location of said bead, said sleeve including an integral radially inward flange located deeper than said bead but axially short of the closed end of said housing member; said base end including a key portion having key engagement with said flange member when received therein, and said base end further including a circumferential bead with radially outward detent means having insertably removable detent interference with the bore of said sleeve and also having two-way-acting snap-lock detent action with the groove of said sleeve upon approach to and achievement of full insertion of said base end into said cup-shaped housing member.

2. The combination of claim **1**, wherein the interference of said sleeve bead with the groove of said cup exceeds the interference of said cartridge-bead detent means with the groove of said sleeve, whereby said sleeve is retained by said cup during axial insertion and removal of said cartridge base with respect to said sleeve.

3. The combination of claim **1**, wherein said detent means comprises a plurality of angularly spaced smoothly rounded outward bumps, said sleeve being locally radially deformable between the axial location of said groove and the open end of said sleeve, whereby interference prior to snap-detent engagement with the sleeve groove is relatively light in action due to local detent-urged radial deformation of said sleeve.

4. The combination of claim **1**, wherein the open end of said sleeve includes a radially outward bead having a shoulder adjacent the open end of said cup when said sleeve bead is engaged at the groove in the bore of said cup.

5. The combination of claim **3**, in which said plurality is three.

6. The combination of claim **1**, in which said key portion of said cartridge is regularly polygonally prismatic and in which the key formations of said flange member comprise a matching polygonal edge at an opening in said flange member.

7. The combination of claim **1**, in which said decorative cup is of molded plastic.

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