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Pfrommer et al.

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[54] **CARTRIDGE-TYPE LIPSTICK CONTAINER OR THE LIKE**

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[73] Assignee: **Eyelet Specialty Company**, Wallingford, Conn.

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[21] Appl. No.: **220,770**

[52] **U.S. Cl.** **401/86**

[51] **Int. Cl.** **A45d 40/06**

[58] **Field of Search** 401/55–78, 86

[56] **References Cited**

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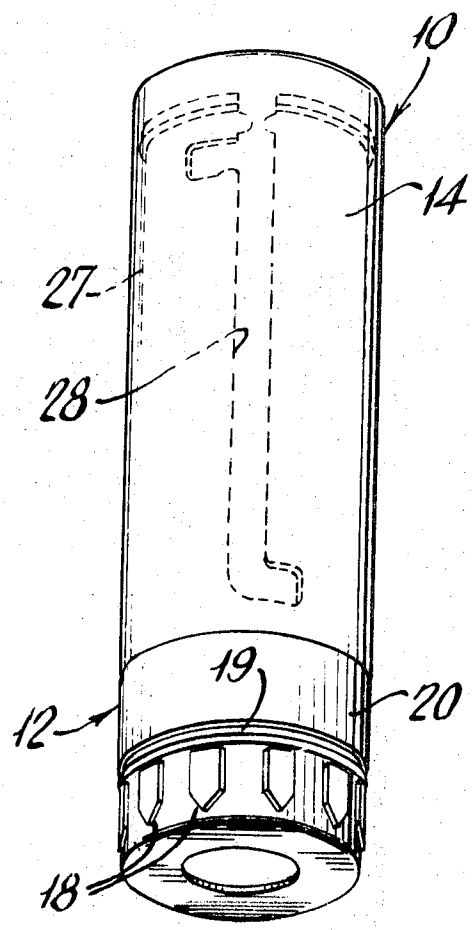
[57] **ABSTRACT**

The invention contemplates an improved base-end construction for a basic lipstick assembly, whereby the basic lipstick assembly may serve universally for a relatively wide variety of different customer requirements, in some of which the basic assembly is a replaceable refill cartridge, and in some which the basic assembly receives merely a decorative or plain shell, which may be of metal or of plastic. Whatever the ultimate application, the invention features coacting formations on the base end of the basic assembly, and in the bore of the base housing or casing member to which it is assembled, whereby coaxially stabilized positioning of the parts is assured while at the same time achieving a circumferentially distributed axial-locating abutment reference and a driving (i.e., non-rotative) relation between the outer and inner assembled parts.

21 Claims, 11 Drawing Figures



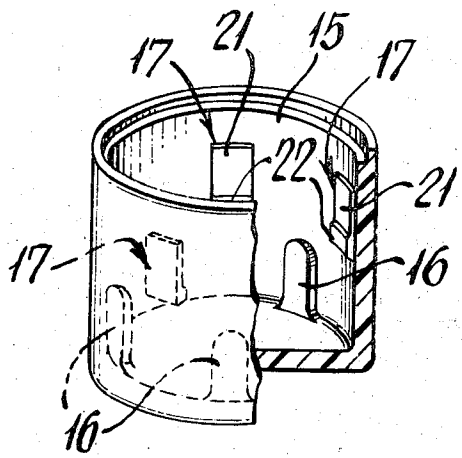


Fig.1.

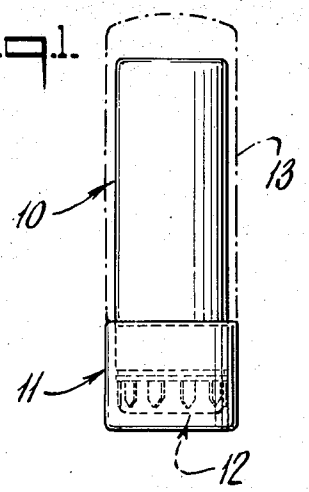


Fig.2.

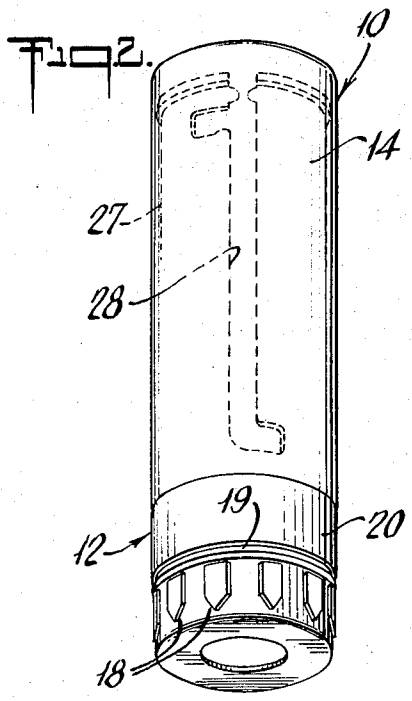


Fig.3.

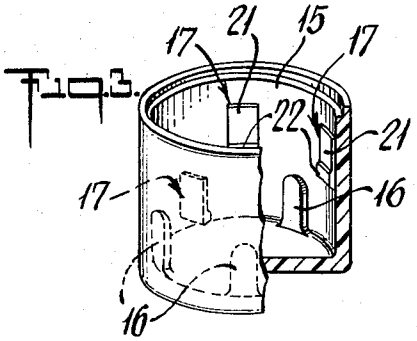


Fig.4.

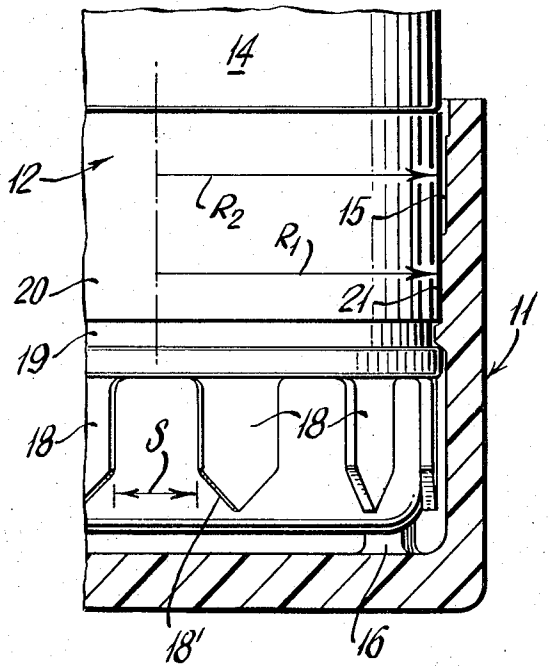


Fig.5.

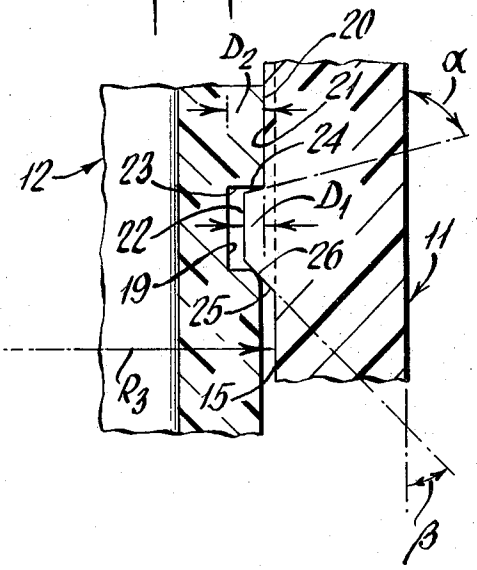


Fig. 6.

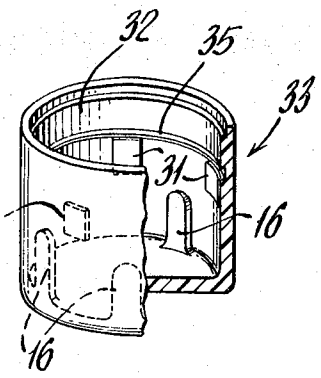


Fig. 8.

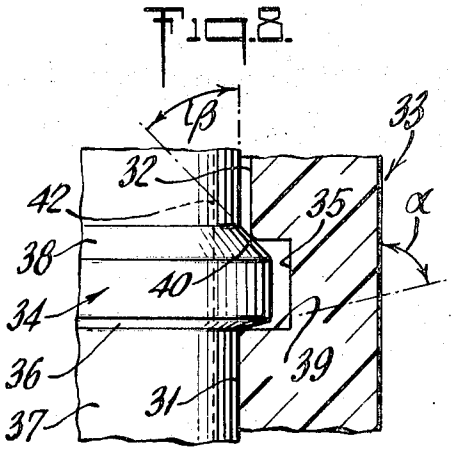


Fig. 7.

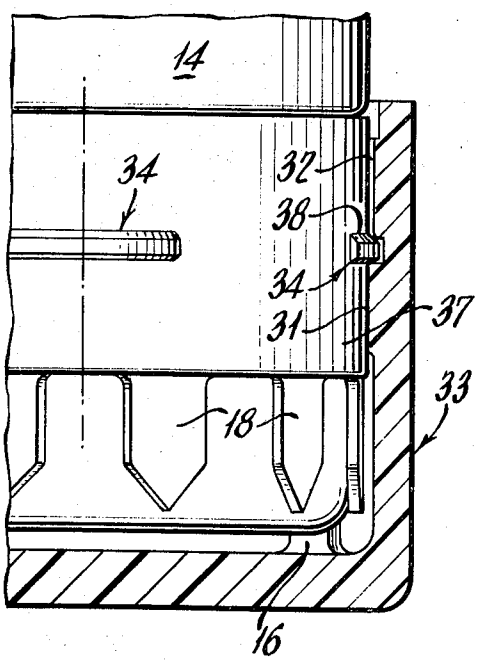


Fig. 10.

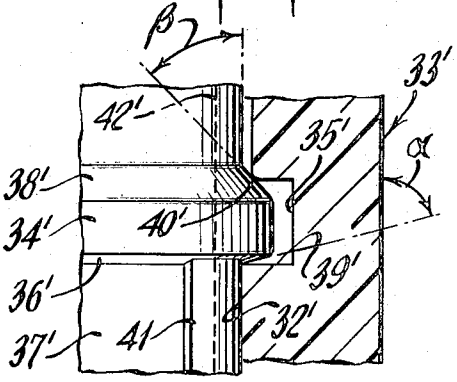


Fig. 9.

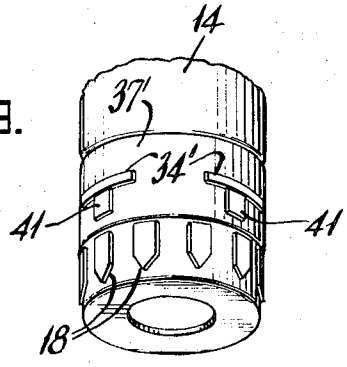
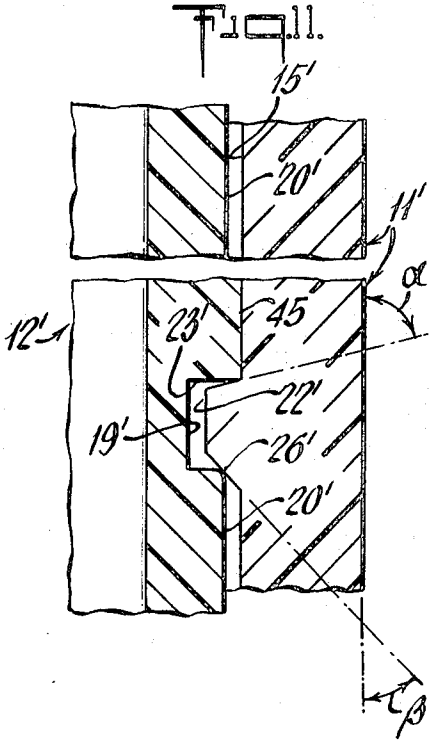


Fig. 11.



CARTRIDGE-TYPE LIPSTICK CONTAINER OR THE LIKE

This invention relates to an improved lipstick or the like container construction, and in particular to a lipstick of the cartridge type wherein the cartridge assembly is received in an outer decorative housing or casing.

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

Another object is to provide a cartridge-type 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.

It is also an object to achieve automatic coaxial alignment of the assembled parts in a construction of the character indicated.

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, secure and coaxially support a plurality of types of refill-cartridge construction.

A specific object is to meet the foregoing objects with a construction in which the same parts and formations serve plural functions.

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 conjunction 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 received in a base housing member which may be part of an outer decorative housing, the closure cap being suggested in phantom outline;

FIG. 2 is a slightly enlarged view in perspective showing the basic cartridge of FIG. 1;

FIG. 3 is a perspective view of the base housing member of FIG. 1, partly broken away and in section;

FIGS. 4 and 5 are progressively further enlarged fragmentary sectional views of a base-fitted part of FIG. 1, FIG. 5 showing radial-positioning and axial-locating parts of FIG. 4.

FIGS. 6, 7 and 8 are fragmentary views corresponding to FIGS. 3, 4, and 5, respectively, to show another embodiment;

FIGS. 9 and 10 are fragmentary views corresponding to FIGS. 2 (lower part) and 5, respectively, to show a further embodiment; and

FIG. 11 is a fragmentary view corresponding to FIG. 5, to show a still further embodiment.

Referring to FIG. 1 of the drawings, the invention is shown in application to a basic cartridge-type container, designated generally 10, received within the lower or base half of an outer decorative housing member, designated generally 11. If the housing member 11 is ornate and relatively expensive, the basic container 10 may be a refill cartridge, removably received in member 11; if, on the other hand, the housing member 11 is relatively inexpensive, it may be merely an outer decorative or plain shell that is not adapted for removal from the basic container, as will be later explained.

The housing member 11 is shown to be generally cylindrical and cup-shaped, being closed at its lower end and having a bore open to the other end, for reception of the base-end member 12 of the cartrideg. A removable closure cap 13 fits over the upper or application end of the cartridge 10 and is of decorative finish and design in keeping with that of the base housing member 11. Detail of the retention means for cap 13 is omitted, as being irrelevant to the invention.

The cartridge 10 may be of the type employing two relatively rotatable parts to produce propel-repel actuation of a lipstick carrier therewithin. It suffices for present purposes to identify a sleeve member 14 at the upper or application end, which may be cylindrical, having an opening through which the lipstick is selectively projected and, in addition, to identify the base member 12 at the lower end. Base member 12 is fully received in and concealed by the housing member 11 when assembled thereto.

When the closure cap 13 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 14 and the base housing member 11. This is done by means of a keyed engagement between the base end 12 of the cartridge and a suitable formation or formations within the bore of the base housing member 11. These formations serve not only to provide the indicated keying engagement but also coact with the base end 12 to achieve a coaxial-positioning and snap-lock function, which may be one-way or two-way acting, depending upon whether the basic container 10 is to be a refill cartridge or permanently assembled to the housing member 11.

In accordance with the invention, the formation or formations in the bore of the housing member 11 are provided in multiple, simultaneously serving three functions. These formations or their equivalent may be provided in an intermediate insert shell which may be of metal, permanently assembled by insertion into the bore of a selected one of a variety of outer decorative casings, depending upon particular customer requirements; or, as shown, these formations may be integral with the housing member 11. The bore 15 of member 11 is shown to be cylindrical, interrupted only by a first set of angularly spaced projections 16 at a first axial region, deep within member 11, and by a second set of angularly spaced projections 17 at a second axial region, generally axially centrally located in bore 15. The base operating member 12 is externally characterized by a series of angularly spaced splines or castellations 18, in a first axial region which corresponds to the region of bore formations 16, and by a circumferentially continuous axial-locking groove 19 adjacent an extended cylindrcial surface 20 in a second axial region, which corresponds to the region of the bore formations 17.

As best seen in FIGS. 3, 4, and 5, each of the radially inward bore formations 17 comprises a pedestal portion 21 and an adjacent, further radially inward, lug portion 22. The inner surface of each pedestal 21 is a cylindrical arc which, in the unstressed condition of part 11, is part of a single cylinder of radius R_1 about the axis of bore 15. The radius R_1 is preferably slightly less than the radius R_2 of the cylindrical exterior 20 of

the base member **12**, thereby establishing a slight interference so that the stressed radial compliance of parts **11-12** may be constantly operative to assure concentricity of the assembled parts **11–12**, immediately adjacent the location of groove-lug engagement (**19–22**). The radius R_1 need be very little less than the primary bore radius R_3 (in the order of **5** mils, for a cartridge-base radius R_2 of 0.33 inch) to establish sufficient radial clearance for the necessary slight deformation, and by choosing a symmetrical arrangement of spacings for three pedestals **17**, the concentricity of assembly is not impaired.

The groove sidewall **23** adjacent cylindrical surface **20** is preferably substantially radial and has a sharply defined corner intersection with surface **20**, as shown. In like manner, the adjacent lug sidewall surface **24** is also substantially radial and has a sharply defined corner intersection with the adjacent cylindrical surface (R_1) of pedestal **21**; in FIG. **5**, sidewall **24** is shown inclined at the angle α (slightly less than a right angle) to the central axis and, therefore, slightly divergent from sidewall **23**, so that axial abutment at sidewalls **21–23** may be as radially outwardly referenced as possible (i.e., at and near the sharp corner intersections.) The radial depth D_1 by which lug **22** projects inward of pedestal **21** is, as shown, preferably less than the depth D_2 of groove **19**, and the other lug sidewall **25** may be gently sloped as indicated at β. For a cartridge **10** that is to be removable from the base housing member **11**, the angle β established a cam surface at **25**, being in the order of $\pi/4$ radian; for a cartridge **10** that is not to be thus removable, the surface **25** should be formed with a slope β which is more generally radial, as to an extent which is in the order of magnitude shown for angle α. In either event, the effective axial extent of lug **22** is preferably such as to engage both adjacent groove sidewalls, thus assuring the described axial location at **23–24**; and, if the base housing member **11** is to be readily removable, the lower sidewall edge of groove **19** is preferably rounded at **26**, to facilitate cammed elevation of lugs **22**. Since all lug sidewalls **24** are in the same substantially radial surface, the abutments at **23–24** are not only inherently firm axial references, but there is also inherent firm stabilization against angular misalignment of axes of parts **11–12**, even in the presence of strongly applied eccentric loads, for example, when applying a projected lipstick while grasping the base housing member **11**.

The splined or castellated formations **18** are at equal angular spacings, center-to-center, and we have found it convenient to adopt ten as the number of such formations **18**. The agular separations of the key formations **16** are at integer multiples of the center-to-center spline separation, thus assuring fiedlity of ultimate key-to-spline engagement. The tip ends **18'** (FIG. **4**) of the splines are tapered and preferably pointed, to maximize the chances of free key-to-spline self-alignment and engagement. Such self-aligned engagement is further facilitated by designing formations **17** with an angular width at least no greater than the interspline spacing S so that even if splines **18** theoretically radially clear the inner circle of lugs **22**, the relatively great chance of one lug-to-spline contact (**18–22**) in the course of assembly may be utilized to effect registry for key-to-spline engagement. This result is achieved by placing lug-pedestal formations **17** at center-to-center spacings which are integer multiples of the center-to-center spline spacing; and, for ease of molding, the formations **17** are offset from or interlaced with the locations of key **16**. Specifically, for the 10–spline embodiment noted above, accurate concentric retention is achieved by a symmetrical lay-out of three lug formations **17**, wherein a first lug center is on a diametrical plane of symmetry, and the other two lug centers are substantially diametrically opposite, being offset on opposite sides of said plane to the extent of one basic center-to-center spline spacing, thus positioning the latter two lugs at twice the basic spline spacing. In similar fashion, the three key formations **16** are symmetrically positioned, one on the same plane of symmetry and between the second two lug formations, and the other two at substantially diametrically opposite locations which are offset from the plane of symmetry to the extent of one basic center-to-center spline spacing.

The modification of FIGS. **6**, **7** and **8** embodies principles discussed above in connection with corresponding FIGS. **3**, **4** and **5**. In the modification, the prime axial-alignment pedestals **31** are again integrally formed in the bore **32** of the base-housing member **33**; but the axial-locating lugs **34** are on the periphery of the cartridge base, while the circumferential groove **35** therefor is in the bore **32**. The lugs **34** are spaced arcuate lengths of what would otherwise be a circumferential bead, preferably characterized by a lower wall **36** which has a sharply defined corner intersection, at angle α, with the outer cylindrical surface **37** of the cartridge base; the upper wall **38** is characterized by the angle β, already described, but which as shown is gently sloped, to facilitate cam action upon cartridge removal from member **33**. The groove **35** has lower and upper wall formations **39–40** as described for the upper and lower wall formations **23–26** in FIG. **5**. Again, the radial offset of the pedestals **31** from the adjacent supporting cylinders **32** may be in the order of 5 mils, for the indicated container size. And since the anti-rotational devices may be as previously described, they are given the same reference numbers.

In the embodiment of FIG. **9** and **10**, the axial-locking lugs **34'** may be as described for FIGS. **7** and **8**, for engagement with a circumferential groove **35'** in the bore **32'** of the base-housing member **33'**; but the spaced pedestals **41** for coaxial positioning are integral outward formations of the cartridge base, projecting from the cylindrical surface **37'** thereof. Other featurs, including angles α and β, are as described for FIGS. **7** and **8** and are therefore given the same reference numbers, but with primed notation.

In both the forms of FIGS. **6** to **8** and of FIGS. **9** and **10**, the arcuate extent of lugs **34** (**34'**) may account for the predominant fraction of the full circumference, for example, four such lugs of 50° extent, at 40° spacings. The discontinuous nature of axial locking afforded by such discrete lug formations permits natural transient local resilient deformation of the relatively thin wall material of the base end of the cartridge (suggested by dashed lines **42–42'** in FIGS. **8** and **10**, respectively) in the course of accommodating the interference action described for assembly, disassembly, and pedestal retention of the assembled relationship. Such a lug relationship will also be seen to lend itself to relatively simple injection-molding techniques wherein the inner **27** with integral base **20** is formed with a mold-parting line oriented in a plane which includes the central axis and from which all lugs **34** (**34'**) are symmetrically offset.

The embodiment of FIG. 11 represents slight modification of FIG. 5, in that the integral axial alignment pedestals 45 are part of the container base. Axial-locating means remain as described and are therefore given numbers as in FIG. 5, but with primed notation. The axial-locating inward projection 22' is preferably a single circumferentially continuously distributed radially inward bead having the α and β characteristics already described, but it may also comprise plural circumferentially distributed discrete arcuate elements, as in FIG. 5.

The described constructions will be seen to achieve all stated objects, assuring concentric and coaxial fidelity of mounting, for a wide variety of types of base housing member 11 to which the basic container 10 is assembled, and whether the assembly is removable (small angle β, as shown) or essentially not removable (angle β approaching magnitude of angle α). The described base operating member 12 particularly lends itself to use of such injection-molded plastic materials as polypropylene and ABS, and also to the integral molding thereof with the inner sleeve 27 of the container propulstion mechanism, shown in FIG. 2 with a straight cam slot 28 for carrier propulsion and retraction.

While the invention has been described in detail for the preferred forms shown, it will be understood that modifications may be made without departing from the scope of the invention.

What is claimed is:

1. In combination, a lipstick or the like container having a base end and an applicator end for exposing lipstick or the like to be applied, and a cup-shaped base housing member having a bore opening removably receiving the base end of the container, a first axial region of the outer surface of said base end and a corresponding axial region of the bore of said housing member having means interengaging upon base-end insertion into the bore to prevent relative rotation of the housing member with respect to said base end, a second axial region of the outer surface of said base having a circumferentially continuous groove with a sidewall extending generally radially to a sharply defined corner intersection with the said second outer-surface portion, plural integral angularly spaced like pedestal formations in a second corresponding axial region of the bore of said housing member, said pedestal regions being at a radius having interference fit with said second axial region of said base end adjacent the groove, and an integral snap-retention lug formation of width to fit the groove projecting radially inwardly of each pedestal, each of said lug formations having a sidewall extending generally radially to a sharply defined corner intersection with its adjacent pedestal surface, all said lug sidewall corner intersections lying in a single radial plane, and the effective axial width of said lugs in relation to said groove being such as not to prevent the seated engagement of said base end with all pedestals when said lugs are located in the groove.

2. The combination according to claim 1, in which said groove sidewall is on the axial side of the groove remote from the axial limit of said base end, and in which the lug sidewalls are on that axial side of the lugs which is closer to the open end of said housing member, whereby contacting sidewalls at and near said corner intersections establish a radial-plane abutment reference, rendered concentric by said pedestals, for all normal cosmetic-applying and container-closing manipulations of said base member.

3. The combination of claim 2, in which the other axial side of each lug is tapered for transiently cammed local radial deformation of engaged base end and housing-member parts during the course of axial disassembly from the point of snapped lug reception in the groove.

4. The combination of claim 3, in which the effective width of the groove in relation to the axial spacing of lug sidewalls is such as to normally urge said sharply defined lug-corner intersections into close proximity with that of the groove.

5. The combination of claim 1, in which said nonrotative interengaging means includes spline and key formations operative near the closed end of the bore, said lug and groove engagements and said pedestal engagements being operative nearer to the open end of the bore.

6. The combination of claim 5, in which said pedestal engagements are operative at a generally central axial region of the bore.

7. The combination of claim 5, in which the splines of said last-mentioned formations are on said base end and at least one key thereof is integrally formed in the bore, said splines being at equal angular spacing.

8. The combination fo claim 5, in which the insertion ends of the splines are tapered.

9. The combination of claim 7, in which the spacings of said lugs are at integer multiples of the spacing between adjacent spline centers, the center of said key being angularly offset from any lug location to the extent of an integer multiple of the spacing between adjacent spline centers, whereby, in the course of assembly, initial spline engagement is with said lugs and determines correct spline alignment for engagement with said key.

10. The combination of claim 9, in which said key is one of an angularly spaced plurality, all said keys being offset from any lug alignment and being at spacings which are integer multiples of the spacing between adjacent spline centers.

11. In combination, a lipstick or the like container having a base member at one end and an applicator at the other end for exposing lipstick or the like to be applied, and a cup-shaped base-housing member having a bore opening axially insertably receiving the base member of the container, the material of at least one of said members being radially compliant, said base member and the bore having adjacent generally cylindrical surfaces in relatively close radial-positioning relation when assembled, one of said members having a circumferentially continuous groove adjacent the cylindrical surface of said one member, and at least three angularly spaced circumferentially arcuate radially extending groove-engaging and locating means integrally formed with the other of said members and adjacent the cylindrical surface of said other member, the radial extent of said locating means being less than the depth of said groove and so limited as to entail transient compliant deformation substantially only in the interference engagement of said members upon axial assembly thereof, whereby the engaged cylindrical surfaces are determinative of a coaxially stabilized relation of said members and said groove and locating means are determinative of an axial location of said members.

12. The combination of claim 11, in which the groove is axially inward of the said cylindrical surface of said other member, and in which adjacent generally radial sidewalls of the groove and locating means define sharp corner intersections with their respective adjacent cylindrical surfaces.

13. The combination of claim 11, in which the groove is in the container base member, in which said locating means is an integral radially inward formation in the bore of said base housing member, and in which said cylindrical surface of the bore comprises at least three angularly spaced cylindrical arcs, each said arc being at the radially inner limit of a pedestal integrally formed in the bore.

14. The combination of claim 11, in which the groove is in the bore, in which said locating means extends radially outward of said container base member, and in which said cylindrical surface of the bore comprises at least three angularly spaced cylindrical arcs, each said arc being at the radially inner limit of a pedestal integrally formed in the bore.

15. The combination of claim 11, in which the groove is in the bore, in which said locating means extends radially outward of said container base member, and in which said cylindrical surface of the container base member comprises at least three angularly spaced cylindrical arcs, each said arc being at the radially outer limit of a pedestal integrally formed with said container base member.

16. The combination of claim 11, in which the groove is in the container base member, in which said locating means is an integral radially inward formation in the bore of said base housing member, and in which said cylindrical surface of the container base member comprises at least three angularly spaced cylindrical arcs, each said arc being at the radially outer limit of a pedestal integrally formed with the container base member.

17. The combination of claim 12, in which the locating means sidewall is a circumferentially arcuate segment of a frusto-conical surface near intersection with the said adjacent cylindrical surface of said other member.

18. The combination of claim 17, in which said locating means includes a second sidewall which is a circumferentially arcuate segment of a second frusto-conical surface of convergent slope opposed to that of said first frusto-conical surface, said frusto-conical surfaces converging toward each other in the direction of radial projection of said locating means.

19. The combination of claim 11, in which the groove is in the container base member and the locating means is an integral radially inward formation in the bore of the base housing member.

20. The combination of claim 11, in which the groove is in the bore of the base housing member and the locating means is an integral radially outward formation on said base member.

21. The combination of claim 11, in which each of said locating means is a circumferentially arcuate radial rib projection, all said rib projections being at the same axial location.

* * * * *