April 4, 1967 F. F. BUCHWALTER ETAL 3,311,941

CONTAINERS FOR FINGERNAIL ENAMEL

Filed Feb. 8, 1965 2 Sheets-Sheet 1

FIG. 1

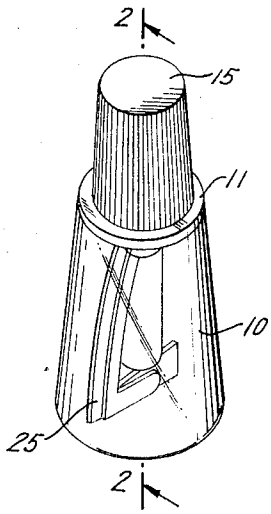


FIG. 2

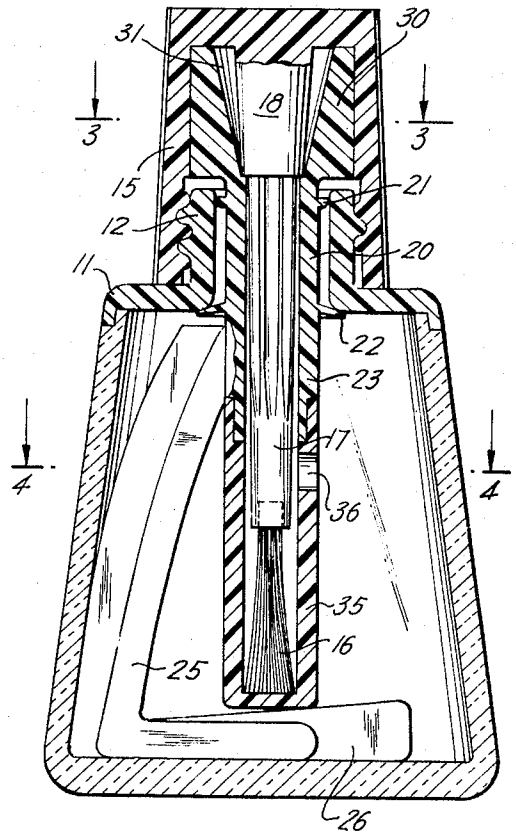
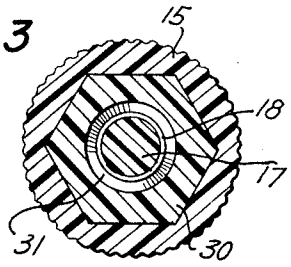


FIG. 3



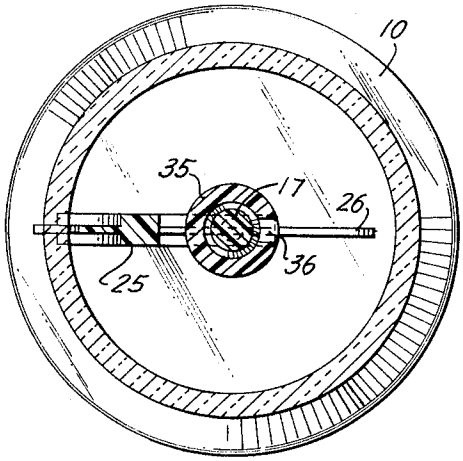


FIG. 4

INVENTORS
FRANCIS F. BUCHWALTER
NORMAN L. GREIF
JAMES J. BAKER
ALBERT SHOLNIK
BY
Curtis, Morris & Safford
ATTORNEYS

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FIG. 5

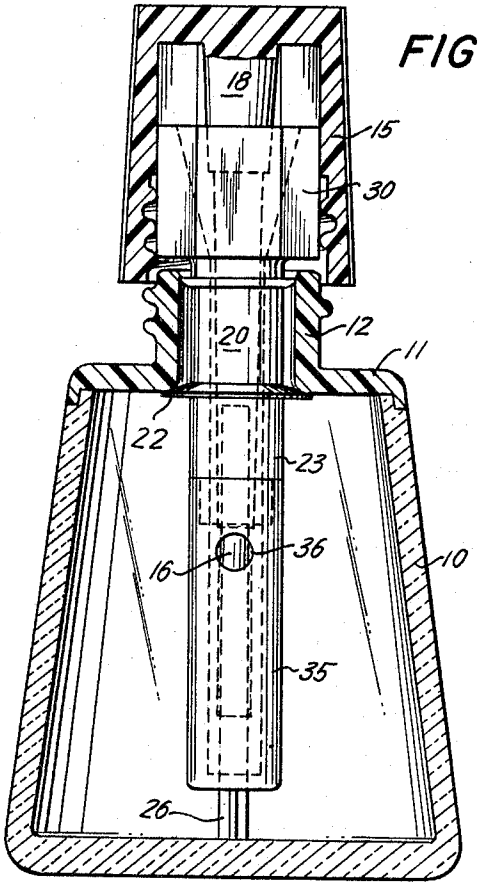


FIG. 6

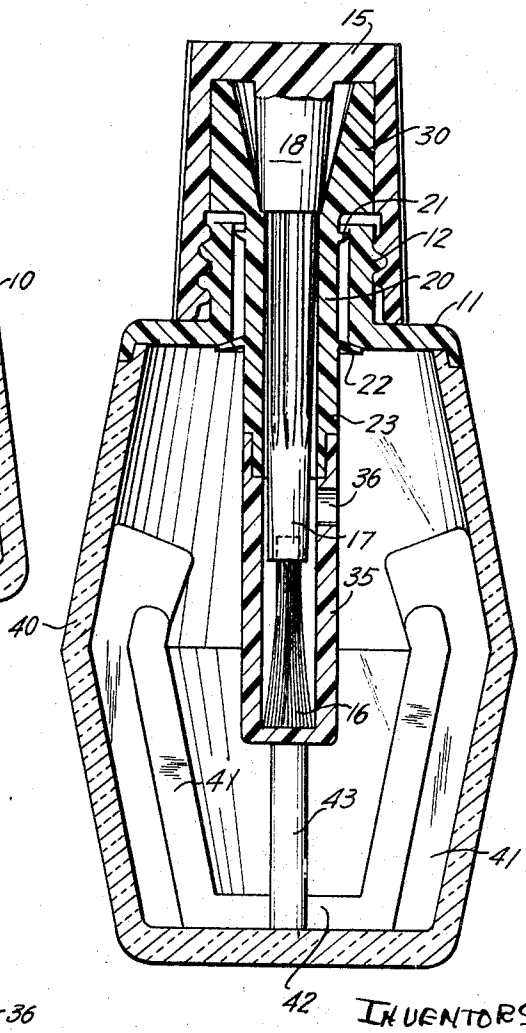
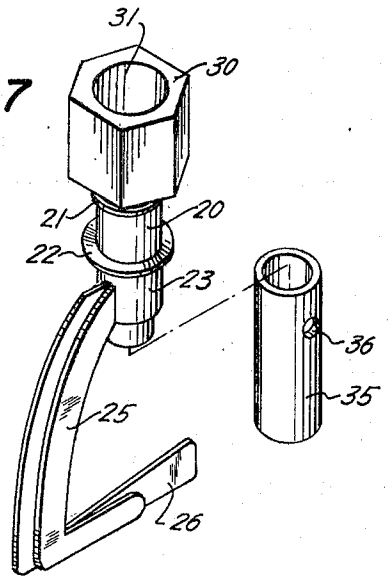


FIG. 7



INVENTORS
FRANCIS F. BUCHWALTER
NORMAN L. GREIF
JAMES I. BAKER
ALBERT SKOLNIK
BY
Curtis, Morris & Safford
ATTORNEYS

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CONTAINERS FOR FINGERNAIL ENAMEL

Francis F. Buchwalter, New Rochelle, Norman L. Greif, North Woodmere, and Albert Skolnik, Merrick, N.Y., and James J. Baker, Darien, Conn., assignors to Revlon, Inc., New York, N.Y.

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This invention relates to dispensing containers for fingernail enamel and like heavily pigmented materials and, more particularly, to such dispensing containers having both a built-in agitating device and a dispensing well for metering and controlling the amount of enamel and depth thereof to be applied to a brush each time the brush is dipped into the container and regardless of variations of the level of the enamel therein.

As is well understood in this art, a conventional and recurring problem is generally encountered with compositions such as colored or pigmented fingernail enamel or lacquer because of the tendency for the suspended pigment to settle out in the bottle or container during storage before the bottle is purchased and/or even between uses or applications by the purchaser or user. Because of the particular nature and characteristics of the pigments and vehicles conventionally used for fingernail enamels, it may be quite difficult to redisperse the pigments, once they are settled out of the liquid suspension, and such difficulty is particularly aggravated in the case of so-called pearlescent enamels where the pearlescence is achieved by including in the composition suspended fish scale materials of fairly large particle size.

Indeed, the difficulty of redispersing settled out pigments in fingernail enamel bottles has heretofore exercised quite substantial and, in some cases, controlling limitations on the size and shape of the bottles in which such materials are commonly packaged and sold. For example, with many formulations, violent shaking of the bottle before each use is not sufficient completely to redisperse the settled out pigment, even when aided by such expedients as including steel shot in the bottle so that it acts somewhat as a miniature ball mill. For the same reasons, and because of this same difficulty, it may generally be believed that only about two-thirds of the enamel included in a bottle will be used before the settling out of pigment presents such a problem to the user that she throws the remainder away and replaces it with a new bottle; and the same difficulty generally indicates that virtually all nail enamels are packaged and sold in small bottles of conventionally frustro-conical shape or, at least, with the width of the bottle decreasing from the bottom toward the top to avoid inwardly protruding or inwardly extending lower side wall surfaces on which settling of the pigment is accentuated.

Also as well understood, there is another peculiarity of pigmented fingernail enamels and lacquers arising out of both the formulation thereof and the desired manner of use, especially by the average woman without the particular skill or training of a professional manicurist. This peculiarity relates to the fact that the enamel formulations and the applicator brush therefor are particularly designed so that one dip of the brush into the enamel should accumulate thereon enough enamel to cover five (or sometimes ten) fingernails evenly or uniformly. To this end and for proper flow control of the enamel through and from the applying brush and the lower portion of the handle thereof which is also dipped into the enamel, a predetermined length or depth of brush and handle should be submerged into the enamel when the brush is dipped into the bottle.

Perhaps not so much for quantity control as for flow rate control from the brush, such uniformity of dip level

may be quite important for securing the desired results, in the sense that too little enamel on the brush may produce a flow rate from the brush giving too thin a coating of enamel on the fingernails, while too great a quantity on the brush may produce too great a flow when the brush is applied to the nails for the desired coverage and uniformity. Obviously, the liquid level inside the bottle, whatever shape the bottle may be, decreases gradually with repeated use, thereby inducing the situation where not only a variation in color or intensity but also a variation in the ease or uniformity of application may occur to varying and more or less unpredictable degrees each successive time the particular bottle of nail enamel is used and in a manner which, of course, may be quite annoying or frustrating to the ordinary user who is not a professional manicurist.

All of the various foregoing factors, as will be understood, exercise substantial limitations on both the size and shape of fingernail enamel bottles, thus presenting a situation which is both extremely unusual and undesired, particularly in the cosmetic industry where the commercial success in merchandising various cosmetic products is widely believed to depend to a large extent upon the individuality and particular design or configuration of the packaging in which cosmetic products are sold. It is further undesirable from the point of view of the user if such factors similarly indicate or dictate that as much as one-third of the total quantity of material in the bottle will be useless or thrown away prior to use.

According to this invention, however, such factors are accommodated and such difficulties alleviated by providing containers (which may be of virtually any desired shape, height, and capacity) which include built-in agitating devices for redispersing settled out pigment (preferably, arranged to be automatically operated by the user merely as she unscrews the bottle cap) and automatically fillable metering or dispensing wells into which the applicator brush is dipped to control and provide on the brush at each dipping thereof a metered or predetermined depth or quantity of enamel regardless of the extent to which the container may be full or partially empty, and further providing the advantage of isolating the brush itself from the main body of enamel to avoid particularly the settling out of excess pigment on the brush itself with concomitant non-uniformity of color or intensity of the enamel applied to or by the brush at each successive dip thereof.

With the foregoing and additional objects in view, this invention will now be described in more detail and other objects and advantages thereof will be apparent from the following description, the accompanying drawings, and the appended claims.

In the drawings:

FIG. 1 is a perspective view of a fingernail enamel bottle or container embodying and for practicing this invention;

FIG. 2 is an axial section view of the container of FIG. 1 along the line 2—2 thereof;

FIG. 3 is a transverse section along the line 3—3 of FIG. 2;

FIG. 4 is a transverse section along the line 4—4 of FIG. 2;

FIG. 5 is an axial section similar to FIG. 2 but showing the agitator device in a different angular position and showing the stopper unscrewed and ready to be removed;

FIG. 6 is an axial section similar to FIG. 2 but illustrating a different shape of bottle and agitator; and

FIG. 7 is a perspective and partially exploded view of the agitator and dispensing well portions of the apparatus of FIG. 1.

Referring to the drawings, in which like reference characters refer to like parts throughout the several views

thereof, there is illustrated, particularly in FIGS. 1 and 2, a fingernail enamel container embodying and for practicing this invention as including a glass bottle **10** having a plastic top **11** with a threaded neck portion **12** affixed thereto to receive a screw top or cap **15** carrying an applicator brush **16** having a shaft **17** inserted into a central socket **18** inside cap **15**, all in more or less known and conventional manner.

A rotatable agitator arrangement (particularly illustrated in FIG. 7) is inserted within bottle **10** and carried by neck **12** of top **11** by a bearing portion **20** inserted through neck **12** and held vertically but rotatably in place there as by two bearing flanges or collars **21** and **22**. Below bearing portion **20** (which is hollow as shown) and below collar **22** is an integral hollow shaft portion **23** to which is eccentrically affixed an agitator **25**, shown in the illustrated embodiment as generally having a shape defined by the shape of the bottle **10** and including a bottom blade **26**. Thus, upon rotation of bearing member **20** and hollow shaft **23**, agitator **25** is rotated within bottle **10**, and the shape of the agitator and its bottom blade **26** is specifically arranged so as to sweep around the inside of bottle **10** and the bottom thereof for agitating and mixing and redispersing any amounts of pigment which may have settled out of the enamel in bottle **10**.

As a means for readily effecting such rotation of the agitator **25**, there is provided a non-round extension **30** integral with bearing portion **20** and hollow shaft **23** and positioned above the top of neck **12** for interfitting or keyed driving engagement with cap **15** (as indicated particularly in FIGS. 3 and 7). In this manner, rotation of cap **15** (even merely in the process of unscrewing it for removal) automatically rotates agitator **25** inside the bottle. The height of extension **30** is sufficiently great so that it is still in driving engagement with the inside of cap **15** even when the cap is completely unscrewed above the threads on neck **12** (see FIG. 5) so that any amount of agitation desired is readily provided merely by unscrewing cap **15** and continuing to rotate it and agitator **25**, after which the cap (including brush **16**) is withdrawn through the hollow shaft **23**, hollow bearing member **20**, and the hollow extension **30** of the agitator arrangement.

As will be understood from the foregoing, agitator **25** and blade **26** thereof are preferably molds from plastic materials with sufficient resiliency to permit insertion of the device through the small top of bottle **10**. Similarly, although a variety of methods are available for keying extension **30** into driving engagement with the inside of cap **15**, the provision of a hexagonal extension **30** interfitting with a similar hexagonal interior socket of cap **15** is preferred as permitting the desired driving engagement while still allowing the diameter of central opening **31** in extension **30** to be as large as possible for the convenient reinsertion of brush **16** therethrough.

Also depending from hollow shaft **23** is a metering and dispensing well **35**, having a filling opening or hole **36**. In this manner, and with the cap **15** in place, the device generally as shown in FIG. 2, merely inverting the entire container permits nail enamel to flow into dispensing well **35** through filling hole **36** to form a metered quantity of enamel for application to brush **16** and shaft **17** thereof. As will be understood from the foregoing, the size and capacity of dispensing well **35** and the distance from the bottom thereof of filling opening **36** are selected and provided automatically to meter or control the amount and depth of enamel applied to brush **16** in dispensing well **35** and more or less independently of the continuously diminishing level or quantity of enamel within bottle **10** as it gets progressively used up. Since generally filling opening **36** is above the original level of enamel in bottle **10**, clogging of the opening by settling pigment is eliminated, while communication is maintained with the solvent vapors in bottle **10** to prevent drying of enamel on brush **16** when the brush is replaced between uses.

Not only does dispensing well **35** provide for uniform metering of enamel onto brush **16** at each use thereof, but it also cooperates with agitator **25** to produce additional advantages promoting the desired uniformity of application of enamel each time it is used. Thus, without dispensing well **35**, brush **16** and shaft **17** therefor normally rest in the closed container at precisely the axial center line thereof and, consequently, at the particular point therein at which any stirring or agitation by a peripherally rotating agitator is at a minimum. If, then, brush **16** were directly immersed in the main quantity of enamel in bottle **10**, utilization of an agitator such as **25** would indeed aid in the redispersion of pigment which settled out of the enamel onto the bottom and the sides of the bottle, but would have virtually no effect on pigment which settled out on the brush, thus leaving a situation where the pigment content of the brush would vary from application to application, and particularly between the first application and any subsequent ones because of the settling which occurs during a long period of shelf-like after packaging and before the first use of the enamel.

Accordingly, the provision of dispensing well **35** not only meters and controls the appropriate amount of enamel to be applied to the brush at each use, but also eliminates the additional disadvantage of excessive settling of pigment on the brush even to an extent which may not be completely correctible by the agitator alone, or by any construction of a rotatable agitator which, obviously, cannot provide great agitation immediately adjacent brush **16**. As will be apparent from the foregoing, the internal capacity of dispensing well **35** is also preferably selected so as to hold substantially no more than the particular amount of enamel which is to be applied and withdrawn on a single dipping of brush **16** and shaft **17** therefor. Thus, little or no enamel remains in well **35** after removal of the brush, thereby substantially eliminating any problems which might arise from settling of pigment from residual quantities of enamel remaining in well **35**, any of which residual amounts will be substantially the same from application to application, thereby cancelling out possible non-uniform situations from one application of enamel to the next and virtually independently of the amount of time the bottle may rest unused or motionless between applications.

As noted above, this invention permits the utilization of a variety of different shapes of containers, as may be desired in merchandising cosmetics, without the restrictions generally imposed by the settling and other difficulties noted above. The embodiment illustrated in FIG. 6, for example, is a form of container which would not be preferred with a conventional bottle because of the inwardly slanting lower portions of the bottle walls. With this embodiment, a differently shaped bottle **40** is shown, in place of the bottle **10**, with other parts being the same, indicating the versatile application of this invention to any shape of bottle. The agitator is shown with two side blades **41** and a lower blade **42**, and is configured generally to conform to the shape of bottle **40** and particularly to sweep or scrape off interior surfaces thereof pigment which may tend to settle thereon. In this arrangement, the agitator **41–42** is driven for rotation from shaft **43** depending from the bottom of dispensing well **35** and driven initially, as with the arrangement of FIG. 2, by rotating cap **15**. Also, as will be noted and understood from the foregoing, despite the greater height of bottle **40** and/or depth of enamel contained therein, dispensing well **35** still meters and controls the application of enamel to brush **16** for the desired depth of dip automatically and independently of either the skill of the user or the level of enamel within the container.

Accordingly, there is provided in accordance herewith containers for fingernail enamel or lacquer having agitators therein disposed in the manner to be automatically operated when unscrewing the cap or otherwise as an aid to redispersing pigment which may settle out from the enamel, as well as having metering or dispersing wells for controlling accurately the depth of enamel applied to

the brush each time it is used and regardless of the differing levels of enamels in the container, while also cooperating with the agitating mechanism for complete and reproducible uniformity regarding pigment which may settle out on the application brush itself, etc. Such devices are readily and inexpensively formed from plastic materials and, indeed, in virtually unitary fashion for insertion into standard or conventional bottles or containers. The agitating and dispensing mechanism itself exercises virtually no control or restriction on the size or shape of the bottle or container and, indeed, eliminates restrictions heretofore imposed upon the shape and depth of fingernail enamel bottles because of the peculiar characteristics of fingernail enamel and the desirability of obtaining a certain quantity or depth of enamel on the brush for each use or application thereof.

While the forms of apparatus herein disclosed represent preferred embodiments of this invention, this invention is not limited to these precise forms of apparatus, and changes may be made therein without departing from the scope of this invention which is defined in the appended claims.

What is claimed is:

1. In container apparatus of the character described for holding fingernail enamel having a readily settling material suspended therein and for dispensing the correct amount of said enamel in its proper suspended form upon a brush inserted therein, the combination which comprises an open-topped first container for holding said enamel with a neck extending from the opening thereof, a second tube-like dispensing container disposed therein and rotatably journaled in said neck, said second container extending from just above the bottom of said first container to beyond the end of said neck and having an opening providing flow communication between said containers at a point therealong above the liquid level of said first container, a scraper blade connected to and extending from said second container and shaped to follow the configuration of the sides of said first container for movement therealong upon rotation of said second container for scraping therefrom said suspended materials and said enamel, an agitator connected to and extending from said scraper blade adjacent the bottom of said first container for movement upon rotation of said second container for agitating said suspended materials in said enamel, and means disposed upon said second container adjacent said neck preventing axial movement therebetween, a closure cap for said containers, an applicator brush depending from said cap, and cooperating means on said cap and the top of said second container whereby rotating said cap rotates said second container with said agitating means thereon.

2. In container apparatus of the character described for holding fingernail enamel having a readily settling material suspended therein and for dispensing the correct amount of said enamel in its proper suspended form upon a brush inserted therein, the combination which comprises an open-topped first container for holding said enamel with a neck extending from the opening thereof, and a second tube-like dispensing container disposed therein and rotatably journaled in said neck, said second container extending from just above the bottom of said first container to beyond the end of said neck and having an opening providing flow communication between said containers at a point therealong above the liquid level of said first container, agitator means connected to and extending from said second container to the periphery of said first container for movement therearound upon rotation of said second container thereby agitating said suspended materials in said enamel, means disposed upon said second container adjacent said neck preventing axial movement therebetween, a closure cap for said containers, an applicator brush depending from said cap, and cooperating means on said cap and the top of said second container whereby

rotating said cap rotates said second container with said agitating means thereon.

3. Apparatus as recited in claim 2 in which said agitator means includes a doctor blade connected to and extending from said second container and shaped to follow the configuration of the sides of said first container for movement therealong upon rotation of said second container for scraping therefrom said suspended materials and said enamel.

4. Apparatus as recited in claim 3 in which said means preventing axial movement between said neck and said second container includes two collars fixedly disposed on said container adjacent said neck, one being disposed immediately above said neck preventing axial displacement of said second container into said neck, and one being disposed immediately below said neck preventing axial displacement of said second container out of said neck.

5. Apparatus as recited in claim 1 in which said second container is the size necessary for holding only the desired portion of enamel and material suspended therein for dispensing at any one time on said brush inserted therein.

6. In a dispensing apparatus of the character described for depositing on an object inserted therein a measured quantity of liquid material having a readily settling material evenly suspended therein, the combination which comprises an open-topped first container for holding said materials with a neck having a screw thread around the outside thereof, an elongated applicator for insertion into said container having integral therewith at one end thereof a screw cap closure for cooperation with said screw thread, a second container disposed in said first container and having an opening therein providing flow communication between said first and second containers above the liquid level of said first container, an elongated hollow bearing member on said second container and rotatably journaled in said neck, means on said bearing member for preventing axial displacement thereof in said neck, a portion of said bearing member being insertable into said cap for working engagement therewith when said cap is in place, and agitator means connected to said bearing member and extending radially therefrom toward the side of said first container for agitation of said materials therein upon turning of said screw cap and said bearing member engaged therewith.

7. Apparatus as recited in claim 6 in which said agitator means includes a doctor blade connected to and extending from said bearing member and shaped to follow the configuration of the sides of said first container for movement therealong upon rotation of said screw cap and said bearing member.

8. Apparatus as recited in claim 6 in which said means preventing axial movement between said neck and said bearing member includes two collars fixedly disposed on said bearing member adjacent said neck, one being positioned immediately above said neck preventing axial displacement of said member into said neck, and one being positioned immediately below said neck preventing axial displacement of said member out of said neck.

9. Apparatus as recited in claim 6 in which said second container is the size necessary for holding only the desired portion of said liquid material with said suspended material therein for disposal on said inserted object at any one time.

10. In a nail enamel dispensing apparatus of the character described for depositing on a brush inserted therein a measured quantity of liquid enamel having a readily settling pigment material suspended therein, the combination which comprises an open-topped first container for holding said enamel with a neck having a screw thread therearound, an elongated brush holder for insertion into said container having integral therewith at one end thereof a screw cap closure for cooperation with said screw thread, said screw cap having an internal socket surrounding said brush-holder with a non-circular cross section, a second container disposed in said first container and

having an opening providing flow communication between said first and second containers above the liquid level of said first container, an elongated hollow bearing member integral with said second container and rotatably journaled on said neck and having means preventing axial displacement thereof in said neck, an extension disposed on said bearing member on the end thereof opposite said second container and extending above said neck, said extension having an exterior non-circular cross section for driving engagement with said internal socket in said cap, a doctor blade connected to and extending from said bearing member and being shaped to follow the configuration of the sides of said first container for movement therealong upon rotation of said extension by said screw cap thereby scraping from the sides of said second container said suspended materials and said enamel, and an agitator connected to and extending from said doctor blade adjacent the bottom of said first container for movement upon rotation of said extension by said cooperating screw cap for agitating said suspended materials and said enamel.

11. Apparatus as recited in claim **10** in which said second container is the size necessary for holding only the desired portion of said liquid material with said suspended material therein for disposal on said inserted object any one time.

12. Apparatus as recited in claim **10** in which said doctor blade and said agitator are formed of resilient material for the easy insertion thereof into the opening of said first container.

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CHARLES A. WILLMUTH, *Primary Examiner.*

E. ROBERTS, *Assistant Examiner.*