March 15, 1955 L. L. KELLETT 2,703,898

COMBINATION BRUSH STRIPPER AND LIQUID SEAL FOR CONTAINERS

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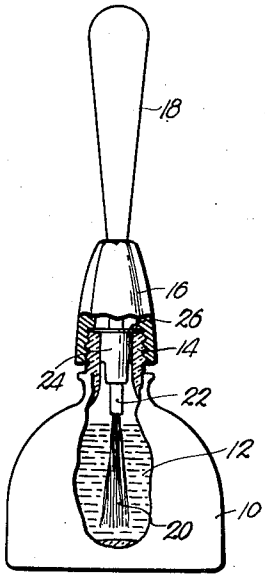


Fig. 1.

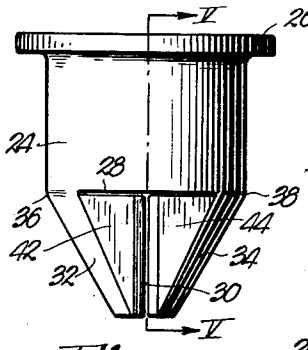


Fig. 4.

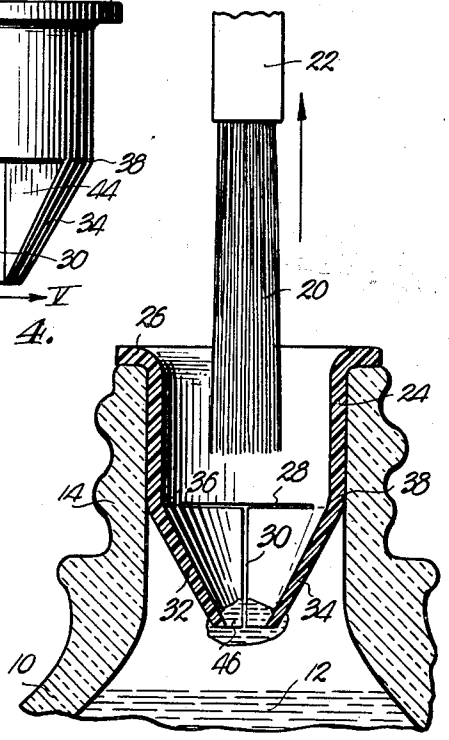


Fig. 6.

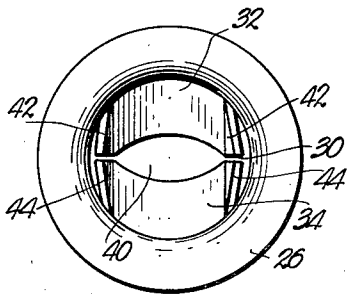


Fig. 2.

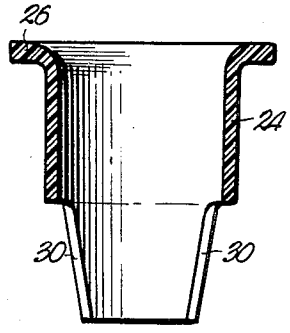


Fig. 5.

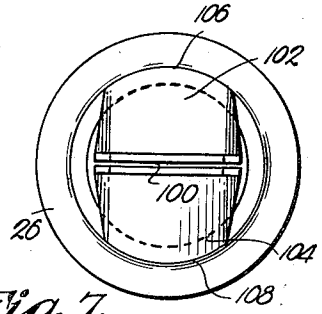


Fig. 7.

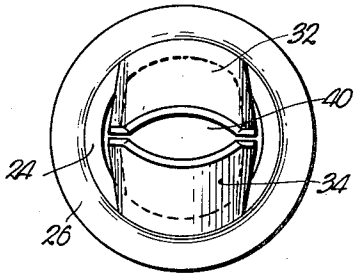


Fig. 3.

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COMBINATION BRUSH STRIPPER AND LIQUID SEAL FOR CONTAINERS

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3 Claims. (Cl. 15—121.3)

This invention relates to attachments for liquid containers such as bottles adapted for disposition within the neck of the bottle and capable when placed in use, of performing a number of functions, namely, that of stripping of a brush of excess liquid after the same has been dipped into the container; forming the brush into a particular desired cross-sectional contour; sealing the contents of the bottle against the atmosphere for a period of time after the brush has been withdrawn therefrom; and preventing spilling of the contents of the bottle upon accidental tipping of the same.

It is accordingly the most important object of the present invention to provide a device as above explained, having a funnel-like body provided with a pair of opposed flexible lips at one end thereof contoured to the shape desired for the dipped brush, and made of flexible material with the lips biased toward each other.

Another important object of the present invention is to provide a device for sealing the contents of a bottle wherein the lips are so formed as to receive a small quantity of the excess liquid stripped from the brush, which liquid, depending on the viscosity of the fluid gradually seeps back into the bottle and maintains the contents thereof sealed while seeping takes place.

Another object of the present invention is to provide a funnel-like body wherein the same is slit transversely intermediate the ends thereof at diametrically opposed points to present a pair of flexible lips that yieldably bear against the brush as the same is being removed from the bottle to strip the excess liquid therefrom, shape the brush and collect a quantity of the removed liquid to present an air-seal.

A further object of the present invention is to provide a combined brush stripper and liquid sealer having the aforesaid opposed lips formed and contoured to prevent spilling of the contents of the bottle when the same is tipped over.

More minor objects will become apparent as the following specification progresses, reference being had to the accompanying drawing, wherein:

Fig. 1 is a side elevational view of a liquid container and a brush-closure construction, parts being broken away to illustrate in elevation, a combination brush stripper and liquid seal for containers made in accordance with the present invention.

Fig. 2 is a top plan view of the device per se.

Fig. 3 is a bottom plan view thereof.

Fig. 4 is a side elevational view of the device.

Fig. 5 is a substantially central, vertical, cross-sectional view taken on line V—V of Fig. 4.

Fig. 6 is a cross-sectional view taken at right angles to the view of Fig. 5 showing the device in a container and illustrating the use thereof with a brush; and

Fig. 7 is a bottom plan view of a slightly modified form of the invention.

Reference may be had to my U. S. Letters Patent 2,644,183, dated February 10, 1953, entitled "Brush Stripper Attachment for Liquid Containers." Generally speaking, the device about to be described, has been designed for much the same purpose as that of the aforesaid application with many improvements that will hereinafter be clearly set forth.

The problems that are overcome through use of the device relate particularly to the field of finger nail polish, including not only the hazard of spillage because of accidental tipping of the containers therefor, but the difficulties encountered in drying of the contents of the containers while in use and the desirability of removing excess polish from the brush prior to application to the finger nails as well as forming the brush to facilitate such application.

The entire assembly of parts is illustrated in Fig. 1 of the drawing and includes a conventional bottle **10** for finger nail polish **12** having a relatively long, narrow, externally threaded neck **14**. An internally tapped cap or closure **16** having a handle **18** thereon is adapted for fitting over the neck **14** and is provided with a brush **20** mounted in the usual manner within a ferrule **22**. The attachment hereof that is adapted to be inserted within the neck **14** of bottle **10**, as is most clearly illustrated in Fig. 6 of the drawing, is made in its entirety from a suitable light-weight, yet sturdy, flexible material such as plastic material and includes a tubular body portion **24** that is cylindrical to conform with the neck **14** of the particular bottle **10** chosen for illustration. The outside diameter of body portion **24** is substantially the same as the inside diameter of neck **14** whereby to present a relatively tight fit when the body **24** is inserted into neck **14**. The uppermost end of body **24** is provided with an out-turned integral flange **26** that overlies the uppermost end of neck **14** and is clamped to the bottle **10** by the cap **16** when the latter is threadably mounted upon neck **14**.

Body **24** is provided with a pair of opposed elongated, transverse slots **28** and a longitudinally extending slot **30** for each slot **28** respectively, each slot **30** communicating with its corresponding slot **28** and being perpendicular thereto. This slot construction presents a pair of opposed, elongated lips **32** and **34** that are substantially U-shaped in cross-section. The normally uppermost end of the bight of each lip **32** and **34** respectively, is integrally joined with the lowermost edge of the tubular body **24**, presenting arcuate lines of hinge or flex **36** and **38** respectively. The bights of lips **32** and **34** converge as the lowermost ends thereof are approached and are arcuate in cross-section throughout the entire lengths thereof presenting an elliptical opening **40**. Lips **32** and **34** are additionally provided with a pair of substantially flat opposed side walls **42** and **44** respectively, the two side walls **42** of the lip **32** extending toward the two side walls **44** of the lip **34**. Accordingly, the slots **30** define one longitudinal edge of the side walls **42** and **44** while the slots **28** form the uppermost edges of side walls **42** and **44**.

It is to be noted in Fig. 3 of the drawing that the side walls **42** of lip **32**, diverge as slots **30** are approached in one direction and converge as the elliptical opening **40** is approached in the other direction.

The side walls **44** of lip **34** are formed in the same manner. Manifestly, the lips **32** and **34** are biased toward each other and it is to be noted further that the extent of flexibility of the lips **32** and **34** at their lines of hinge **36** and **38**, depends upon the length of the slots **28**.

The device is placed in use by removing the cap **16** in the usual manner and as the brush **20** is moved upwardly as indicated by the arrow in Fig. 6, and pulled through the elliptical opening **40**, excess polish **12** will be scraped from the sides of brush **20**. Because of the elliptical shape of opening **40**, brush **20** will simultaneously be accordingly formed to adapt the same advantageously to use in applying polish **12** to the finger nails. As the brush **20** is thus stripped by the lowermost arcuate edges of lips **32** and **34** defining elliptical opening **40**, a substantial amount of the removed polish **12** will collect as at **46** between the lips **32** and **34** and some of such excess liquid **12** will manifestly collect on and depend from the lowermost ends of lips **32** and **34**, all as indicated in Fig. 6 of the drawing. While brush **20** is in use, applying the polish **12** to finger nails, the collection **46** of the liquid **12** will gradually seep away and drip downwardly until the opening **40** is finally clear.

It has been found that the liquid body **46** will seal the contents **12** of bottle **10** against entrance of air for a considerable period of time and usually at least long enough to permit the completion of one finger nail whereupon the brush **20** is again dipped into polish **12** and the sealing process is repeated. Actually, the seal remains

much longer than the average time needed to complete several finger nails with a single dipping of brush **20**. It has been found also that because of the particular shape, contour and disposition of lips **32** and **34**, accidental tipping of the bottle **10** will not cause damage or loss of liquid **12** because of out-flow thereof from bottle **10**, even though the brush **20** is not within the bottle at the time. Manifestly, the amount of liquid **46** that is collected between the lips **32** and **34**, the time consumed in clearing the opening **40** by redripping of the collection back into bottle **10** and the effectiveness in preventing slipping upon accidental tipping of bottle **10** is directly dependent upon the viscosity of the polish **12**. Various changes can be made to adapt the device to liquids of differing viscosities such as changing the sizes of slots **28** and **30** and varying the size and shape of opening **40** to approach progressively the type of opening provided for by the form shown in Fig. 7, hereinafter described. For the most part, however, most polishes now on the market will not flow from the container **10** when the same is overturned and a substantial amount of the same will collect as at **46** in the manner above described.

Because of a relatively tight frictional fit of the body **24** within the neck **14**, the entire device will not pull out of the container **10** when brush **20** is removed therefrom and will not become displaced from the neck **14** when bottle **10** is tipped over.

While the modification of Figs. 1 to 6, inclusive, just described, has been produced primarily for use with finger nail polish, it is to be understood that the same may have other and many varied uses. In this connection, it is contemplated that, in lieu of or in addition to the liquid seal above described, a mechanical seal can, also, be produced by forming the lips of the device in a slightly different manner as indicated in the modified form of Fig. 7.

In all respects, the device is much the same as above set forth with the exception that in lieu of an elliptical opening **40**, there is provided a relatively narrow, elongated opening **100** provided by lips **102** and **104**. If desired, the lowermost straight edges of the lips **102** and **104** may be in normal contacting relationship, thereby fully sealing the contents of the bottle against admittance of air. In all other respects, lips **102** and **104** are formed precisely the same as lips **32** and **34**. Lips **102** and **104** are substantially U-shaped in cross-section, the bights thereof being arcuate at hinge lines **106** and **108** respectively. Instead of being arcuate in cross-section throughout the lengths thereof as provided for in lips **32** and **34**, the lips **102** and **104** have their cross-sectional arching progressively lengthened as the lowermost ends thereof are approached and until such innermost edges present a relatively straight line as indicated at **100**.

The modification of Fig. 7 is adapted for use wherever members such as penpoints, are to be inserted into the container and where it is not necessary to be concerned about the difficulty of inserting the same as in the case of the highly flexible brush **20**. In this connection, the lips **32** and **34**, being of a highly flexible nature and the provision of the elliptical opening **40**, permits insertion of the brush **20** without causing the same to become frayed at the end thereof and causing damage to brush **20**.

While the modification of Fig. 7 is particularly adapted for use with fluids of relatively high viscosity, it is to be understood that in the case of the modifications of Figs. 1 to 6 inclusive, while a sufficient collection **46** is presented to present an effective seal, by the time the brush **20** is replaced into the bottle, such collection is not so great as to impede the ease in which brush **20** can be reinserted.

One of the salient features of the invention, therefore, lies in the utilization of the liquid itself because of its inherent viscosity in cooperation with the particular formation of various elements of the device itself to accomplish the objects of anti-spill and prevention of air contact with the contents of the container, particularly at a time when such protection is most needed, i. e., during actual use.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A combined brush stripper and liquid sealer of flexible material for insertion in the neck of a bottle comprising, in combination, a tubular body receivable in said neck and having a bottom end lying in a horizontal plane extending transverse to the axis of said tubular body, a pair of U-shaped downwardly extending lips having an arcuate bight portion and planar legs, said arcuate bight portion at the upper end of the lip being integrally attached to an adjacent bottom end portion of the tubular body thereabove along an arcuate and flexible hinge line, said upper end of each planar leg portion lying in a second horizontally disposed plane extending in parallel spaced relation just below the adjacent portion of the bottom end of the body lying in said first horizontal plane, said U-shaped lips being oppositely disposed and having the inside surfaces of the arcuate bight portions thereof facing each other and converging towards each other as said lips extend downwardly to where the bottom ends of the lips at the arcuate bight portions thereof form together closely spaced wiping edges lying in a third horizontal plane extending generally parallel to said first two mentioned planes, said planar legs of each lip terminating at their outermost portions remote from the arcuate bight portion of the lip in vertically extending edges that are spaced apart from the corresponding vertically extending edges on said oppositely disposed legs of the oppositely disposed lip, whereby said planar leg portions of the lips reinforce said arcuate bight portions of the lips and form a side closure therewith yet permit said lips to flex along their hinge line attachment to said body when a brush is thrust down through said closely spaced wiping edges formed by said lips whereupon said lips flex outwardly from each other to pass said brush and flex back toward each other to resume their former position upon passage therethrough of said bush and upon withdrawal of said brush through said spaced apart edges, said brush is wiped against the lower edge of either or both lips and any excess liquid carried by said brush is wiped therefrom and trapped as a globule of liquid at said spaced apart edges at the lower ends of said lips to form a temporary seal between said converging lips.

2. A combined brush stripper and liquid sealer for insertion in the neck of a bottle according to claim 1 wherein the bottom ends of the lips at the arcuate bight portions thereof form together a generally elliptical and relatively small opening lying in said third horizontal plane.

3. A combined brush stripper and liquid sealer for insertion in the neck of a bottle according to claim 1 wherein said arcuate bight portions of the lips terminate at their bottom ends in closely spaced parallel wiping edges.

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