Sept. 30, 1969 W. M. WIDEGREN 3,469,928

APPLICATOR

Filed Oct. 18, 1968

FIG. 1

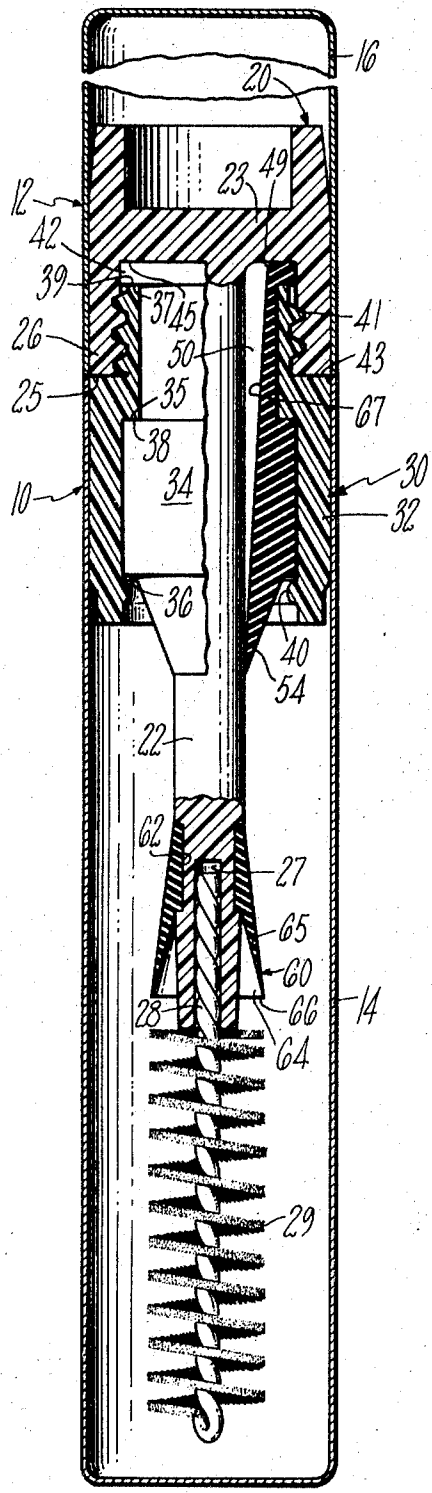
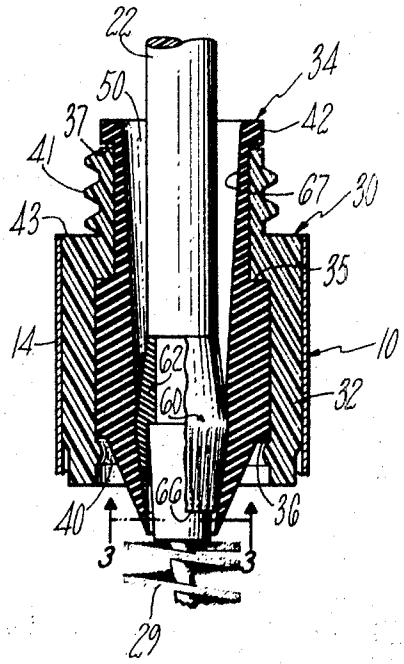


FIG. 2



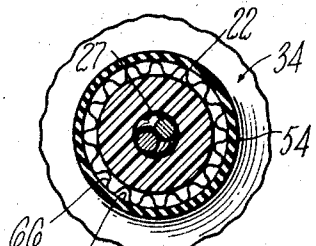


FIG. 3

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APPLICATOR

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ABSTRACT OF THE DISCLOSURE

A mascara applicator comprising a mascara reservoir and an applicator wand providing a cap for the reservoir and having a depending brush normally retained in the reservoir and adapted for application of the mascara. The reservoir has a throat with an inwardly tapered opening for removing excess mascara from the brush when the wand is withdrawn from the reservoir and the wand has a conical wiper element for wiping the throat opening clean when the wand is reinserted into the reservoir.

Brief summary of the invention

The present invention relates to a new and improved applicator of the type conventionally having a liquid reservoir and a closure cap with a depending brush normally retained within the reservoir and adapted for being withdrawn from the reservoir for applying the liquid.

It is a principal aim of the present invention to provide a new and improved applicator for manually applying liquid or the like, for example mascara to the eyelashes, which facilitates application of the liquid without inadvertently staining the fingers, clothing, etc., with the liquid.

It is another aim of the present invention to provide a new and improved applicator of the type in which the throat of the reservoir provides a restriction for removing excess liquid from the applicator brush when it is withdrawn from the reservoir.

It is a further aim of the present invention to provide a new and improved liquid applicator having a more economical and reliable design and providing improved sealing against foreign matter and leakage of the liquid from the reservoir.

Brief description of the drawing

In the drawing.

FIG. 1 is a longitudinal section view partly broken away and partly in section of a mascara applicator incorporating an embodiment of the present invention;

FIG. 2 is a partial longitudinal section view partly broken away and partly in section of the mascara applicator showing the wand thereof partially withdrawn from the mascara reservoir; and

FIG. 3 is a transverse section view taken substantially along line 3—3 of FIG. 2.

Description of the preferred embodiment

Referring now to the drawing in detail, a mascara applicator incorporating an embodiment of the present invention is shown comprising a base subassembly **10** and an enclosure cap subassembly **12** having cylindrical metal shells or casings **14**, **16**, respectively, with enclosed outer ends and which together provide a cylindrical outer surface for suitable embellishment.

The cap **12** comprises a molded plastic insert **20** having an elongated generally cylindrical rod **22** extending outwardly from the shell **16** coaxially therewith and an enlarged head **23** at the inner end of the rod **22** which is press fit within the outer end of the shell **16** to position

the outer edge **25** of a bushing portion **26** thereof flush with the outer edge of the shell **16**. An axial bore **27** is providing in the outer end of the rod **22** to receive an elongated twisted wire support **28** of a brush element **29** which is shown having a nylon generally helically extending brush secured between the twisted wires. The rod **22** and brush element **29** thereby form with the shell **16** a wand for applying mascara contained in the reservoir provided by the casing **14**.

The base **10** comprises a throat element **30** which includes an outer molded plastic bushing **32** press fit within the outer end of the casing **14** and an inner resilient rubber bushing or liner **34** axially retained within the outer bushing **32** by the shoulders **35**, **36**, **37** of the rubber liner **34** and the cooperating shoulders **38**, **39** and bead **40** of the outer bushing **32**. The bushing **32** has a reduced externally threaded outer projection **41** and the depending bushing portion **26** of the insert **20** has conforming internal threads for securing the cap **12** to the base **10**. And as shown in FIG. 1 with the cap **12** threaded onto the base **10**, the outer edge **25** of the bushing portion **26** and the shell **16** abut an edge **43** of the bushing **32** and the outer edge of the casing **14** respectively. Also an outer lip **42** of the rubber liner **34** is pressed between the shoulder or edge **39** of the bushing **32** and an opposed face **45** of the insert **20** to provide a seal between the base and cap and to thereby seal the applicator against foreign matter and leakage. In addition the lip **42** is thereby deformed slightly to provide a rounded or chamfered inner lip edge **49**.

The throat element **30** has an elongated circular opening **50** coaxial with the casing **14** for inserting the wand into the mascara reservoir. The opening **50** is dimensioned to provide a restriction for removing excess liquid from the brush element **29** when the wand is withdrawn from the reservoir and to thereby provide that the brush element **29** contains the optimum amount of mascara. The liner **34** is provided with an inward projection **54** having a circular end opening with a diameter substantially equal to but less than the diameter of the generally cylindrical rod **22** such that when the wand is withdrawn the projection **54** will function to remove excess mascara from the brush element **29** and also function as a rod wiper to remove mascara from the rod. For this purpose the projection **54** is axially tapered inwardly to its inner end to provide a circular resilient lip for effectively removing the liquid from the rod and brush. In addition the opening **50** is of conical shape and in the shown embodiment is axially tapered substantially its full length from the rounded edge **49**, to provide in part for gradually relieving the brush deformation when the wand is withdrawn from the reservoir. In this regard the diameter of the conical opening **50** at its outer end is preferably greater than the diameter or maximum transverse dimension of the brush so that each section of the brush will have resumed its normal shape before it emerges from the throat opening and will therefore not spatter mascara upon emergence.

A wiper **60** mounted on the rod **22** is shown consisting of a first sleeve portion **62** received within a peripheral annulus of the rod **22** to retain the wiper **60** against axial movement on the rod **20** and a funnel-like portion **64** extending outwardly from the sleeve portion **62** toward the brush and forming a catcher for mascara spattering or dripping from the brush, for example during application of the mascara. The outer surface of the wiper **60** is of conical shape tapering outwardly from the rod **20** toward the brush such that the bushing **34** will remove liquid from the external surface of the wiper **60** when the wand is withdrawn from the reservoir.

The funnel-like wall **65** of the wiper portion **64** tapers toward the brush to provide a flexible and resilient lead-

ing edge **66**, and so that upon reinsertion of the wand into the reservoir the wiper **60** functions to wipe the throat opening **50** clean of liquid. For this reason the diameter of the circular leading edge **66** is made substantially equal to but slightly greater than the diameter of the outer end of the opening **50**, exclusive of the round or chamfer **49**, and the rounded edge **49** accordingly provides for assisting in guiding the wiper **60** into the throat opening **50**.

As the wand is reinserted into the throat opening **50** the leading edge **66** is progressively deflected inwardly by the conical opening wall **67**. The funnel-like portion **64** of the wiper **60** is accordingly made flexible and resilient to enable it to be readily deflected inwardly as the wand is reinserted into the reservoir. In this regard it has been found that if the liner **34** has a Durometer hardness of **80**, the leading edge **66** of the wiper will be deformed into a corrugated shape by the opening wall **67** as shown in FIG. 3 as the wand is inserted into the reservoir. As a result, the air within the reservoir is permitted to bleed relatively freely between the wiper **60** and opening wall **67** to permit the wand to be inserted into the reservoir free of restraint from compressed air in the reservoir.

Also, it can be seen that the progressive inward deflection of the wiper wall **65** provides for maintaining substantially line contact between the wiper **60** and liner **34** which permits the wiper **60** to effectively remove any mascara from the opening wall **67** while at the same time minimize the frictional restraint between the opening wall and wiper. Thus, it can be seen that the wiper **60** provides for wiping the throat opening **50** free of mascara when the wand is inserted into the reservoir and that the rod therefore remains free of mascara during use. Accordingly, the brush of the wand will contain the optimum amount of mascara and the rest of the wand will remain clean of mascara to avoid staining the user's fingers, clothing, etc.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above-described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. In an applicator comprising an applicator wand with an elongated rod and a brush element at the outer end of the rod, and a reservoir with a throat having an opening for receiving the wand for inserting the brush element into the reservoir, the improvement wherein the wand comprises a wiper element surrounding the rod inwardly of the brush element and cooperable with the throat to wipe the throat upon insertion of the wand through the throat opening into the reservoir.

2. In the applicator of claim **1** wherein the wiper element has a peripheral conical surface portion substantially coaxial with the rod and extending outwardly toward the brush element.

3. In the applicator of claim **1** wherein the wiper element has a first sleeve portion receiving the rod and a circular hollow portion surrounding the rod and extending axially from the sleeve portion toward the brush element.

4. In the applicator of claim **3** wherein the hollow portion of the wiper element has a funnel-like shape.

5. In the applicator of claim **3** wherein the rod has a first generally cylindrical portion, a second reduced portion providing a peripheral annulus for receiving the sleeve portion of the wiper element and a third portion inwardly of the hollow portion of the wiper element axially tapering toward the brush element.

6. In the applicator of any one of claims **1–5** wherein the throat has an inwardly tapered generally conical opening and wherein the wiper element is circular and has a diameter substantially equal to the largest diameter of the throat opening.

7. In the applicator of any one of claims **1–5** wherein the rod is generally cylindrical and wherein the throat has a generally circular opening with a minimum diameter substantially equal to the diameter of the generally cylindrical rod.

8. In the applicator of any one of claims **1–5** wherein the throat comprises a resilient rubber bushing providing said throat opening and having a lip at the outer end thereof, wherein the wand provides a closure for the reservoir and wherein the wand and reservoir have cooperating means for mounting the wand on the reservoir with the brush element received therein and with the lip providing a seal between the wand and reservoir.

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LAWRENCE CHARLES, Primary Examiner

U.S. Cl. X.R.

401—128