Oct. 10, 1967 G. SCHWARTZMAN 3,345,673

BRUSH-TYPE APPLICATOR

Filed Oct. 19, 1965

FIG. 1

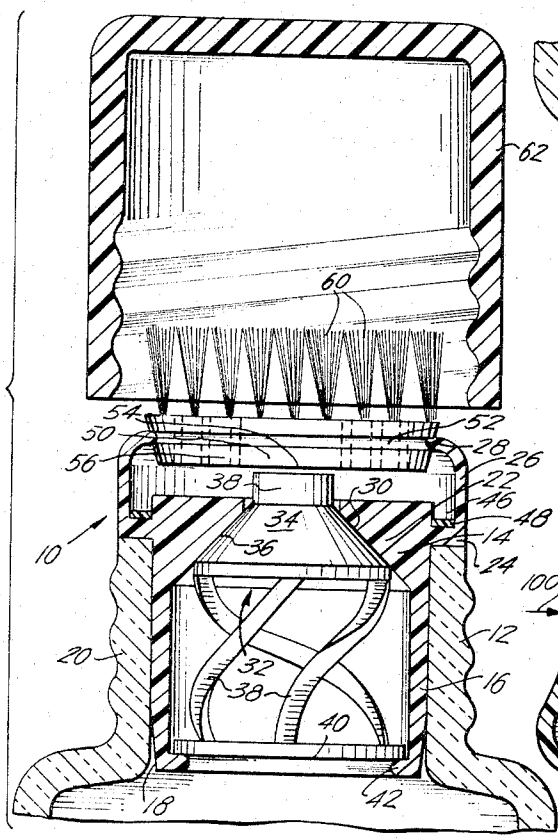
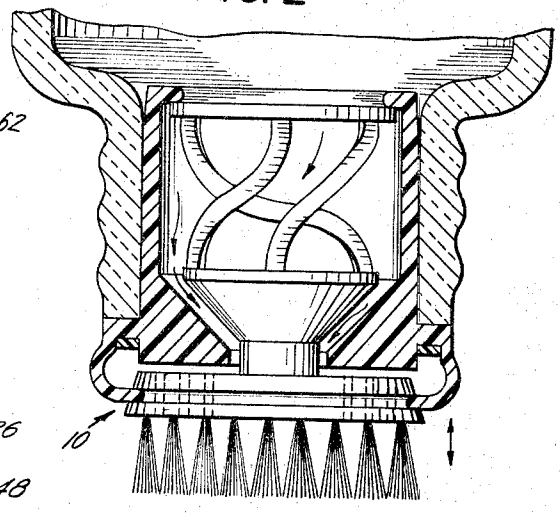


FIG. 2



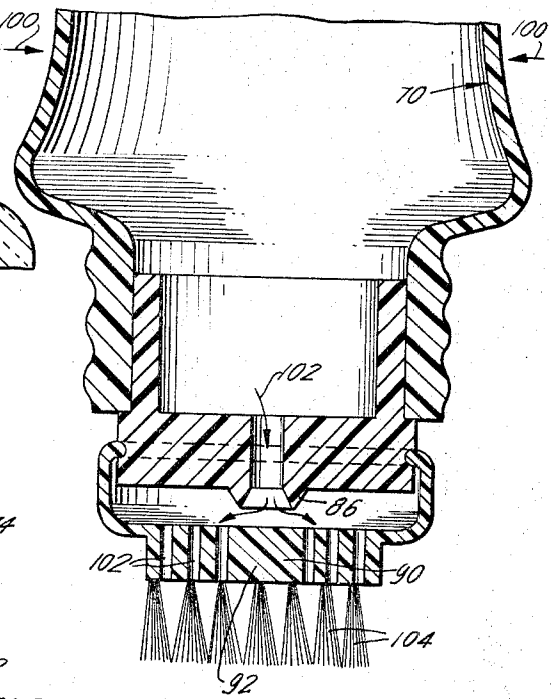


FIG. 4

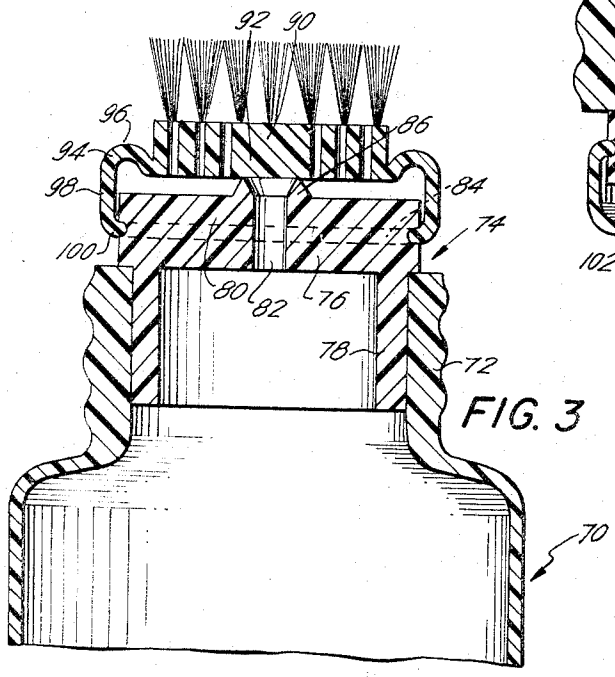


FIG. 3

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BRUSH-TYPE APPLICATOR

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This invention relates to an applicator especially adapted for use in applying cosmetics, medications, shoe polish or other fluids on the person, clothing, shoes, and the like of the user, and more particularly, to an applicator having a brush head adapted to be used in applying fluids in an efficacious manner.

In the past, applicators have been produced which are provided with applicator ends serving to actuate valves. Previously, however, it has not been possible to provide an applicator having a brush head with a valve which can be efficiently controlled by the brush head and yet which will permit the brush head to revolve and to be movable and to be resiliently mounted in a manner so as to efficiently apply fluid while also metering the fluid flow in a suitably controlled manner.

It is therefore an important object of the invention to overcome the disadvantages of the prior art devices by providing an applicator which includes a retaining ring having a projecting portion adapted to fit into a container and which rotatably carries a brush head having bores therethrough, which brush head serves to actuate the valve assembly.

One of the important features of the invention resides in the resilient flange means which mounts the brush head for movement towards and away from the retaining ring to actuate the valve means.

It is a further object of the present invention to provide an applicator having a brush head in which resilient flange means normally urge the brush head away from the valve member so as to permit the valve to close.

It is an additional object of the present invention to provide an applicator designed for use with a squeeze bottle wherein the resilient flange means normally urge the brush head toward a valve seat to close a valve.

Still further objects and features of this invention reside in the use of an applicator which is simple in construction, capable of being manufactured out of readily available synthetic plastic materials, which is attractive in appearance and capable of being mass produced at relatively low cost.

These together with the various ancillary objects and features of the present invention which will become apparent as the following description proceeds are attained by this brush-type applicator, a preferred embodiment of which is illustrated in the accompanying drawing, by way of example only, wherein:

FIG. 1 is an exploded sectional view of an embodiment of applicator in accordance with the concepts of the present invention showing the valve in closed position;

FIG. 2 is a vertical sectional view of the applicator shown in a valve open position with the brush head contacting the valve member;

FIG. 3 is a vertical sectional view of another embodiment of the invention shown in a valve closed position; and

FIG. 4 is a vertical sectional view of the applicator shown in its valve open position after pressure has been applied on the squeeze bottle.

With continuing reference to the accompanying drawing, wherein like reference numerals designate similar parts throughout the various views, and with initial attention directed to the embodiment of the invention as shown in FIG. 1, reference numeral **10** is used to generally designate the applicator. The applicator **10** is adapted to be

mounted within a container **12**. The applicator **10** includes a body **14** which has a projecting portion **16** of generally cylindrical shape having a tapered lower end **18** for convenience of fitting the projection **16** in the neck **20** of the container **12**. Further, the body **14** includes a retainer ring **22** which is integrally molded with the projection portion **16** and which includes an outwardly projecting flange **24** provided with a resilient and upwardly extending flange extension **26** and an inwardly turned flange lip **28**. The retaining ring **22** has a central arcuate tapered opening **30** therethrough. Cooperating with the arcuate tapered opening **30** which serves as a valve seat, is a valve member generally indicated at **32**, which includes a valve head **34** having tapered conical surface **36** corresponding to the conical opening **30** and having button top **38**. The valve member **32** includes a plurality of helical coil members **38**, which are integrally attached to the valve head **34** and to a ring **40** which is held in place by the swaged lower edge **42** of the retaining ring **16**. The space between the flange portion **26** and the side wall **44** of the retaining ring **22** forms a ring-shaped reservoir **46** and a sponge or like member **48** may be inserted therein to retain fluid and minimize leakage.

A brush head **50** is provided which may be of substantially disc shape or in the shape of a truncated cone as shown in FIGS. 1 and 2 and has a peripheral groove **52** extending thereabout. The flange lip **28** snap fits in the groove **52**. The brush also has an imperforate central portion **54** and a plurality of spaced bores **56** therethrough for communicating the interior of the applicator with a plurality of bristles **60**.

A cap **62** of any suitable configuration is adapted to be threadedly secured about the neck **19**. In use, the helical spring members **38** will normally urge the valve member **34** to a valve closed position with the button head **38** being in spaced relation to the brush head **50**. However, upon application of the brush head to the surface upon which fluid is to be applied, the brush head will be depressed against the valve button **38**, causing the valve head to be depressed and causing the springs **38** to be depressed as shown in FIG. 2. This permits fluid flow past the valve member and through the bores **56**. Removal of the brush head from the application surface will allow the resilient spring flange means **26** to move the brush heads **50** away from the valve button **38** and allow the helical spring members **38** to close the valve.

Referring now to the embodiment of the invention as is shown in FIG. 3, reference numeral **70** generally designates a conventional squeeze bottle such as made from any of the readily available synthetic plastic materials. The squeeze bottle **70** is provided with a neck **72** of convenient size into which the applicator **74** is adapted to be inserted. The applicator includes a body **76** provided with a projecting portion **78** which seats within the neck **72** and is provided with a retaining ring **80** which has a central opening **82** therethrough. Further, the retaining ring **80** is provided with a peripheral flange **84** extending thereabout. Surrounding the periphery of the opening **82** is a circular rib **86** of triangular cross section which forms a valve seat.

A brush head **90** of generally disc shape, having a central imperforate portion **92** is provided. The brush head has a flange member **94** formed of resilient synthetic plastic material, including an arcuate portion **96**, a downwardly extending portion **98** and an inwardly turned lip **100**. The lip is adapted to be snap fitted in the groove **84** and the resilient construction of the flange **94** is that it has an initial tendency to pull the imperforate portion **92** directly downwardly into sealing engagement with the rib **86** to prevent fluid flow through the opening **82**. However, when pressure is applied, as shown by the arrows

at **100**, on the squeeze bottle **70**, fluid will be forced in the direction of the arrow **102** and thence onto the imperforate portion, forcing the brush head **90** away from the rib **86** and thereby permitting fluid flow through the plurality of bores **102** formed in the brush head. A plurality of bristles **104** are fitted in the brush head **90**.

A latitude of modification, change and substitution is intended in the foregoing disclosure, and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the invention herein.

I claim:

1. An applicator comprising a body including a retainer ring having a projecting portion; said ring having an opening therein forming a valve seat, a brush head having a plurality of spaced bores therethrough, means cooperating with said valve seat to close said opening, and resilient flange means connecting said brush head to said retainer ring for movement towards and away from said retainer ring and for rotation relative to said retainer ring.

2. An applicator according to claim **1**, wherein said flange means is integral with said brush head.

3. An applicator according to claim **2**, wherein said body has a peripheral groove therein, said flange means being rotatably snap fitted in said groove.

4. An applicator according to claim **3**, wherein said valve seat is defined by a peripheral rib of triangular cross section surrounding said opening, said brush head having an imperforate portion engageable with said rib to control flow of fluid through said opening.

5. An applicator according to claim **4**, wherein said brush head is provided with a plurality of bristles.

6. An applicator according to claim **1**, wherein said flange means is integral with said body.

7. An applicator according to claim **6**, wherein said brush head has a peripheral groove therein, said flange means being rotatably snap fitted in said groove.

8. An applicator according to claim **7**, wherein said first named means includes a valve member disposed within said body, said valve member being movable with respect to said valve seat to control fluid flow through said opening.

9. An applicator according to claim **8**, wherein said opening is tapered, said valve member including a helical coil spring secured to said projecting portion and a conical valve head extending into said opening and adapted to be engaged by said brush head to depress said valve head.

10. An applicator according to claim **9**, wherein said brush head is provided with a plurality of bristles.

11. An applicator according to claim **1**, wherein said flange means is integral with said brush head, a squeeze bottle having a neck, said projecting portion being disposed in said neck, said valve seat being defined by a peripheral rib of triangular cross section surrounding said opening, said brush head having an imperforate portion engageable with said rib to control flow of fluid through said opening, said flange means resilient by urging said imperforate portion against said rib, said brush head being urged away from said rib upon application of squeeze pressure on said squeeze bottle to permit fluid flow through said opening.

12. An applicator according to claim **1**, wherein said body has a peripheral groove therein, said flange means being rotatably snap fitted in said groove, said brush head being provided with a plurality of bristles.

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