ABSTRACT OF THE DISCLOSURE

An applicator element mounted on a handle to serve the general purpose of a brush comprises a bulbous body of a soft, resilient, foamed plastic with the cells open to provide communication among the cells and to provide numerous minute outwardly open cavities formed by the outer cell walls. A stiffener element projecting from the handle is enclosed by the foamed plastic applicator element and is substantially smaller in cross sectional area than the applicator element.

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a division of my copending application Ser. No. 816,183, filed Apr. 11, 1969, and which in turn is a continuation of my application Ser. No. 660,124, filed Aug. 11, 1967, now abandoned.

BACKGROUND OF THE INVENTION

Brushes are commonly moused on handles to serve as means for applying various materials to various surfaces. The present invention is directed to the need for circumventing certain disadvantages and limitations that are inherent in such brushes, and especially in the use of brushes to apply cosmetics.

One disadvantage of a conventional brush for use with cosmetics such as rouge, mascara, and eye shadow is that it is difficult to control the area of application with close precision. A slight increase in pressure may spread the brush beyond the desired area of application and too often errant bristles diverge from the main body of bristles to defeat close control. The need is for an applicator element that has and will maintain well defined boundaries.

A related need is a brush that may be used for sidewise strokes with close control of the width and length of the strokes. If a conventional flat brush is moved sidewise to apply a stroke of material, the bristles necessarily bend laterally and the location of the stroke varies with the degree of flexure of the bristles. Consequently, it is not possible to move a flat brush sidewise with such close control as to be sure of covering a precisely defined area.

Another disadvantage is that a conventional brush has too limited capacity for retention of a fluid cosmetic after the brush is dipped into the fluid. A brush has only limited capillary capacity and most of the fluent material that is being applied is retained on the brush by simple adherence to the smooth outer surfaces of the individual bristles of the brush.

Another need in many instances is for a brush that will make exceedingly light contact with a skin area. Ideally, such a brush should be as light and soft as a feather not only for the comfort of the user but also to avoid any excessive tendency for the brush to wipe off previously applied material.

A still further need is for a brush having special utility for the application of finely divided dry materials such as dry rouge and powder. Such an improved applicator should, of course, permit accurate control of the area of application and such a brush should be capable of retaining a desirable quantity of the dry material when the brush is dipped into the dry material. Here again, a brush for the application of dry material should make only light contact with a skin area to avoid dragging away previously applied dry material.

Finally, it is desirable that a cosmetic applicator be of a relatively simple construction suitable for mass production by automatic or semiautomatic machinery.

SUMMARY OF THE INVENTION

The invention is based on the discovery that a light, soft, resilient foamed plastic such as foamed urethane has special utility for use as an applicator for cosmetics or the like if the foamed plastic is of open cell construction. With the numerous minute or microscopic cells of the foamed plastic in communication with each other, the foamed plastic has exceptional capacity for capillary retention of a relatively large total volume of the voids of such an applicator of a given size provides an exceptional capacity for the retention of a quantity of liquid cosmetic after the applicator is dipped into the liquid cosmetic.

A special advantage of such an applicator is that the open cells on the outer surface of the applicator constitute numerous closely spaced cavities that are opened to the exterior of the applicator. If the applicator is used for applying a liquid cosmetic, initial contact of the applicator with the skin releases the liquid in the surface of the cavities of the applicator and thereafter the surface cavities are supplied with reserve liquid from the deeper cells of the applicator. If the applicator is dipped into a dry cosmetic such as face powder or dry rouge, the minute surface cavities of the applicator retain particles of the dry material and readily release the particles upon initial contact of the applicator with the user's skin.

A further important advantage of an applicator made of a soft open cell foamed plastic is that the applicator has definite boundaries which are maintained when the applicator is brought into light pressure contact with the skin. Since the applicator tends to maintain its configuration, it is easy for the user to control the area of application with precision. It is also an important fact that such an applicator may be moved sidewise for accurately located and well defined strokes of cosmetic material.

Where it is desirable for certain uses to provide a larger or longer applicator element that would tend to flop in an uncontrolled manner, the invention teaches that the applicator may be reinforced by a suitable stiffener member. Preferably, the stiffener member is enclosed by the foamed plastic material. In some embodiments of the invention the foamed plastic is in the form of an envelope with the stiffener member extending into the interior of the envelope.

A feature of the invention is that the stiffener member may be advantageously of smaller longitudinal cross sectional area than the envelope into which it extends. Thus, the foamed plastic of such an applicator may have a freely flexible marginal end portion extending beyond the end of the enclosed stiffener member with two freely flexible side marginal portions extending beyond the opposite sides of the stiffener material.

The advantage of such a stiffener inside an envelope of the open cell plastic material is that the envelope may be relatively large without being so limited as to sacrifice close control of the area of application. A special advantage is that the applicator may be moved sidewise for sidewise strokes with close control of the area of the applied material. A further special advantage of the disclosed embodiments of the invention is that open cell foamed urethane is of such light weight and delicate construction that it compares with a feather in its ability to brush the skin with exceedingly light contact.
With reference to economical fabrication of such applicators, the open cell foamed plastic may be produced in sheets of suitable thickness to permit applicator elements to be stamped out by mass production techniques. In this regard, one feature of the invention is that the envelopes may be produced by superimposing one layer of the foamed material on another layer and then using a cutting die to cut through both layers and simultaneously applying sonic energy along the cutting edges to seal the two cut layers together along their edges. As will be explained, economy may also be achieved by using such a combination of cutting and sealing die to produce twin envelopes economically, the two envelopes being subsequently severed from each other. In one practice of the invention, further economy is achieved by using a handle construction that provides a suitable seat for the base end of the foamed plastic envelope, the seat serving the purpose of a ferrule and thus saving the cost of a ferrule.

The various features and advantages of the invention may be understood from the following described detail and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, which are to be regarded as merely illustrative:

FIG. 1 is a plan view of an applicator according to one embodiment employing an applicator element formed as an envelope with an interior stiffener;

FIG. 2 is a side elevational view of the same;

FIG. 3 shows a narrow sheet of open cell foamed plastic material with a flat flexible plastic stiffener strip imposed on the sheet as used in forming the applicator element shown in FIGS. 1 and 2;

FIG. 4 shows a second sheet placed on the first sheet to cover the flat stiffener strip, as shown in FIG. 3;

FIG. 5 shows the outline of a double size envelope that may be stamped out of the multiple layers in FIG. 4 by means of a combined stamping and sealing die;

FIG. 6 is a perspective view showing how the applicator of FIGS. 1 and 2 may be employed for a sidewise movement against a skin surface;

FIG. 7 is a plan view of an applicator according to another embodiment employing a modified form of applicator element;

FIG. 8 is an exploded view, partly in side elevation and partly in section, showing the applicator element envelope and handle of the applicator as shown in FIG. 7, prior to assembly;

FIG. 9 is a plan view similar to FIG. 5 showing how a combined cutting and sealing die may produce twin envelopes without stiffener members therein, as used in the applicator shown in FIG. 7;

FIG. 10 shows how the applicator of FIG. 7 may be flexed sidewise against a surface for the purpose of executing a lateral stroke against the surface;

FIG. 11 is a plan view of an applicator according to still another embodiment;

FIG. 12 is a fragmentary side elevational view of a plastic handle with an integral flexible stiffening blade extending from the end thereof and with the end of the handle forming a conical socket to seat the inner end of an applicator element, as used in the applicator shown in FIG. 11; and

FIG. 13 is an end elevation of the handle shown in FIG. 12.

DESCRIPTION OF THE SEVERAL EMBODIMENTS

Referring more specifically to the drawings, an applicator is shown in FIGS. 1 and 2 having an applicator element 55 mounted on a handle 56 by means of a ferrule 58, the applicator element being in the form of an envelope of generally triangular configuration enclosing a flat resiliently flexible stiffener member 60. The ferrule 58 is crimped or flattened at its outer portion against opposite faces of the neck portion of element 55 to secure the same to the handle.

The applicator shown in FIGS. 1 and 2 may be produced by a fabrication procedure that includes steps illustrated in FIGS. 3, 4, and 5. FIG. 3 shows a first layer 62 of the open cell foamed plastic with a thin flat flexible piece 64 of stiffening material positioned on the layer transversely thereof. It will be noted that the two opposite ends of the piece 64 terminate short of the two opposite margins of the layer 62.

FIG. 4 shows how a second layer 65 of the open cell foamed plastic material may be superimposed on the first layer 62 to cover the piece of stiffening material 64. FIG. 5 shows the outline 66 of a double sized envelope that may be stamped out by a combined cutting and sealing die (not shown) with the piece of stiffener material 64 enclosed by the double sized envelope. Such a double sized envelope and the enclosed piece 64 of the stiffener material may be severed along the line 68 to produce two separate applicator elements 55 with stiffener members 60 therein ready to be mounted on handles 56 by means of ferrules 58.

It may be noted in FIG. 1 that an end marginal portion 70 of the envelope formed by the applicator element 55 extends beyond the end of the stiffener member 60 and it may be further noted that two side marginal portions 72 of the envelope formed by the applicator element extends beyond the sides of the stiffener member. Each of these three marginal portions is capable of flexure under light pressure. FIG. 6, for example, shows how the applicator shown in FIG. 1 may be applied to a skin surface with the applicator element canted for a sidewise stroke of the applicator. If the stiffener member 60 were omitted the envelope of foamed plastic material would be excessively pliable and would simply flop around out of control.

FIG. 7 shows an applicator element 74 mounted on a handle 75, the applicator element being in the form of an envelope that is rounded in plan configuration. A stiffener member 76 inside the envelope may be in the form of a relatively stiff tapered pin-like member 77 that is an integral extension of the handle 75.

A feature of this embodiment of the invention, as shown in FIG. 8, is that the necessity for a ferrule is eliminated by forming a tapered socket 78 in the end of the handle 75 around the base of the stiffener member 76, which socket may have a thin sharp peripheral edge 80. The envelope of the applicator element 74 has a reduced neck portion 82 that seats in the socket 78 and is bonded to the surfaces of the socket.

FIG. 9 shows by means of an outline 83 how the applicator element 74 may be produced from two layers 84 and 85 of foamed plastic, by means of a suitably combined cutting and sealing die (not shown). The outline 83 defines a double sized envelope of hourglass configuration which may be severed along the line 88 to produce two applicator elements 74 with tapered neck portions.

The envelope of the applicator element 74 shown in FIG. 7 is substantially larger than the stiffener member 76 that it encloses and is of substantially greater width than the stiffener member. Thus, the applicator element 74 has relatively large marginal portions which may be flexed for the application of light pressure against the user's skin.

FIG. 10 shows how the applicator element 74 may be canted to bring one of the side marginal portions into light contact with the user's skin. FIG. 11 shows an applicator element 90 mounted on a handle 92, the applicator element being in the form of an envelope with a thin flat flexible stiffener member 94 enclosed by the envelope. As shown in FIGS. 12 and 13, the flat flexible stiffener member 94 may be an integral extension of the handle 92. FIGS. 12 and 13 also show how a conical socket 95 may be formed in the end of the handle 92 to seat an inner portion of the envelope with the inner portion bonded to the seat.
My description in specific detail of the several embodiments of the invention will suggest various substitutions and other departures from my disclosure.

What is claimed is:

1. An applicator comprising:
   an elongate rigid handle;
   a tubular ferrule embracing and projecting from one end of said handle;
   a substantially rectangular elongate stiffener of flexible material; and
   an elongate flat body of resiliently yieldable foamed plastic material of multiple cell thickness comprising a wide outer portion and a relatively narrow portion terminating at an inner edge, said body having a rectangular internal pocket therein with an opening at said inner edge, said stiffener being positioned in said pocket and extending within said neck portion substantially to said inner edge and into said wide outer portion, and said neck portion and stiffener portion therein being positioned within and permanently secured to said projecting portion of said ferrule by flattening the projecting portion of the ferrule against opposite faces of said neck portion, whereby portions of said wide outer portion of said body, outwardly of said ferrule, provide laterally extending flexible body portions on opposite sides of said stiffener.

2. The method of making an applicator, comprising the steps of:
   placing an elongated, generally rectangular strip of thin flexible stiffener material between two substantially flat sheets of resiliently yieldable foamed plastic material of multiple cell depth;
   severing said sheets and sealing the severed edges thereof together, along an outline surrounding said stiffener and shaped to define a composite body having laterally widened end portions and a central narrow neck portion;
   severing said neck portion of said composite body transversely at substantially the center thereof to form two bodies each having a wide portion and a narrow neck portion; and
   securing said narrow neck portions to the ends of respective rigid handle members to form two applicators.

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