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(54) **LIQUID DISPENSING MAKEUP BRUSH**

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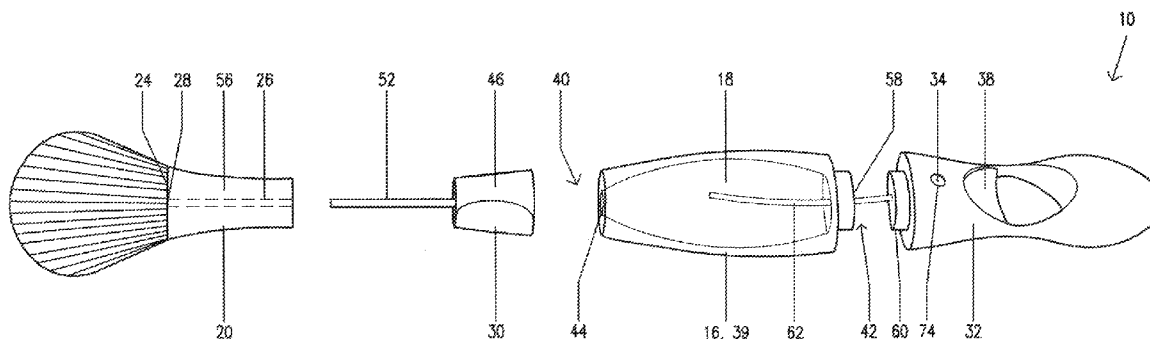
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(57) **ABSTRACT**

A cosmetics application apparatus is disclosed. The apparatus has a primary stem body with an interior fluid chamber. A brush head includes a plurality of bristles attached thereto and extends radially outwardly, and is attached to the primary stem body. An axial fluid passage channel defined by the brush head is coupled to the interior fluid chamber and opening to the bristles. A manually actuatable valve is incorporated into the fluid passage channel, and fluid flow from the interior fluid chamber to the opening of the brush head is selectively restricted thereby. The apparatus has a spray pump assembly with an outlet nozzle, an inlet fluid passage channel, and a manually actuatable pump trigger. The spray pump assembly is attached to the primary stem body with the inlet fluid passage channel fluidly coupled to the interior fluid chamber.



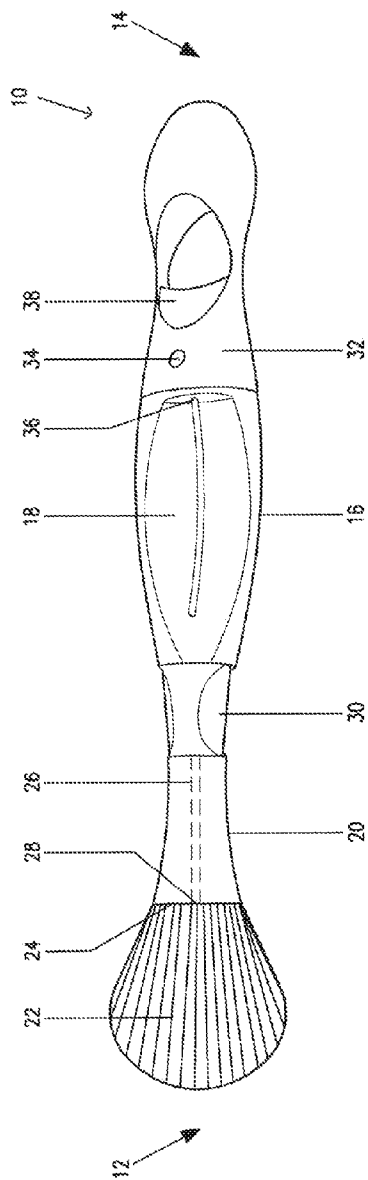


FIG. 1

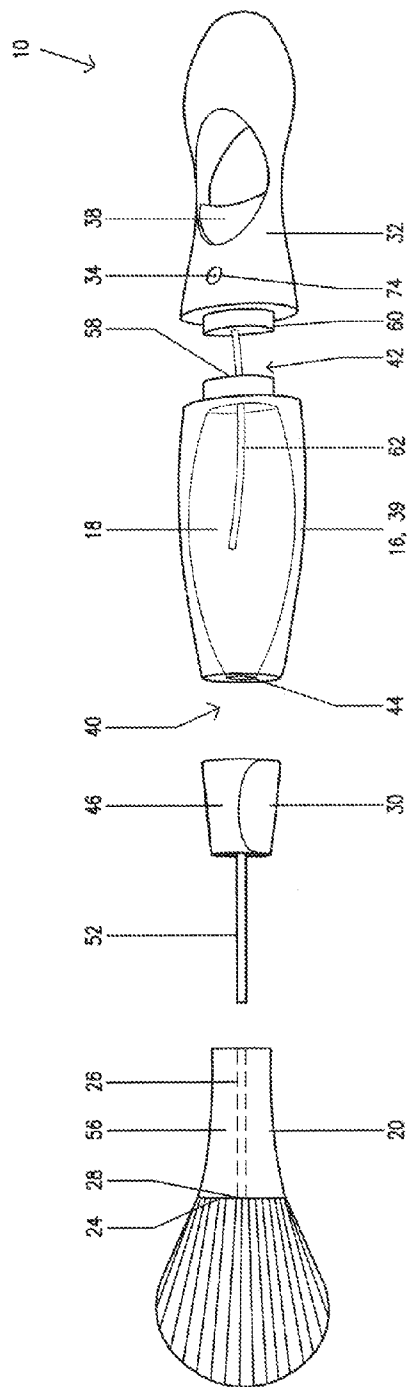


FIG. 2

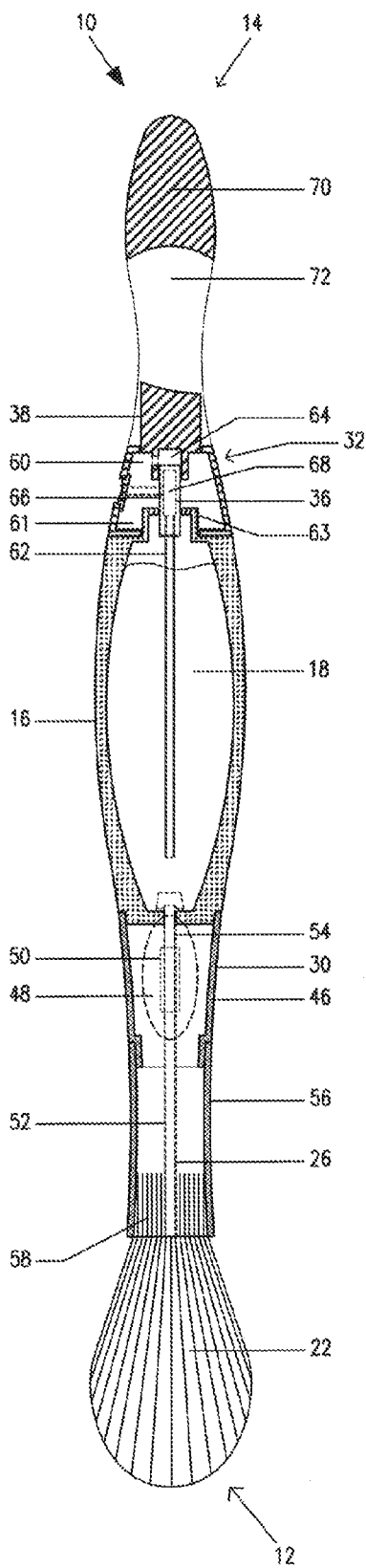


FIG.3

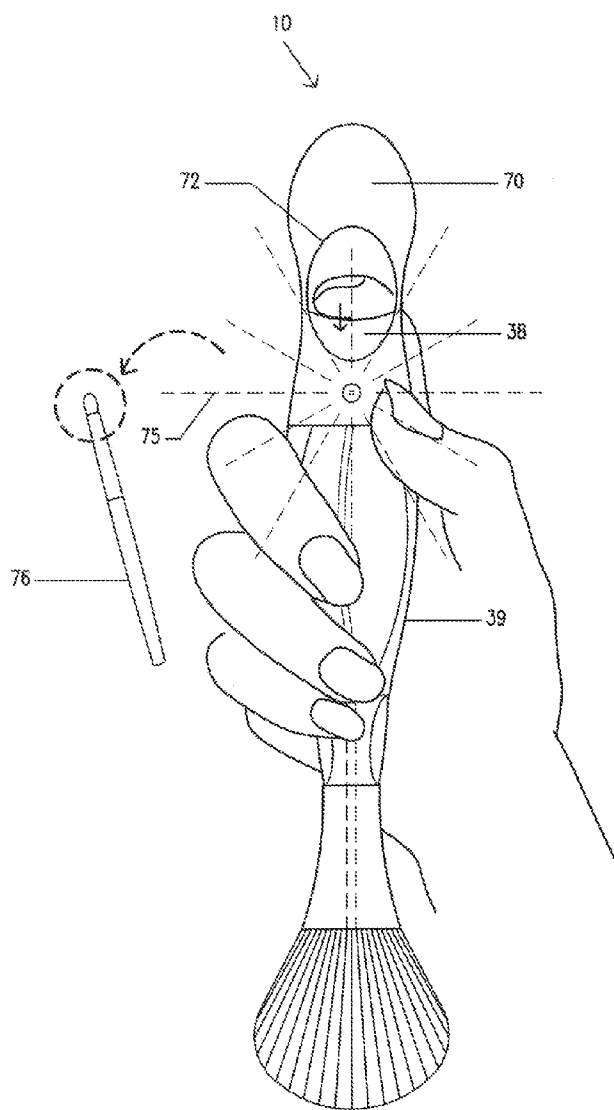


FIG. 5

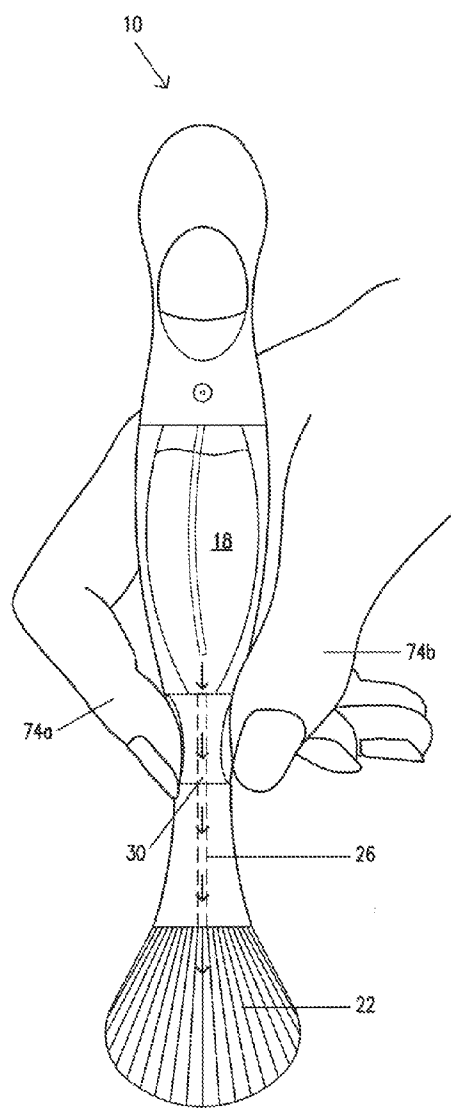


FIG. 4

LIQUID DISPENSING MAKEUP BRUSH

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable

STATEMENT RE: FEDERALLY SPONSORED RESEARCH/DEVELOPMENT

[0002] Not Applicable

BACKGROUND

[0003] 1. Technical Field

[0004] The present disclosure relates generally to personal care devices including makeup brushes. More particularly, the present disclosure relates to liquid-dispensing makeup brushes.

[0005] 2. Related Art

[0006] Cosmetics products, and specifically decorative make-up products, have been used throughout history to alter or enhance the visual appearance of its user, in accordance with the aesthetic values of particular times, situations, and/or cultures. Presently, the use of cosmetics for improving appearances for work, leisure, and other socializing settings is common and widespread. Besides general, everyday use, make-up can be used to dramatic effect in fashion and theater applications.

[0007] With attractiveness and visual desirability being highly subjective, there are numerous categories of make-up products that attempt to accentuate certain physical features and characteristics while minimizing others. For instance, the appearance of the lips can be enhanced with different colored lipstick. The appearance of the eyes can be enhanced with mascara, which lengthens, darkens, and/or thickens the eyelashes, and with eyeliner or eye shadow, which alters the appearance of the eyelids, or with eyebrow. Along these lines, appearance of the eyebrows may be enhanced with eyebrow pencils of different colors. Uneven skin coloration and spots on the skin of the face can be evened out with foundation, and possibly change the shade of the skin altogether. Blemishes can also be covered with concealer that matches the surrounding skin tone. Powder can be used to set the foundation after application, and may likewise have different pigmentation for achieving the desired color effect upon the skin. During certain periods in history, a pale complexion was deemed desirable, so white foundation and powder was used. At other times, a darker complexion was preferred, so in addition to darker foundations and powder, a bronzer was applied. The color of certain parts of the face, namely, the cheek area, may be reddened or otherwise darkened with blush to accentuate the same.

[0008] Each of the foregoing make-up products is supplied in different forms and consistencies, including power, solid, liquid, and gel, and some are available in more than one. The preferred modality by which such products are applied to the user is, for the most part, dependent on its form. For example, a solid lipstick can be directly applied, whereas mascara is typically applied with a brush. Certain gel and liquid type cosmetics can be manually dispensed and applied. Foundation and other powder type make-up products may be applied with a fabric pad. Regardless of the form, generally any type of make-up can be applied with brushes. The size and bristle configuration may be optimized for specific types of make-up being applied, the typical positions therefor, and the effect

desired. For example, where light deposits are desired, a tapered brush may be employed. On the other hand, where heavier, bolder deposits of make-up are desired, a flat brush may be used.

[0009] Brushes have been long-favored as a preferred modality for applying makeup for its versatility. Unfortunately, due to frequent contact with dead skin and the atmosphere, the bristles become a fertile breeding ground for bacteria, fungus, and mold. Using dirty brushes can lead to staphylococcal skin infections, conjunctivitis, and so forth. Depending on the severity of the infection, specific illnesses such as abscesses, boils, carbuncles, and so forth may develop. Bacterial infections also have the potential of leading to more serious, life threatening illnesses such as sepsis and toxic shock syndrome if left ignored.

[0010] Although contact with harmful pathogens via make-up brushes is inevitable, minimizing exposure is preferable. Therefore, users are often advised to wash brushes under running water and a disinfectant at least once a week, and replace brushes in accordance with a regular rotation schedule once it becomes difficult to completely clean or when the bristles begin to disintegrate. As with any manual step beyond typical ordinary use, many users nevertheless fail to maintain the proper hygiene of make-up brushes and on a regular basis. Washing and rinsing a single brush may not involve a substantial expenditure of time, but most make-up users have more than one frequently used brush, and cleaning all of them at once can be involve substantial time and effort. To the extent they are cleaned, it may be so infrequent that replacement becomes a more attractive option since a full, complete cleaning is rendered impossible. While make-up brushes can be replaced relatively easily without much cost, its useful life is effectively decreased when a precise cleaning routine is not followed. Accordingly, there is a need in the art for an improved liquid dispensing makeup brush.

BRIEF SUMMARY

[0011] In accordance with one embodiment of the present disclosure, a cosmetics application apparatus is disclosed. The apparatus may include a primary stem body with an interior fluid chamber. Additionally, there may be a brush head that includes a plurality of bristles attached thereto and extending radially outwardly. The brush head may be attached to the primary stem body and also define an axial fluid passage channel that is coupled to the interior fluid chamber and opening to the bristles. The apparatus may further include a manually actuatable valve that is incorporated into the fluid passage channel of the brush head. Fluid flow from the interior fluid chamber to the opening of the brush head may be selectively restricted by the valve. There may be a spray pump assembly with an outlet nozzle, an inlet fluid passage channel, and a manually actuatable pump trigger. The spray pump assembly may be attached to the primary stem body with the inlet fluid passage channel fluidly coupled to the interior fluid chamber.

[0012] According to another embodiment of the present disclosure, a sanitizing make-up brush assembly is contemplated. The brush assembly may include a cleaning solution reservoir that defines an interior chamber, an open first end and an opposed open second end. Additionally, there may be a brush stem with a plurality of bristles attached thereto. The brush stem may also include a conduit with an opening defined by the brush stem. The brush assembly may include a first dispenser that is coupled to the first end of the reservoir

and to the brush stem. The first dispenser may further include a valve and a leader channel in selective fluid communication with the interior chamber of the cleaning solution reservoir. The leader channel may be in receiving engagement with the conduit of the brush stem. The brush assembly may also include a second dispenser that is coupled to the open second end of the reservoir. The second dispenser may have a pump with an outlet nozzle and an inlet in fluid communication with the interior chamber of the cleaning solution reservoir. A cleaning solution stored in the interior chamber may be independently output from the first dispenser and the second dispenser.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] These and other features and advantages of the various embodiments disclosed herein will be better understood with respect to the following description and drawings, in which:

[0014] FIG. 1 is a perspective view of one embodiment of a cosmetic application apparatus;

[0015] FIG. 2 is an exploded perspective view of the cosmetic application apparatus including a cleaning solution reservoir, a brush stem, a first dispenser and a second dispenser;

[0016] FIG. 3 is a cross-sectional side view of the cosmetic application apparatus;

[0017] FIG. 4 is a front view of the cosmetic application apparatus with the first dispenser being used to deposit a cleaning solution on to bristles of the brush stem; and

[0018] FIG. 5 is a front view of the cosmetic application apparatus with the second dispenser being used to deposit the cleaning solution on to a separate brush.

[0019] Common reference numerals are used throughout the drawings and the detailed description to indicate the same elements.

DETAILED DESCRIPTION

[0020] The present disclosure contemplates a cosmetics application apparatus, and more specifically a sanitizing make-up brush assembly. The detailed description set forth below in connection with the appended drawings is intended as a description of the several presently contemplated embodiments of these methods, and is not intended to represent the only form in which the disclosed invention may be developed or utilized. The description sets forth the functions and features in connection with the illustrated embodiments. It is to be understood, however, that the same or equivalent functions may be accomplished by different embodiments that are also intended to be encompassed within the scope of the present disclosure. It is further understood that the use of relational terms such as first and second, top and bottom, left and right and the like are used solely to distinguish one from another entity without necessarily requiring or implying any actual such relationship or order between such entities.

[0021] FIG. 1 illustrates one embodiment of a sanitizing make-up brush assembly 10, also referred to more generally as a cosmetics application apparatus. The brush assembly 10 has a generally elongate configuration with a first or bottom end 12 and an opposed second or top end 14. Though a specific shape of the brush assembly 10, including various curvatures, flat portions, and so forth, is depicted, it will be appreciated that this is by way of example only and not of limitation. Any other suitable configuration that allows for a

comfortable and ergonomic use may be substituted without departing from the scope of the present disclosure.

[0022] One component of the brush assembly 10 is a primary stem body 16, which includes an interior fluid chamber 18. It is contemplated that the interior fluid chamber 18 is filled with an anti-bacterial cleaning solution that is commercially available. These solutions are understood to be in liquid form, and have sufficient fluidity for mist or atomized dispensation. In addition to its anti-bacterial properties, such solutions are understood to remove make-up residue.

[0023] The brush assembly 10 also includes a brush head 20 that is coupled to the primary stem body 16. A plurality of bristles 22 are attached to the brush head 20 and extend radially outwards from a tip 24 thereof. It will be recognized that the size, shape, and density of the bristles 22 may be varied according to a specific type of cosmetics product for which it is intended. The brush head 20 defines an axial fluid passage channel 26 that is connected to the interior fluid chamber 18. More particularly, the tip 24 of the brush head 20 defines an opening 28, through which the cleaning solution is deposited on to the bristles 22.

[0024] For selective deposition of the cleaning solution on to the bristles 22, its flow through the fluid passage channel 26 is normally restricted by a manually actuatable valve 30. As will be discussed in further detail below, the valve 30 may be a flexible membrane that when squeezed in an radially inward direction relative to the central axis of the brush assembly, opens a slot or channel through which fluid can travel. Without any force upon the membrane, a sealing relationship is maintained, thus preventing the flow of fluid. Because the valve 30 is opened and closed by a pinching action from a user, it may also be referred to herein as a pinch valve. Other types of valves may be utilized. The valve 30 may be constructed of a suitably rigid yet flexible material such as rubber or latex, whereas the other components of the brush assembly 10 may be constructed of a more rigid material including plastic or metal.

[0025] Another aspect of the brush assembly 10 contemplates a dispenser pump assembly 32 that is likewise in fluid communication with the interior fluid chamber 18 of the primary stem body 16. The dispenser pump assembly 32 includes an outlet nozzle 34 and an inlet fluid passage channel 36. By manually actuating a pump trigger 38, the cleaning solution from the interior fluid chamber 18 to the inlet fluid passage channel 36, and to the outlet nozzle 34, where it is forcefully expelled. Depending upon the configuration of the outlet nozzle 34, the cleaning solution may be atomized and expelled as a mist, expelled as a steady fluid stream, or another from between such two possibilities. Instead of a spray, the dispenser pump assembly 32 may also be configured to dispense the cleaning solution as a foam, the structural details thereof being ascertainable by those having ordinary skill in the art.

[0026] Further details of the make-up brush assembly 10 are illustrated in FIG. 2 and FIG. 3. The above-noted parts of the brush assembly 10, including the primary stem body 16, the brush head 20, the valve 30, and the dispenser pump assembly 32, may be separate and discrete components that are assembled together. The primary stem body 16, also referred to herein as a cleaning solution reservoir 39 with the interior fluid chamber 18, has a flat first end 40 and an opposed flat second end 42.

[0027] An opening 44 on the flat first end 40 is sized and configured for a cooperative engagement with the valve 30,

more generally referred to as a first dispenser. As best illustrated in the cross-sectional view of FIG. 3, the valve 30 is comprised of a rigid body portion 46 and a flexible membrane portion 48 that may be either cooperatively engaged to or integrally formed with a pair of opposed valve membranes 50. A first hollow shaft 52 is disposed on the valve 30 and further supported or maintained therein by the rigid body portion 46. The first hollow shaft 52 is in engagement with the valve membranes 50, such that when flexed from the exterior via the flexible membrane portion 48, an open channel extends through the valve membranes 50 and to the first hollow shaft 52. When the valve membranes 50 are in a straightened position, that is, there is no pinching force on the flexible membrane portion 48, there is a substantially sealed relationship between the same, and the open channel ceases to extend therethrough. Although a specific valve configuration has been described, it will be appreciated that any other suitable valve may be substituted without departing from the present disclosure.

[0028] Opposite the first hollow shaft 52 is a second hollow shaft 54 that is similarly in engagement with the valve membranes 50 as described previously. The second hollow shaft 54, on the other hand, is in direct fluid communication with the cleaning solution reservoir 39 via the opening 44. Thus, with the valve membranes 50 open, cleaning solution from the interior fluid chamber 18 passes through the opening 44 and into the second hollow shaft 54, between the valve membranes 50, and into the first hollow shaft 52.

[0029] In order to maintain the valve 30 on the cleaning solution reservoir 39, a first component may have a groove, while a second component may have a corresponding rib that mates with the groove on the first component, with some force being required to overcome the initial frictional engagement between the rib and the lip of the groove. Alternatively, the valve 30 may be threaded on to the cleaning solution reservoir 39. Those having ordinary skill in the art will recognize other modalities by which the valve 30 is secured to the cleaning solution reservoir 39.

[0030] The brush head 20 is further characterized by a stem portion 56 and bristle portion 58 to which the bristles 22 are attached. As indicated above, the brush head 20 includes a fluid passage channel 26, that is defined by the stem portion 56 and more specifically referenced as a leader channel. In accordance with one embodiment, the fluid passage channel 26 receives the first hollow shaft 52 of the valve 30. The first hollow shaft 52 extends to the opening 28, and is coterminous therewith. The brush head 20 may be secured to the valve 30 by any number of means, including the aforementioned rib-and-groove configuration or the threaded configuration. Alternatively, the fluid passage channel 26 and the first hollow shaft 52 may have a tapered configuration for frictional retention. It is expressly contemplated that the brush head 20 is readily replaceable with other brush heads of similar or different bristle configurations.

[0031] As best shown in FIG. 2, another opening 58 on the flat second end 42 is sized and configured for a cooperative engagement with the dispenser pump assembly 32, more generally referred to as a second dispenser. A fitting 60 is capable of being coupled to the opening 58 of the cleaning solution reservoir 39. The fitting 60 is further attached to a hollow suction tube 62, which extends into the interior fluid chamber 18. It will be appreciated that the dispenser pump assembly 32 is most likely to be utilized when the brush assembly 10 is in a substantially vertical orientation with the

bottom end 12 being lower than the top end 14. Even at low cleaning solution levels, the hollow suction tube 62 is capable of channeling the same to the dispenser pump assembly 32.

[0032] The dispenser pump assembly 32 includes the outlet nozzle 34 and the inlet fluid passage channel 36, as well as a pump actuator 64. Although any type of pump may be utilized, the embodiment of the brush assembly 10 depicted herein employs a positive displacement pump with a pair of one-way valves (not shown). The operational principles of such pumps are well known and understood by those having ordinary skill in the art. A pump piston 66 is manually actuated via the pump actuator 64, drawing the cleaning solution in from the interior fluid chamber 18 into a pressurized pump chamber 68 that is subsequently expelled via the outlet nozzle 34. In the dispenser pump assembly 32, the pump actuator 64 and the pump piston 66 reciprocate along the longitudinal axis of the brush assembly 10. Furthermore, the outlet nozzle 34 is oriented perpendicularly to the longitudinal axis of the brush assembly 10, such that the spray is directed sideways. The pump actuator 64, in turn, is cooperatively engaged to the pump trigger 38, which is ergonomically shaped to accept and conform to the fingertip of the user. The fitting 60, and hence the dispenser pump assembly 32, is removable from the cleaning solution reservoir 39 for refilling, cleaning, and other purposes. The fitting 60 therefore defines a female portion 61 to which a corresponding male portion 63 on the cleaning solution reservoir 39 can be mated. The female portion 61 and the male portion 63 may be in threaded or frictional engagement.

[0033] To prevent the accidental or unintentional discharge of the cleaning solution via the dispenser pump assembly 32, a trigger guard 70 is contemplated. The trigger guard 70 is disposed around the pump trigger 38, and defines a lateral aperture 72 that partially exposes the same. In some embodiments the trigger guard 70 is a separate assembly that is detachable from the cleaning solution reservoir 39 and the pump trigger 38. Thus, the trigger guard 70 may further define a nozzle aperture 74 that is coaxial with the outlet nozzle 34.

[0034] It is contemplated that the foregoing brush assembly 10 outputs the cleaning solution stored in the interior fluid chamber 18 from the first dispenser, i.e., the valve 30 and on to the bristles 22, as well as from the second dispenser, i.e., the dispenser pump assembly 32, independently of each other. Referring now to FIG. 4, with the brush assembly 10 in a vertical orientation and the bristles 22 facing downwards, an index finger 74a and a thumb 74b of the user squeezes or pinches the valve 30, thereby gravitationally releasing the cleaning solution in the interior fluid chamber 18. The cleaning solution travels down the fluid passage channel 26 and on to the bristles 22 to sanitize the same. As mentioned previously, remaining make-up residue may also be removed. Furthermore, as shown more particularly in FIG. 5, again with the brush assembly 10 in a vertical orientation, the index finger 74a of the user is inserted through the lateral aperture 72 of the trigger guard 70. The pump trigger 38 is then actuated, releasing a spray 75 of the cleaning solution onto, for example, a separate make-up brush 76. The remaining fingers and the palm of the user may be wrapped around the exterior of the cleaning solution reservoir 39.

[0035] The particulars shown herein are by way of example and for purposes of illustrative discussion of the embodiments of the present disclosure only and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and concep-

tual aspects. In this regard, no attempt is made to show details of the present invention with more particularity than is necessary for the fundamental understanding of the make-up brush assembly 10, the description taken with the drawings making apparent to those skilled in the art how the several forms of the present invention may be embodied in practice.

What is claimed is:

- 1. A cosmetics application apparatus, comprising:
 - a primary stem body with an interior fluid chamber;
 - a brush head including a plurality of bristles attached thereto and extending radially outwardly, the brush head being attached to the primary stem body and defining an axial fluid passage channel coupled to the interior fluid chamber and opening to the bristles;
 - a manually actuatable valve incorporated into the fluid passage channel of the brush head, fluid flow from the interior fluid chamber to the opening of the brush head being selectively restricted thereby; and
 - a spray pump assembly with an outlet nozzle, an inlet fluid passage channel, and a manually actuatable pump trigger, the spray pump assembly being attached to the primary stem body with the inlet fluid passage channel fluidly coupled to the interior fluid chamber.
- 2. The apparatus of claim 1, wherein the primary stem body has an elongate configuration defined by a first end and an opposed second end.
- 3. The apparatus of claim 2, wherein the brush head is attached to and extends from the first end of the primary stem body and the spray pump assembly is attached to and extends from the second end of the primary stem body.
- 4. The apparatus of claim 3, further comprising:
 - a conduit coupled to the inlet fluid passage channel of the spray pump assembly, the conduit extending into the interior fluid chamber of the primary stem body toward the first end thereof.
- 5. The apparatus of claim 3, wherein a dispensing axis from the outlet nozzle of the spray pump assembly is substantially perpendicular to a reciprocating axis of the pump trigger.
- 6. The apparatus of claim 5, wherein the spray pump assembly further includes a pump trigger guard defining a lateral aperture partially exposing the pump trigger.
- 7. The apparatus of claim 6, wherein the pump trigger guard defines a nozzle opening corresponding to the outlet nozzle.
- 8. The apparatus of claim 1, wherein the valve is a flexible pinch valve.

- 9. The apparatus of claim 1, wherein the spray pump assembly and the brush head are removable from the primary stem body.
- 10. The apparatus of claim 1, wherein the interior fluid chamber is filled with a disinfectant solution.
- 11. A sanitizing make-up brush assembly, comprising:
 - a cleaning solution reservoir defining an interior chamber, an open first end and an opposed open second end;
 - a brush stem with a plurality of bristles attached thereto and a conduit with an opening defined by the brush stem;
 - a first dispenser coupled to the open first end of the reservoir and to the brush stem, the first dispenser including a valve and a leader channel in selective fluid communication with the interior chamber of the cleaning solution reservoir, the leader channel being in receiving engagement with the conduit of the brush stem; and
 - a second dispenser coupled to the open second end of the reservoir, the second dispenser including a pump with an outlet nozzle and an inlet in fluid communication with the interior chamber of the cleaning solution reservoir; wherein a cleaning solution stored in the interior chamber is independently output from the first dispenser and the second dispenser.
- 12. The brush assembly of claim 11, further comprising:
 - a suction tube coupled to the inlet and extending into the interior chamber of the cleaning solution reservoir toward the first end thereof.
- 13. The brush assembly of claim 11, wherein a dispensing axis from the outlet nozzle is substantially perpendicular to a reciprocating axis of a trigger of the pump.
- 14. The brush assembly of claim 13, wherein the second dispenser further includes a trigger guard defining a lateral aperture partially exposing the trigger of the pump.
- 15. The brush assembly of claim 13, wherein the second dispenser defines a nozzle opening corresponding to the outlet nozzle of the pump.
- 16. The brush assembly of claim 11, wherein the cleaning solution is dispensable in liquid form to the bristles from the first dispenser.
- 17. The brush assembly of claim 11, wherein the cleaning solution is dispensable in atomized form from the second dispenser.
- 18. The brush assembly of claim 11, wherein the brush stem is removable from the first dispenser.
- 19. The brush assembly of claim 11, wherein the first dispenser and the second dispenser are removable from the cleaning solution reservoir.
- 20. The brush assembly of claim 11, wherein the valve is a flexible pinch valve.

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