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Mizell(10) **Pub. No.: US 2009/0152294 A1**(43) **Pub. Date: Jun. 18, 2009**(54) **DUAL-TUBE PRODUCT CONTAINER AND DISPENSER****Publication Classification**(76) Inventor: **Jeffrey W. Mizell**, Thompson's Station, TN (US)(51) **Int. Cl.**
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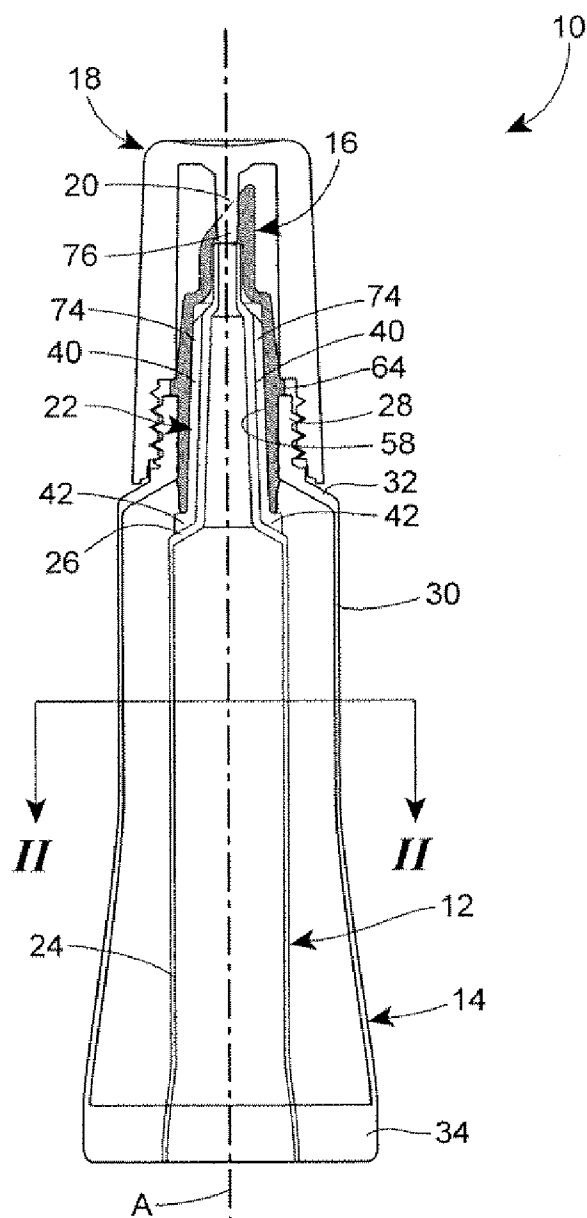
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(52) **U.S. Cl.** **222/94**(57) **ABSTRACT**

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A dual-tube product container comprises a flexible outer reservoir, a flexible inner reservoir, and a generally linear seam. The flexible inner reservoir is disposed within the outer reservoir and comprises a generally oval cross-section. The oval cross-section defines a major axis and a minor axis. The linear seam seals at least one of the inner reservoir and the outer reservoir and is disposed generally perpendicular to the major axis of the inner reservoir.

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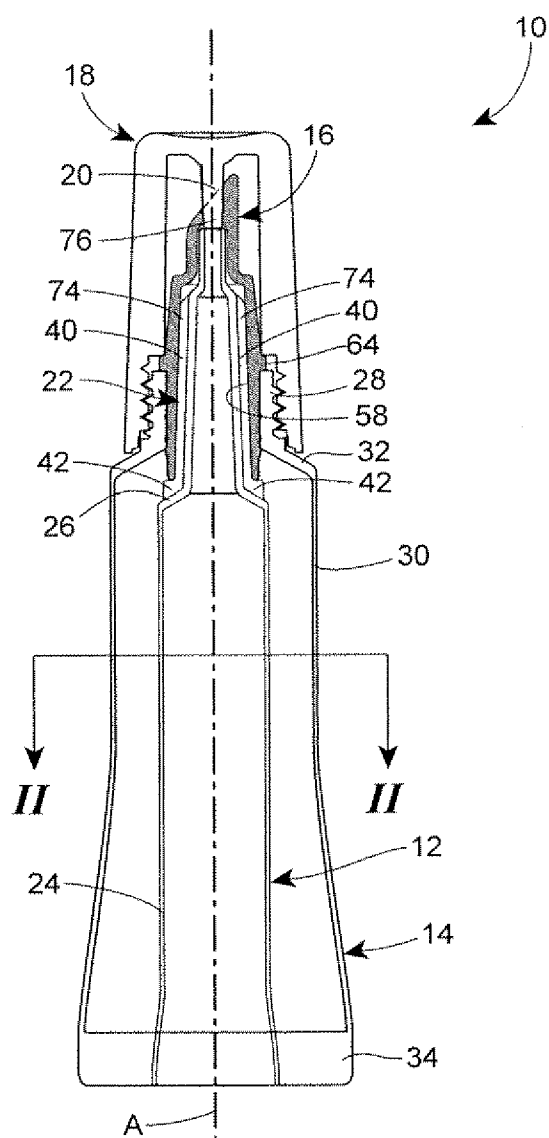


FIG. 1

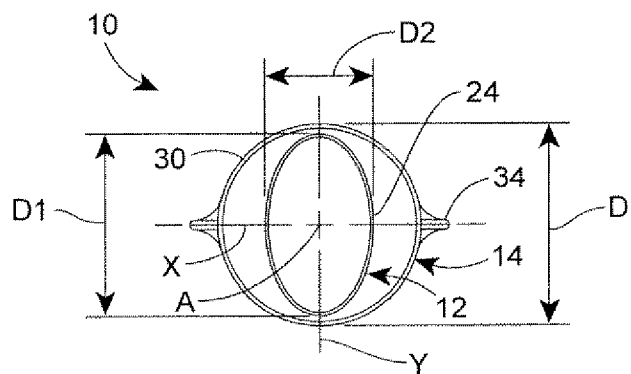


FIG. 2

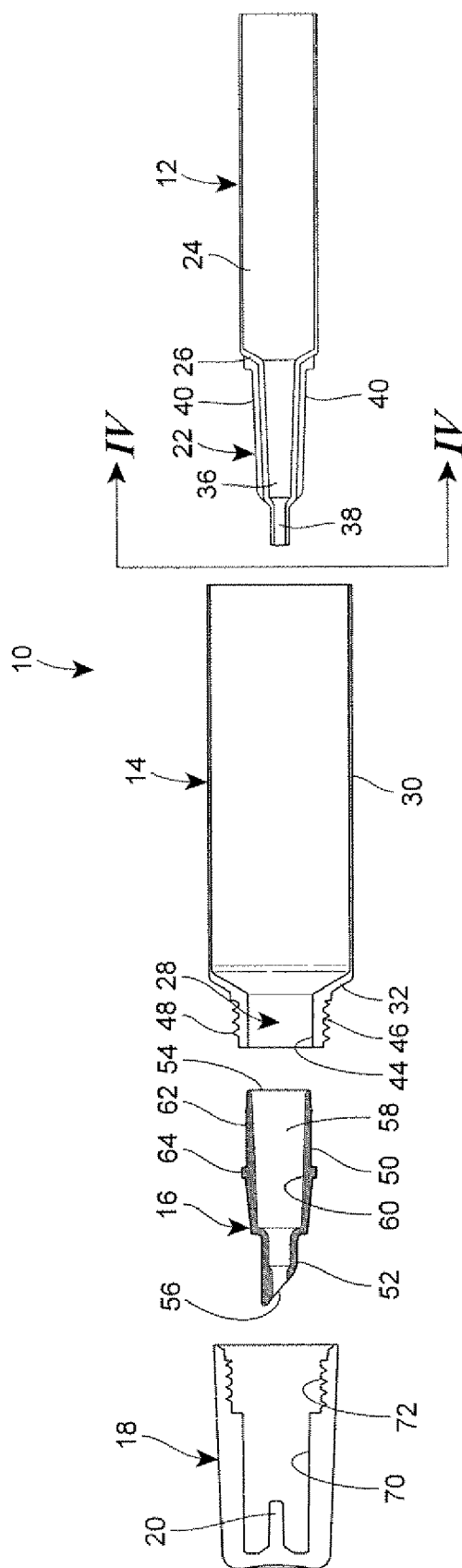


FIG. 3

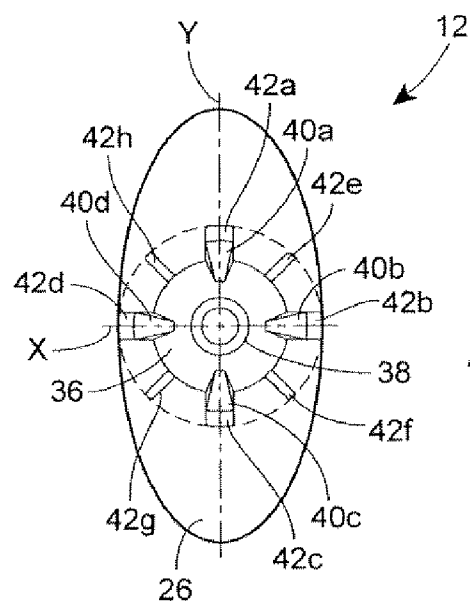


FIG. 4

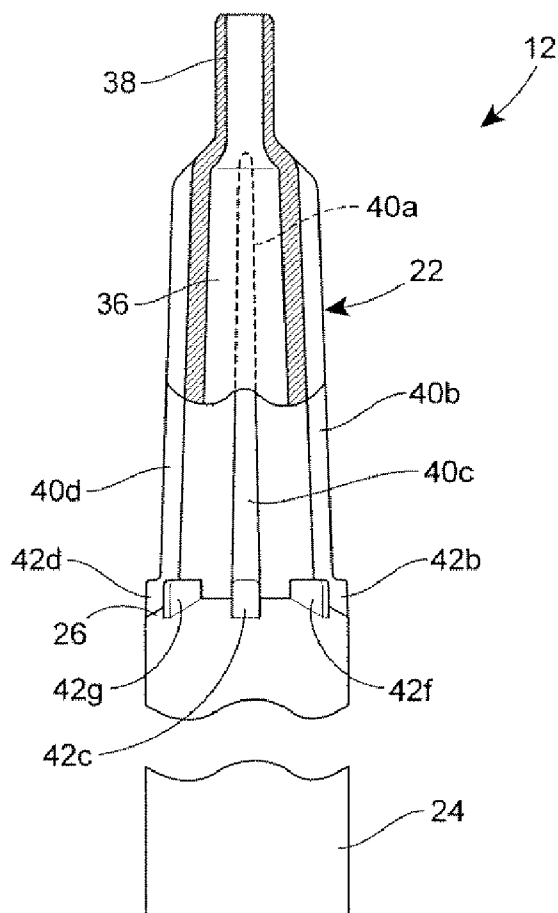


FIG. 5

DUAL-TUBE PRODUCT CONTAINER AND DISPENSER

FIELD OF THE INVENTION

[0001] The present invention generally relates to cosmetic applicators, and more particularly, to cosmetic applicators adapted to dispense multiple products.

BACKGROUND

[0002] Various products such as lip balms and cosmetics, for example, are commercially available in squeezable containers. Such containers typically include a flexible reservoir attached to an applicator tip. The flexible reservoir contains the product and can be squeezed such that the product is dispensed through the applicator tip. Oftentimes, consumers can require more than one such container for applying a first cosmetic such as a lip colorant, and a second cosmetic such as a lip gloss.

SUMMARY

[0003] One embodiment of the invention includes a dual-tube product container that comprises a flexible outer reservoir, a flexible inner reservoir and a generally linear seam. The flexible inner reservoir is disposed within the outer reservoir and comprises a generally oval cross-section. The oval cross-section defines a major axis and a minor axis. The linear seam seals at least one of the inner reservoir and the outer reservoir and is disposed generally perpendicular to the major axis of the inner reservoir.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. 1 is a cross-sectional side view of one embodiment of a dual-tube product container constructed in accordance with the present invention;

[0005] FIG. 2 is a cross-sectional view of the dual-tube product container of FIG. 1 taken through line II-II of FIG. 1;

[0006] FIG. 3 is an exploded cross-sectional side view of the dual-tube product container of FIG. 1;

[0007] FIG. 4 is an end view of an inner reservoir of the dual-tube product container of FIGS. 1-3 taken from line IV-IV of FIG. 3; and

[0008] FIG. 5 is a partially broken-away detailed side view of the inner reservoir of the dual-tube product container of FIGS. 1-4.

DETAILED DESCRIPTION

[0009] The present disclosure provides a dual-tube product container such as a dual-dispensing fluid container for accurately dispensing two products from separate reservoirs in predetermined proportions.

[0010] FIG. 1 depicts one embodiment of a dual-dispensing fluid container 10 constructed in accordance with the principles of the invention. The container 10 generally comprises an inner reservoir 12, an outer reservoir 14, and an applicator tip 16. The applicator tip 16 connects the inner reservoir 12 to the outer reservoir 14. Each of the reservoirs 12, 14 can be at least partially constructed of a flexible plastic material, and the applicator tip 16 preferably is constructed of a rigid plastic material. The inner and outer reservoirs 12, 14 are preferably adapted to contain two different products. For example, the inner reservoir 12 can contain a lip colorant, and the outer reservoir 14 can contain a lip gloss.

[0011] As will be described, the various components of the container 10 are shaped and configured such that, during operation, a user can squeeze the inner and outer reservoirs 12, 14 to generally simultaneously dispense the two products from the applicator tip 16 in accordance with a predetermined output ratio. When the user is finished applying the products, a cap 18, which is illustrated in FIGS. 1 and 3, can be placed onto the container 10. In the disclosed embodiment, the cap 18 includes a plug 20 that engages the applicator tip 16 to prevent the products from leaking out of the reservoirs 12, 14.

[0012] With reference to FIGS. 1 and 3, the inner reservoir 12 includes a neck portion 22, a skirt portion 24, and a shoulder portion 26. The shoulder portion 26 of the inner reservoir 12 is disposed between and connects the neck portion 22 of the inner reservoir 12 to the skirt portion 24 of the inner reservoir 12. Similarly, the outer reservoir 14 includes a neck portion 28, a skirt portion 30, and a shoulder portion 32. The shoulder portion 32 of the outer reservoir 14 is disposed between and connects the neck portion 28 of the outer reservoir 14 to the skirt portion 30 of the outer reservoir 14.

[0013] In one embodiment, the skirt portions 24, 30 of the inner and outer reservoirs 12, 14 preferably are constructed of relatively flexible plastic materials. The neck portions 22, 28 and shoulder portions 26, 32 preferably are constructed of relatively rigid plastic materials. In the disclosed embodiment, a generally linear seam 34 seals the skirt portions 24, 28 of the inner and outer reservoirs 12, 14 at a location opposite the neck portions 22, 30. So configured, the inner and outer reservoirs 12, 14 constitute containers for containing products. In one embodiment, the seam 34 is constructed via heat sealing such that opposing sidewalls of the skirt portion 24 of the inner reservoir 12 are adhered together. Moreover, opposing sidewalls of the skirt portion 30 of the outer reservoir 14 are partly adhered together and partly adhered to the skirt portion 24 of the inner reservoir 12.

[0014] As illustrated in FIGS. 1 and 2, the skirt portions 24, 30 of the inner and outer reservoirs 12, 14 are disposed along a common central axis A. Moreover the skirt portion 24 of the inner reservoir 12 includes an eccentric cross-section at least at a location along the central axis A taken through line II of FIG. 1. In the disclosed embodiment, the eccentric cross-section comprises a generally oval cross-section having two axes of symmetry, and more particularly, comprises a generally elliptical cross-section. Additionally, at this same axial location, the skirt portion 30 of the outer reservoir 14 includes a cross-section that is generally circular.

[0015] The skirt portion 24 of the inner reservoir 12 includes a major axis Y and a minor axis X. As illustrated in FIG. 2, the seam 34 of the container is generally aligned with the minor axis X and generally perpendicular to the major axis Y. An outer dimension D1 of the skirt portion 24 of the inner reservoir 12 along the major axis Y is larger than an outer dimension D2 of the skirt portion 24 of the inner reservoir 12 along the minor axis X. An outer diameter D of the skirt portion 30 of the outer reservoir 14 is substantially constant, and therefore, substantially equal along the minor and major axes X, Y. So configured, the inner and outer reservoirs 12, 14 can dispense products in predetermined ratios, as will be described.

[0016] Referring now to FIG. 3, the container 10 is illustrated in an exploded view and prior to securing the inner and outer reservoirs 12, 14 together via the seam 34. Each of the components will now be described in further detail.

[0017] As mentioned, the inner reservoir 12 includes relatively rigid neck and shoulder portions 22, 26 and a relatively flexible skin portion 24. The skirt portion 24 has a preferably elliptical cross-section. Similarly, the shoulder portion 26 includes a preferably elliptical shape, as illustrated in FIG. 4. In addition to that described above, the neck portion 22 includes a body portion 36, an outlet portion 38, and a plurality of ribs 40. In the disclosed embodiment, the outlet portion 38 is smaller in diameter than the body portion 36. As illustrated in FIGS. 4 and 5, the ribs 40 extend longitudinally along, and are circumferentially spaced about, the body portion 36 of the neck portion 22. In the disclosed embodiment, the inner reservoir 12 includes four ribs 40, which are identified 40a-40d in FIGS. 4 and 5. Alternative embodiments, however, can include more or less than four ribs 40. As is also illustrated in FIGS. 4 and 5, the inner reservoir 12 additionally includes a plurality of shoes 42 spaced circumferentially about the shoulder portion 26. In the disclosed embodiment, the plurality of shoes 42 includes eight shoes 42a-42h. Four shoes 42a-42d of the plurality of shoes 42a-42h are formed integral with the plurality of ribs 40a-40d.

[0018] Referring back to FIG. 3 and as described above, the outer reservoir 14 includes the relatively flexible skirt portion 30, and the relatively rigid neck and shoulder portions 28, 32. In the disclosed embodiment, the shoulder portion 32 has a generally truncated conical shape that converges from the skirt portion 30 to the neck portion 28. The neck portion 28 is generally cylindrical and includes an inner surface 44 and an outer surface 46. The inner surface 44 is generally uniformly cylindrical. The outer surface 46 includes a plurality of external threads 48.

[0019] Still referring to FIG. 3, the applicator tip 16 generally comprises an elongated tubular conduit for directing product out of the container 10 during use. More specifically, the applicator tip 16 includes an adaptor portion 50, an applicator portion 52, an inlet 54, and an outlet 56. Moreover, the applicator tip 16 defines a passageway 58 extending between the inlet 54 and the outlet 56. In the disclosed embodiment, the outlet 56 of the applicator tip 16 is disposed at an angle to facilitate application of product to a user's lips, for example.

[0020] The adaptor portion 50 of the disclosed embodiment of the applicator tip 16 includes a diameter that is larger than a diameter of the applicator portion 52. The adaptor portion 50 also includes an inner surface 60 and an outer surface 62. In the disclosed embodiment, the inner and outer surfaces 60, 62 are generally cylindrical surfaces. The outer surface 62 also carries a collar 64. The collar 64 comprises an annular ring that extends radially outward from the adaptor portion 52 of the applicator tip 16.

[0021] Finally, as illustrated in FIG. 3, the cap 18 of the container 10 includes a generally cylindrical member carrying the plug 20, as mentioned above, and defining an internal surface 70. In the disclosed embodiment, the internal surface 70 is generally cylindrical and defines a plurality of internal threads 72. As illustrated in FIG. 1, the internal threads 72 of the cap 18 are adapted to selectively and threadably engage the external threads 48 on the neck portion 28 of the outer reservoir 14 to removably secure the cap 18 to the container 10.

[0022] With the inner and outer reservoirs 12, 14 and the applicator tip 16 configured as described, they are assembled to form the container 10 depicted in FIG. 1. For example, first, the adaptor portion 50 of the applicator tip 16 is positioned within the neck portion 28 of the outer reservoir 14 such that the collar 64 formed on the outer surface 62 of the applicator

tip 16 abuts the neck portion 28 of the outer reservoir 14. So configured, the collar 64 axially positions the applicator tip 16 relative to the outer reservoir 14. In one embodiment, the applicator tip 16 is friction-fit within the neck portion 28 of the outer reservoir 14. In alternative embodiments, however, the applicator tip 16 can be secured within the neck portion 28 of the outer reservoir 14 with an adhesive or some other fixation means.

[0023] Next, the inner reservoir 12 is positioned within the outer reservoir 14 such that the plurality of shoes 42 formed on the shoulder portion 26 of the inner reservoir 12 abut the inlet 54 of the applicator tip 16. So configured, the shoes 52 axially position the inner reservoir 12 relative to the outer reservoir 14. The plurality of ribs 40 formed along the neck portion 22 of the inner reservoir 12 engage the inner surface 62 of the adaptor portion 50 of the applicator tip 16 to align the inner reservoir 12 along the central axis A and relative to the outer reservoir 14. So positioned, the applicator tip 16 and the neck portion 22 of the inner reservoir 12 define a plurality of passageways 74 between the ribs 40. In one embodiment, the plurality of ribs 40 are friction-fit within the applicator tip 16 to secure the axial position of the inner reservoir 12 relative to the outer reservoir 14. In alternative embodiments, the plurality of ribs 40 can be secured to the applicator tip 16 with an adhesive or other fixation means. In still another embodiment, the plurality of ribs 40 are not secured to the applicator tip 16 at all.

[0024] With the inner reservoir 12 so positioned, the body portion 36 of the neck portion 22 is disposed within the adaptor portion 50 of the applicator tip 16. Moreover, the outlet portion 38 of the neck portion 22 is disposed within the applicator portion 52 of the applicator tip 16. As illustrated in FIG. 1, however, the outlet portion 38 of the neck portion 22 of the inner reservoir 12 is shorter than the applicator portion 52 of the applicator tip 16. So configured, the applicator portion 52 of the disclosed embodiment of the applicator tip 16 defines a mixing chamber 76 disposed adjacent the outlet 56. The mixing chamber 76 is in fluid communication with the contents of the inner reservoir 12 via the neck portion 22 of the inner reservoir 12. Moreover, the mixing chamber 76 is in fluid communication with the contents of the outer reservoir 14 via the passageways 74 defined between the applicator tip 16 and the neck portion 22 of the inner reservoir 12.

[0025] Finally, once the inner reservoir 12, outer reservoir 14, and applicator tip 16 are assembled as described, the seam 34 is formed. The seam 34 seals the inner and outer reservoirs 12, 14 together and further serves to fix the position of the inner reservoir 12 relative to the outer reservoir 14. In one embodiment, the seam 34 is formed by a heat sealing process that includes a pair of sealing irons that compress the skirt portions 24, 30 of the inner and outer reservoirs 12, 14 together such that the seam 34 is formed as a generally linear seam that is disposed perpendicular to the major axis Y of the skirt portion 24 of the inner reservoir 12.

[0026] As mentioned above, the container 10 is adapted to contain two products, one in each of the reservoirs 12, 14, for being simultaneously dispensed in accordance with a predetermined ratio. To dispense the products, a user squeezes the skirt portions 24, 30 of the inner and outer reservoirs 12, 14 in a direction perpendicular to the seam 34, which is aligned with the minor axis X of the skirt portion 24 of the inner reservoir 12, as illustrated in FIG. 2. Said another way, a user squeezes the skirt portions 24, 30 of the inner and outer

reservoirs **12**, **14** in a direction along the major axis Y of the skirt portion **24** of the inner reservoir **12**, as illustrated in FIG. 2.

[0027] As the user squeezes the container **10**, product stored in each of the skirt portions **24**, **30** simultaneously dispenses from the outlet **56** of the applicator tip **16**. More specifically, product stored in the skirt portion **24** of the inner reservoir **12** passes through the neck portion **22** of the inner reservoir **12** and into the mixing chamber **76** of the applicator tip **16**. Product stored in the skirt portion **30** of the outer reservoir **14** passes through the passageways **74** defined between the inner surface **60** of the applicator tip **16** and the neck portion **22** of the inner reservoir **12** to the mixing chamber **76**. In the mixing chamber **76**, the two products mix prior to exiting the outlet **56** for application by a user. When the user is finished applying the product, the cap **18** is positioned on the container **10**, as depicted in FIG. 1, such that the plug is disposed in the mixing chamber **76**. The plug **20** prevents the products from leaking from the container **10**, and from communicating or traveling between the inner reservoir **12** and the outer reservoir **14**.

[0028] It should be appreciated that the disclosed cross-sectional shapes of the skirt portions **24**, **30** of the inner and outer reservoirs **12**, **14** helps balance the proportionate flow of each product into the mixing chamber **76** and out of the container **10**. For example, with reference to FIG. 2, when a user squeezes the skirt portions **24**, **30** in a direction along the major axis Y, the skirt portion **24** of the inner reservoir **12** begins to deform almost simultaneously with the deformation of the skirt portion **30** of the outer reservoir **14**. This nearly simultaneous deformation of the skirt portions **24**, **30** of the inner and outer reservoirs **12**, **14** increases the flow rate of product out of the inner reservoir **12** to approach, or even surpass, the flow rate of product out of the outer reservoir **14**.

[0029] Accordingly, it should be appreciated that a container **10** constructed in accordance with the foregoing teachings can be designed to establish any predetermined ratio of flow rates between the inner and outer reservoirs **12**, **14**, preferably substantially equivalent flow rates. Moreover, a container **10** having inner and outer reservoirs **12**, **14** constructed in accordance with the foregoing teachings can be designed to include any predetermined fill ratio.

[0030] For example, in one embodiment, the diameter D of the skirt portion **28** of the outer reservoir **14** is approximately 0.748" (19 mm), the dimension D1 of the skirt portion **24** of the inner reservoir **12** along the major axis Y is approximately 0.674" (17.12 mm), and the dimension D2 of the skirt portion **24** of the inner reservoir **12** along the minor axis X is approximately 0.4" (10.46 mm). With these dimensions, the inner and outer reservoirs **12**, **14** each contain approximately 50% of the total product carried within the container **10**.

[0031] In an alternative embodiment, the diameter D of the skirt portion **28** of the outer reservoir **14** is approximately 0.748" (19 mm), the dimension D1 of the skirt portion **24** of the inner reservoir **12** along the major axis Y is approximately 0.710" (18.03 mm), and the dimension D2 of the skirt portion **24** of the inner reservoir **12** along the minor axis X is approximately 0.33" (8.38 mm). With these dimensions, the outer reservoir **14** contains approximately 58% of the total product carried by the container **10**, and the inner reservoir **12** contains approximately 42% of the total product carried by the container **10**.

[0032] While the skirt portion **24** of the inner reservoir **12** is disclosed herein as comprising an elliptical cross-section, this

is merely one example of an eccentric cross-section that is suitable to serving the principles of the invention. Alternative embodiments can include cross-sections other than elliptical. For example, in one alternative embodiment, the skirt portion **24** of the inner reservoir **12** can comprise a cross-section that is shaped as a super-ellipse, an oval having a single axis of symmetry, or any other shape capable of serving the principles of the invention.

[0033] Finally, while the foregoing example of a dual-tube container constructed in accordance with the invention has been described in cooperation with a container **10** having a specific applicator tip **16**, alternative embodiments of the container **10** can be constructed with alternative applicator tips, or without an applicator tip at all.

[0034] In light of the foregoing, it should be understood that the present invention is not limited by the various examples and embodiments described herein, but rather is defined by the spirit and scope of the claims, and all equivalents thereof.

What is claimed:

1. A dual-tube container, comprising:
 - a flexible outer reservoir;
 - a flexible inner reservoir disposed within the outer reservoir and comprising a generally oval cross-section, the oval cross-section defining a major axis and a minor axis; and
 - a generally linear seam sealing at least one of the inner reservoir and the outer reservoir, the seam disposed generally perpendicular to the major axis of the inner reservoir.
2. The container of claim 1, wherein the oval cross-section comprises an elliptical cross-section.
3. The container of claim 1, wherein the outer reservoir comprises a circular cross-section.
4. The container of claim 1, wherein
 - the outer reservoir comprises an outer neck portion, an outer skirt portion, and an outer shoulder portion disposed between and connecting the outer neck portion and the outer skirt portion, and
 - the inner reservoir comprises an inner neck portion, an inner skirt portion, and an inner shoulder portion disposed between and connecting the inner neck portion and the inner skirt portion,
 - at least a portion of the inner neck portion of the inner reservoir disposed within the outer neck portion.
5. The container of claim 4, wherein the outer shoulder portion comprises a circular cross-section, and the inner shoulder portion comprises an oval cross-section.
6. The container of claim 4, further comprising a passageway defined between the outer neck portion and the inner neck portion, the passageway in fluid communication with the outer reservoir.
7. The container of claim 6, further comprising an applicator tip in fluid communication with the inner reservoir and the outer reservoir.
8. The container of claim 7, wherein the applicator tip comprises an adaptor portion that is disposed between the outer neck portion and the inner neck portion such that the passageway is defined between the inner neck portion and the applicator tip.
9. The container of claim 8, wherein the inner neck portion comprises a plurality of circumferentially spaced ribs in engagement with the adaptor portion of the applicator tip, the plurality of circumferentially spaced ribs aligning the inner neck portion relative to the applicator tip.

10. The container of claim 7, further comprising a cap having a plug that engages and seals the inner reservoir from communicating with the outer reservoir when the cap is fully engaged on the container.

11. A dual-tube container, comprising:

an applicator;

a flexible outer reservoir in fluid communication with the applicator;

a flexible inner reservoir in fluid communication with the applicator, the inner reservoir disposed within the outer reservoir and comprising an elliptical cross-sectional portion, the elliptical cross-sectional portion having a major axis and a minor axis; and

a seam sealing at least one of the inner reservoir and the outer reservoir, the seam disposed generally perpendicular to the major axis of the inner reservoir.

12. The container of claim 11, wherein the outer reservoir comprises a circular cross-sectional portion that is axially aligned with the elliptical cross-sectional portion.

13. The container of claim 11, wherein the outer reservoir comprises an outer neck portion and the inner reservoir comprises an inner neck portion, at least a portion of the inner neck portion disposed within the outer neck portion.

14. The container of claim 13, further comprising a passageway defined between the outer neck portion and the inner neck portion, the passageway in fluid communication with the outer reservoir.

15. The container of claim 14, further comprising an applicator tip in fluid communication with the inner reservoir and the outer reservoir.

16. The container of claim 15, wherein the applicator tip comprises an adaptor portion that is disposed between the outer neck portion and the inner neck portion such that the passageway is defined between the inner neck portion and the applicator tip.

17. The container of claim 16, wherein the inner neck portion comprises a plurality of circumferentially ribs in engagement with the adaptor portion of the applicator tip.

18. The container of claim 15, further comprising a cap having a plug that engages and seals the inner reservoir from communicating with the outer reservoir when the cap is fully engaged on the container.

19. A dual-tube container, comprising:

a flexible outer reservoir comprising an outer neck portion, an outer skirt portion, and an outer shoulder portion disposed between and connecting the outer neck portion and the outer skirt portion, the outer skirt portion comprising a generally circular cross-sectional portion;

a flexible inner reservoir disposed within the outer reservoir and comprising an inner neck portion, an inner skirt portion, and an inner shoulder portion disposed between and connecting the inner neck portion and the inner skirt portion, the inner skirt portion comprising a generally elliptical cross-sectional portion that is axially aligned with the circular cross-sectional portion of the outer skirt portion, the elliptical cross-section defining a major axis and a minor axis;

an applicator tip secured between the outer neck portion and the inner neck portion;

a fluid passageway defined between the applicator tip and the inner neck portion, the fluid passageway in fluid communication with the outer reservoir; and

a seam sealing at least one of the outer skirt portion and the inner skirt portion, the seam disposed generally perpendicular to the major axis of the elliptical cross-sectional portion of the inner reservoir.

20. The container of claim 19, wherein the inner neck portion comprises a plurality of circumferentially spaced ribs engaging the applicator tip and aligning the inner neck portion relative to the applicator tip.

21. The container of claim 19, wherein the outer shoulder portion comprises a circular cross-section and the inner shoulder portion comprises an elliptical cross-section.

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