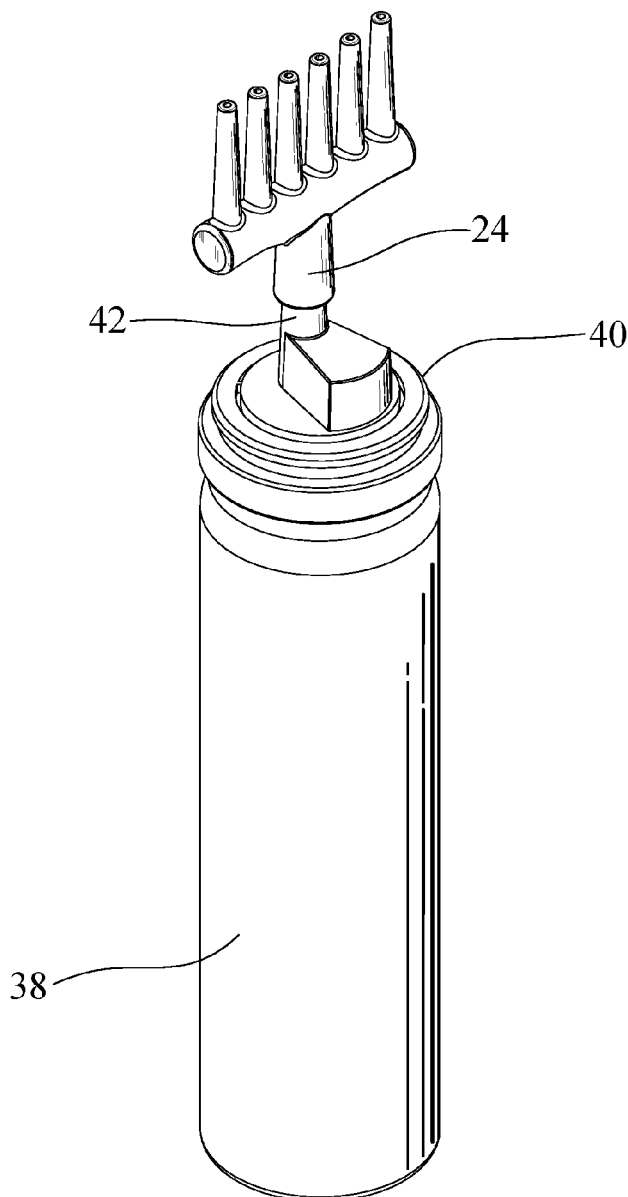




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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0180909 A1**
(43) **Pub. Date:** **Jun. 15, 2023**(54) **HAIR AND SCALP COMB SHAPED
APPLICATOR NOZZLE**(71) Applicant: **Robert Folchi**, Milford, CT (US)(72) Inventor: **Robert Folchi**, Milford, CT (US)(21) Appl. No.: **17/549,803**(22) Filed: **Dec. 13, 2021****Publication Classification**(51) **Int. Cl.**
A45D 24/22 (2006.01)(52) **U.S. Cl.**
CPC **A45D 24/22** (2013.01)(57) **ABSTRACT**

A comb shaped applicator nozzle used to dispense product from an aerosol canister or other similar standard dispenser to the hair or scalp of a user in a clean and efficient manner. The applicator nozzle includes a hollow base, a plurality of hollow tines extending from the base, and a stem also extending from the base. The stem has a tapered internal passageway which fits over a standard tapered dispensing nozzle. The taper of the stem passageway matches the taper of the standard dispensing nozzle. The friction between the two matching tapered surfaces causes the applicator nozzle to stay held in place when it is situated on the dispensing nozzle. When product is dispensed from the dispensing nozzle, it travels through internal fluid communication passageways of the hollow stem, hollow base, and hollow tines. The product exits through an orifice at the end of each tine and is deposited in thin streams onto the user's scalp or hair.



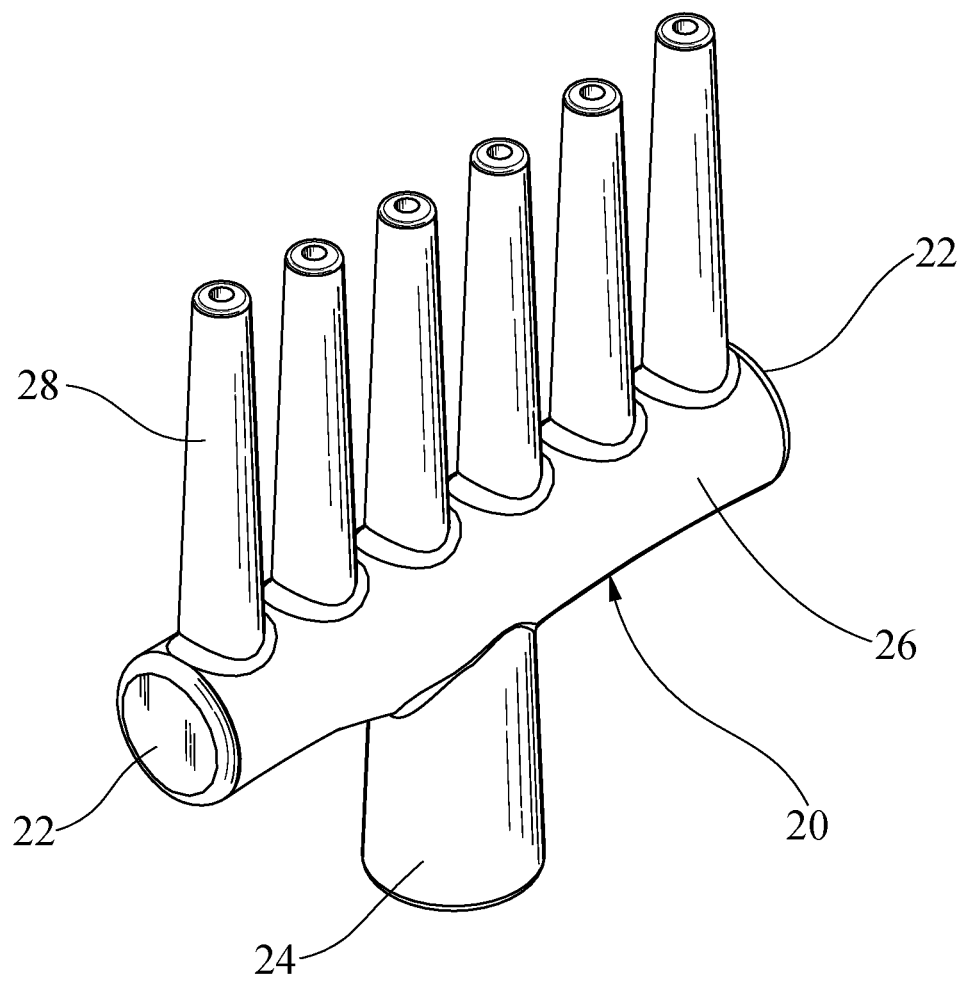


Fig. 1

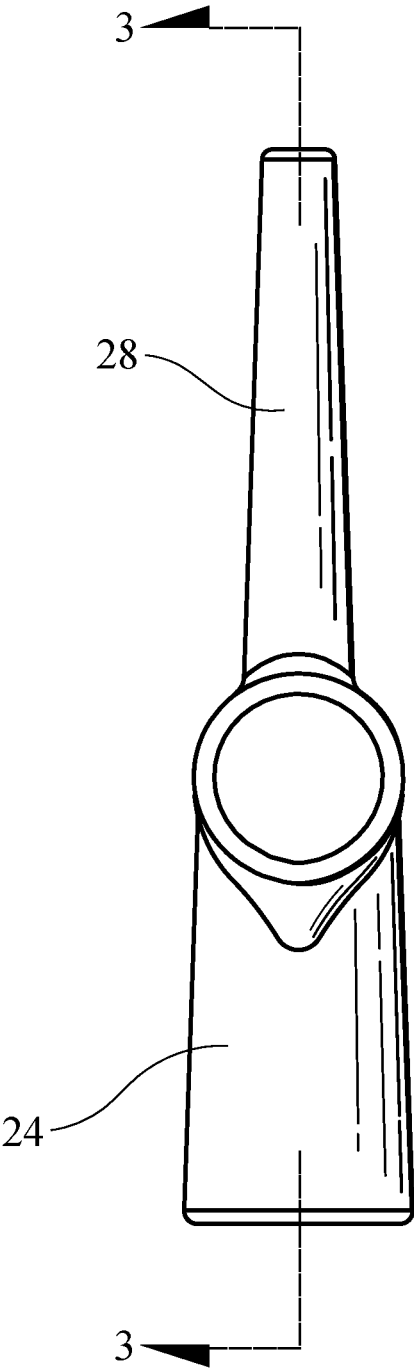


Fig. 2

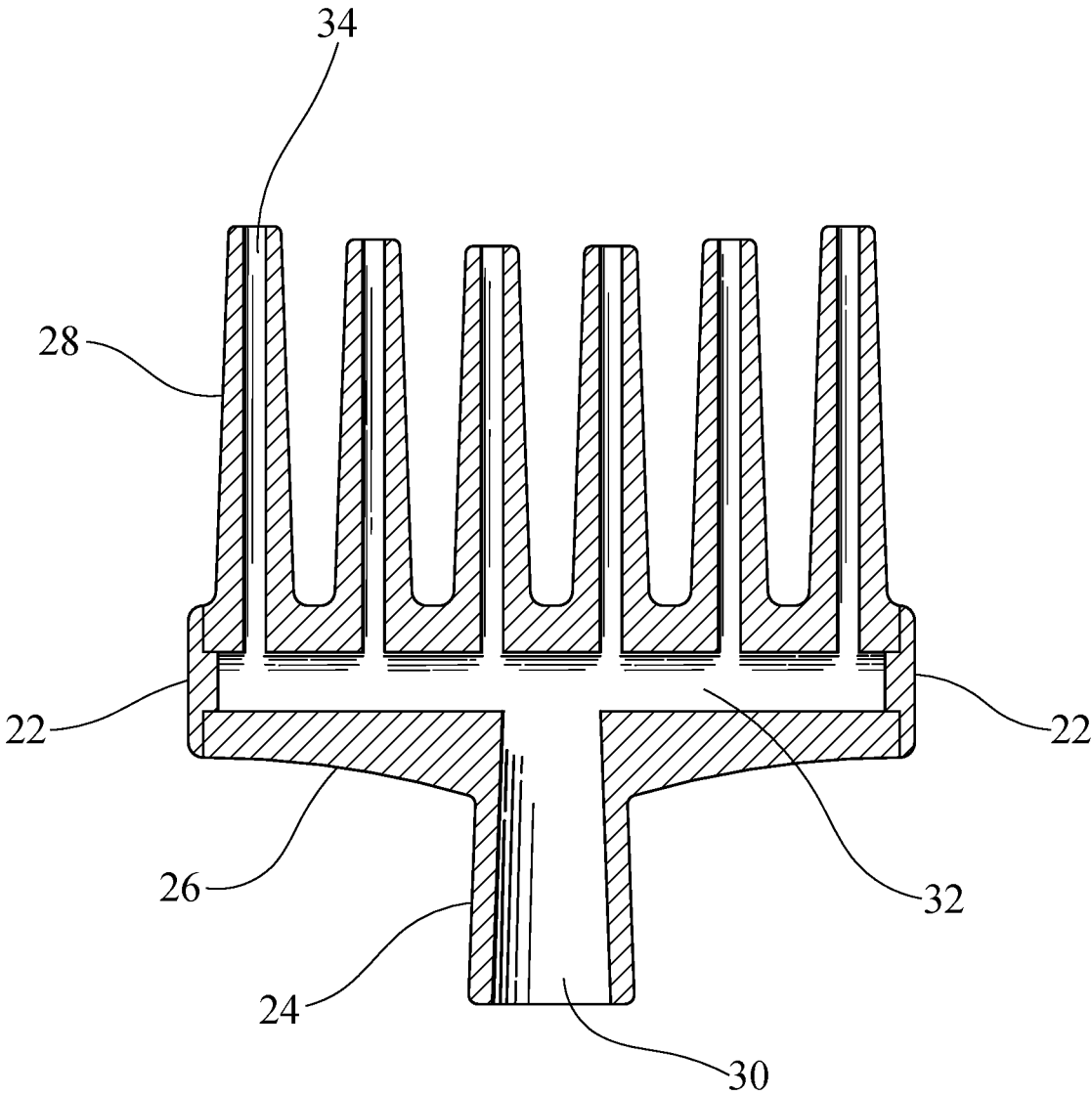


Fig. 3

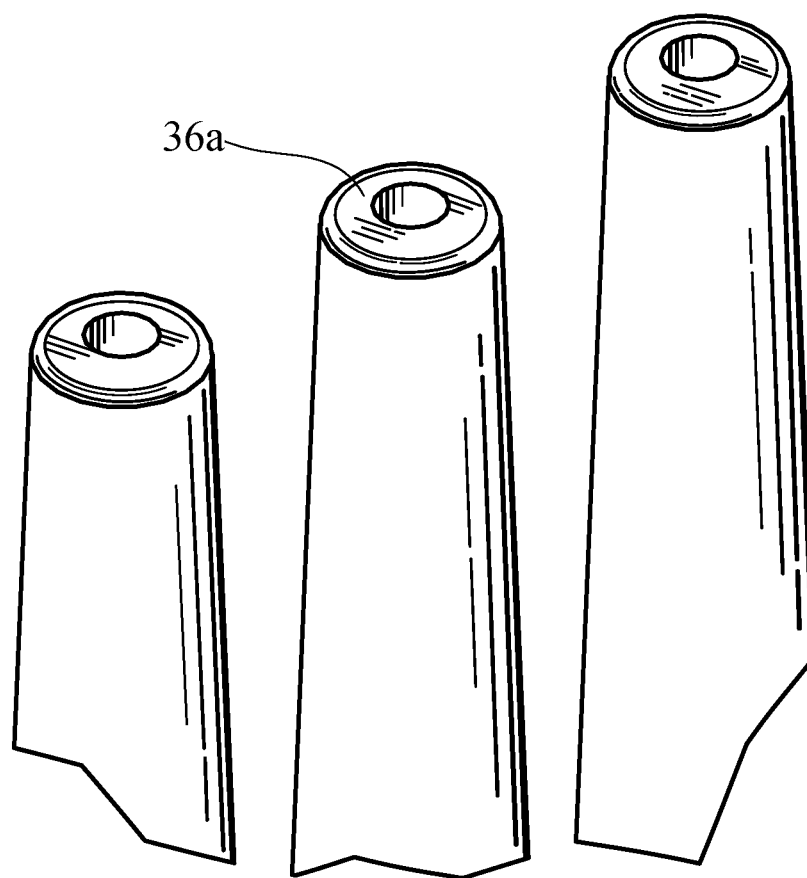


Fig. 4

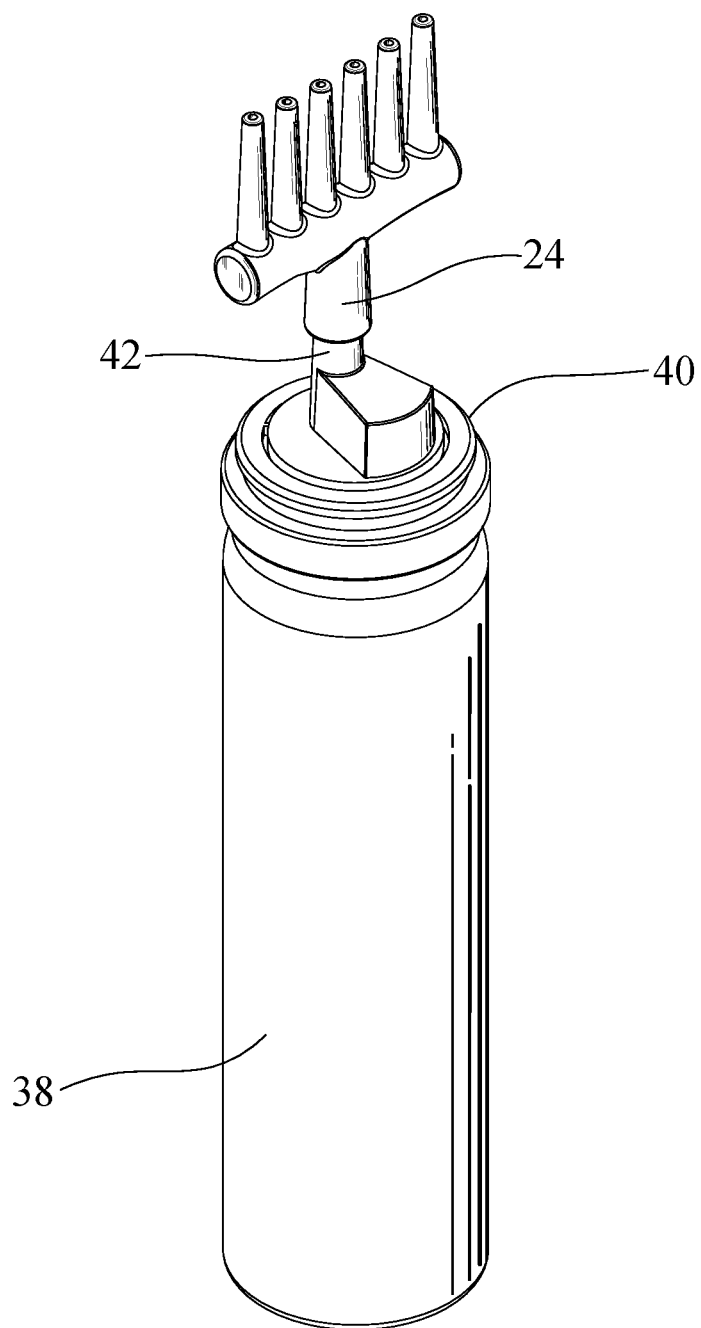


Fig. 5

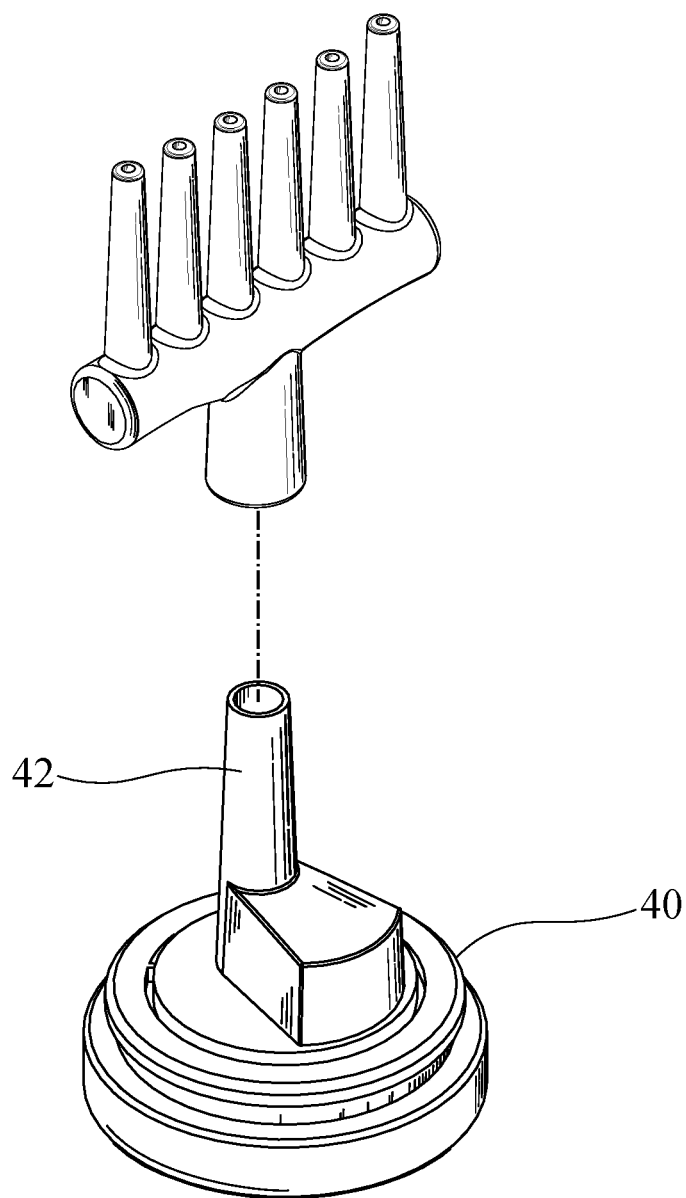


Fig. 6

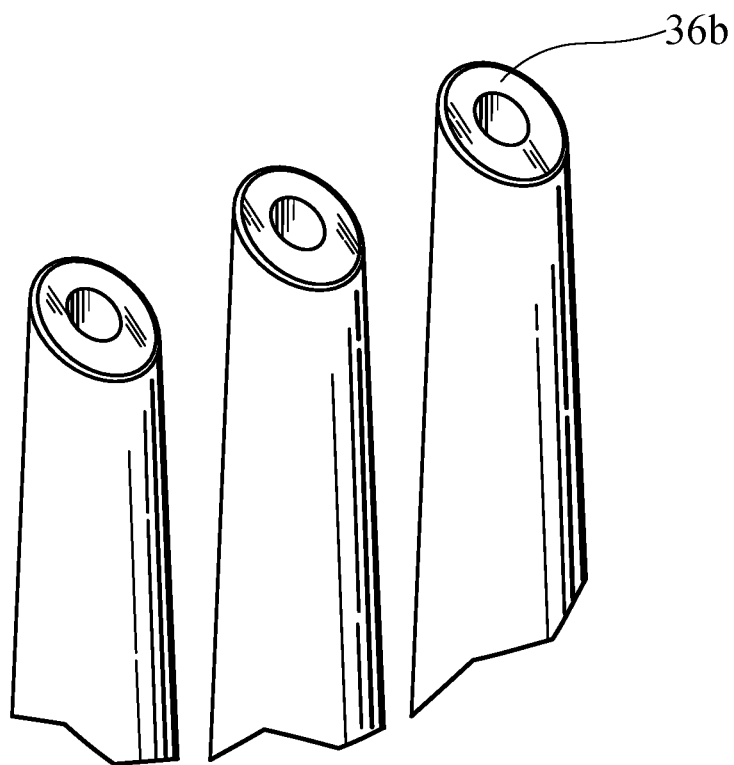


Fig. 7

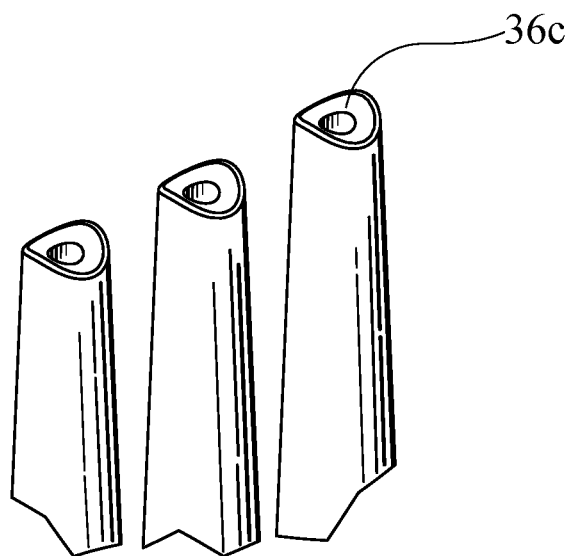


Fig. 8A

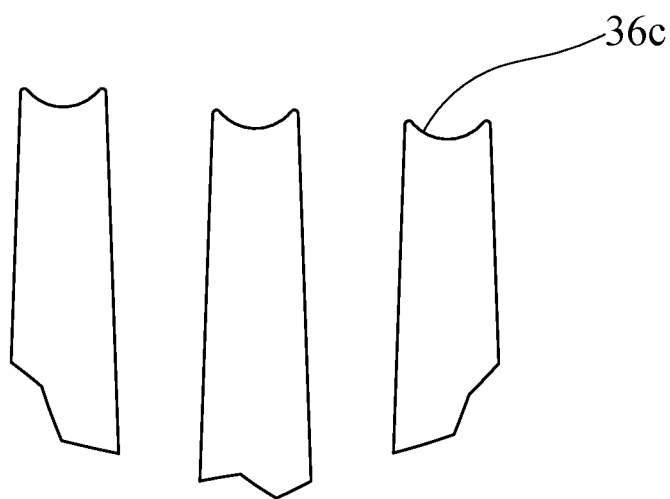


Fig. 8B

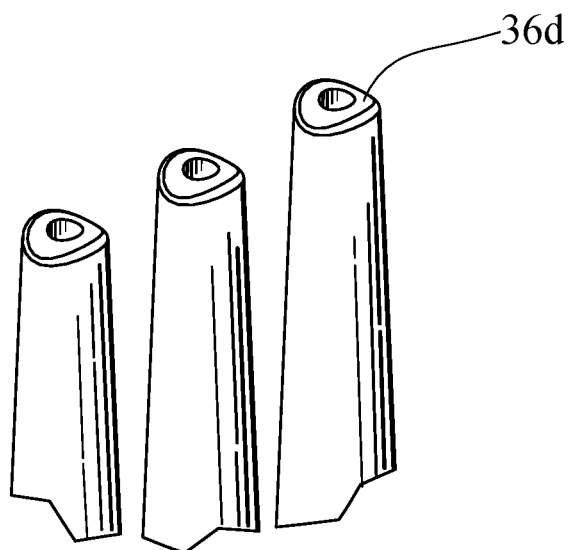


Fig. 9A

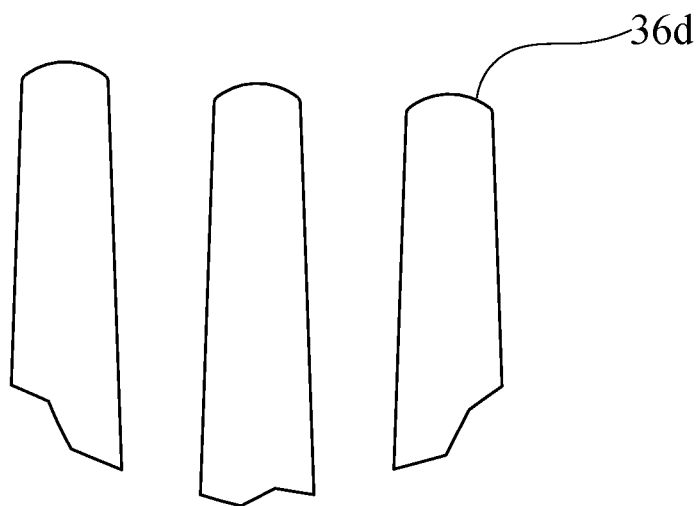


Fig. 9B

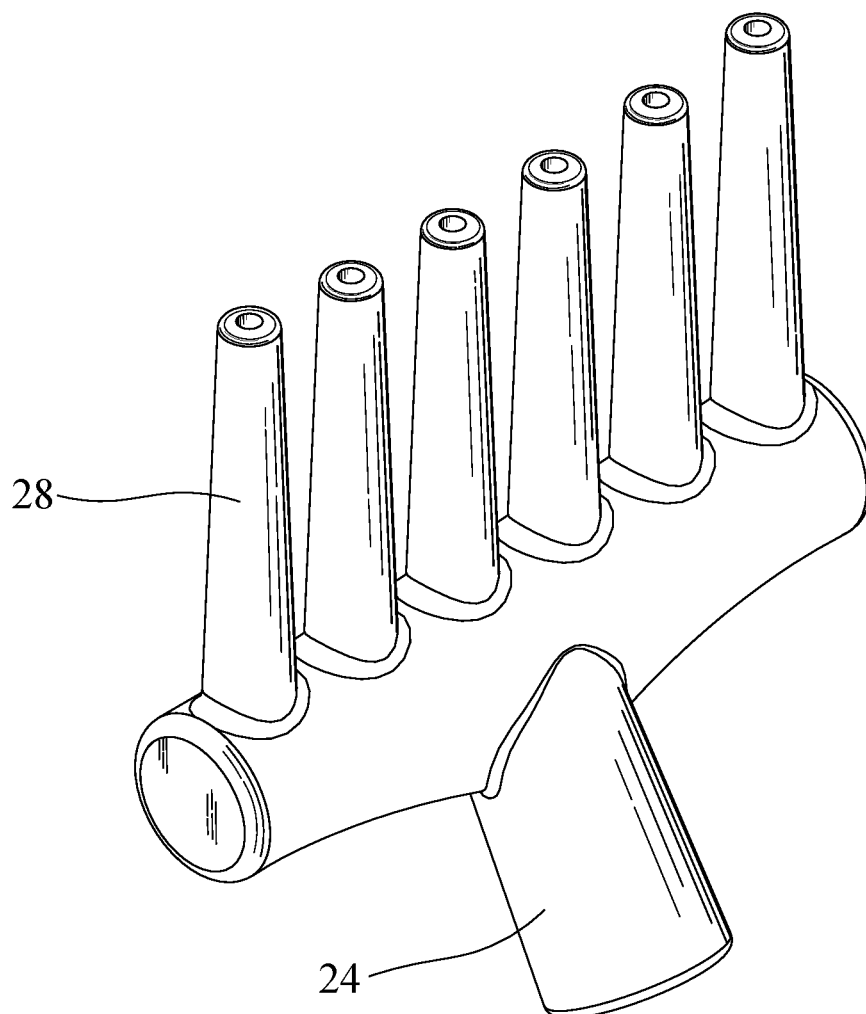


Fig. 10

HAIR AND SCALP COMB SHAPED APPLICATOR NOZZLE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of provisional patent application Ser. No. 63/142,449 filed 2021 Jan. 27 by the present inventor.

BACKGROUND—PRIOR ART

[0002] The following is a tabulation of some prior art that presently appears relevant:

U.S. Patents		
Pat. No.	Issue Date	Patentee
7,077,146	2006 Jul. 18	Eckerson
6,260,557	2001 Jul. 17	Yarbrough
5,555,899	1996 Sep. 17	Foreman
5,339,839	1994 Aug. 23	Forcelledo et al.
3,477,447	1969 Nov. 11	Eldredge

U.S. patent application Publications		
Publication Number	Publ. Date	Applicant
20140326264	2014 Nov. 6	Kong et al.
20050000535	2005 Jan. 6	Kim

Foreign Patent Documents			
Foreign Doc. Number	Country Code	Publ. Date	App or Patentee
523460	EP	1993 Jan. 20	Ooshima

[0003] Certain medications and cosmetics are intended to be applied directly to the scalp of a user in the form of a foam or fluid. There is often difficulty associated with this task because hair on the scalp obstructs direct access to the scalp. This results in messy application and wasted medication or cosmetic product.

[0004] Specifically, some medications are dispensed in the form of foam from an aerosol canister through a single round nozzle. When applying the foam to one's scalp using such a nozzle, the foam does not dispense effectively onto the scalp. The foam exits the nozzle and forms a glob on the scalp, which then has to be spread out over the scalp using one's fingers. This causes excess foam to absorb into the skin of one's hand and undesirably soak into the hair. As a result, foam is wasted and less absorbs into the scalp where it is intended.

[0005] Previously, several types of comb shaped applicators and nozzles have been proposed for applying a variety of products to the scalp, hair, and hair roots—for example, in U.S. Pat. No. 3,477,447 to Eldredge (1969), 5,339,839 to Forcelledo et al. (1994), 5,555,899 to Foreman (1996), 6,260,557 to Yarbrough (2001), 7,077,146 to Eckerson (2006), patent application publications 20,050,000,535 to

Kim (2003), and 20,140,326,264 to Kong et al. (2014), and European patent specification 523460 to Ooshima (1993).

[0006] These devices can dispense substances onto the hair or scalp, however they either directly incorporate some type of container or reservoir to hold the substance to be dispensed, or they incorporate a threaded connection so the device can be coupled with a plastic bottle or other standard threaded container. Therefore, these devices suffer from the following disadvantages:

[0007] (a) The applicator devices are used exclusively with specific containers, reservoirs, or threaded bottles respective to each device. This limits the use of the devices to the particular container, reservoir, or threaded bottle.

[0008] (b) For some of these devices, the substance to be dispensed has to be transferred from its original container to the device's specific container or reservoir. For the other devices, the substance to be dispensed has to be transferred to a bottle with appropriate threads, which match the threaded connection on the device, if the substance is not already in such a bottle. This creates extra work, increases the potential to spill the substance, and may create extra waste if the substance cannot be put back into its original container.

[0009] (c) Manufacturing a one-piece hollow applicator/nozzle with an inlet and multiple outlets is difficult and expensive.

SUMMARY

[0010] In accordance with one embodiment a comb shaped applicator nozzle that can be easily connected to an existing standard singular, round, unthreaded dispenser nozzle to dispense foam or other fluid substances directly to the scalp of a user in a clean and efficient manner.

Advantages

[0011] Accordingly, several advantages of one or more aspects are that the applicator nozzle can be used with and connected to an existing singular round dispenser nozzle, and that the product to be dispensed does not need to be transferred from its original container to a different container, reservoir, or bottle. Other advantages of one or more aspects are that the applicator nozzle can be manufactured cheaper and more easily. These and other advantages of one or more aspects will be apparent from a consideration of the drawings and ensuing description.

DRAWINGS—FIGURES

[0012] FIG. 1 is a perspective view of a first embodiment.

[0013] FIG. 2 is a side view of FIG. 1.

[0014] FIG. 3 is a sectional view along line 3-3 of FIG. 2.

[0015] FIG. 4 is an enlarged detail perspective view of the tine ends of a first embodiment.

[0016] FIG. 5 is a perspective view of a first embodiment shown in use on a reference standard aerosol canister.

[0017] FIG. 6 is a perspective view of a first embodiment shown in use above a reference standard dispensing nozzle.

[0018] FIG. 7 is an enlarged detail perspective view of slanted tine ends of another embodiment.

[0019] FIGS. 8A & 8B is an enlarged detail perspective view & enlarged detail front view of concave tine ends of another embodiment.

[0020] FIGS. 9A & 9B is an enlarged detail perspective view & enlarged detail front view of convex tine ends of another embodiment.

[0021] FIG. 10 is a perspective view of another embodiment with the tines positioned in a different orientation with respect to the stem.

[0022]

Drawings-Reference Numerals	
	20-Body
	22-End Cap
	24-Stem
	26-Base
	28-Tine
	30-Stem Passageway
	32-Base Passageway
	34-Tine Passageway
	36a-Tine End, Flat
	36b-Tine End, Slanted Embodiment
	36c-Tine End, Concave Embodiment
	36d-Tine End, Concave Embodiment
	38-Standard Aerosol Canister
	40-Standard Dispensing Nozzle
	42-Standard Dispensing Nozzle Outlet

DETAILED DESCRIPTION—FIRST EMBODIMENT—FIGS. 1, 2, 3, 4

[0023] FIG. 1 shows a perspective view of the applicator nozzle, comprised of a body 20 and two end caps 22. The body 20 is a single piece, comprising of a stem 24, a base 26, and a plurality of tines 28. The stem 24 extends vertically downward below the base 26, and the tines 28 extend vertically upward above the base 26. The plurality of tines 28 are arranged inline, with the axes of all tines 28 being coplanar.

[0024] FIG. 2 shows a side view of the applicator nozzle, where the stem 24 and tines 28 are shown to be inline and parallel with each other. FIG. 3 shows a sectional view along line 3-3 of FIG. 2 and illustrates the internal passageways. A stem passageway 30, a base passageway 32, and a plurality of tine passageways 34 can be seen in the FIG. 3 sectional view. Each tine 28 has a tine passageway 34. These internal passageways connect to each other and create a fluid communication channel from the terminating end of the stem passageway 30, which serves as an inlet, to the end of each tine passageway 34, which serve as outlets.

[0025] The stem 24 and stem passageway 30 both have a circular cross section along their axes. The stem passageway 30 travels along the axis of the stem 24 with the diameter of the stem passageway 30 reducing as it approaches the base 26. The base passageway 32 is cylindrical, and it travels longitudinally through the entire length of the base 26. The base passageway 32 breaks through both ends of the base 26. The stem passageway 30 connects to the base passageway 32. In each tine 28, the tine passageway 34 runs vertically along the axis of the tine 28. Each tine passageway 34 is cylindrical in shape and continues from the tip of the tine 28 towards the base 26 until it connects with the base passageway 32.

[0026] FIG. 3 also shows a concave profile that is formed by the tip of each tine 28 across the width of the base 26. The tines 28 towards the center of the base 26 are shortest, and the tine length increases towards the two ends of the base 26.

[0027] FIG. 3 also shows two end caps 22 with one at each end of the base 26. The end caps 22 are circular in shape and cover both ends of the base passageway 32 where it breaks through the ends of the base 26. The end caps 22 are permanently affixed to each end of the base 26 for the purpose of closing and sealing both ends of the base passageway 32. To join the end caps 22 to the base 26, the end caps 22 can be bonded, ultrasonic welded, or joined by some other appropriate method depending on the materials used. The applicator nozzle body 20 (FIG. 1) and end caps 22 can be made of rigid plastic by injection molding.

[0028] FIG. 4 shows an enlarged detail perspective view of the end of a few tines 28 (FIG. 1) with flat tine ends 36a visible. The flat tine ends 36a comprise of a flat surface being normal to the axis of the tine 28 (FIG. 1). The flat tine ends 36a also have a small radius around the perimeter.

Operation—First Embodiment—FIGS. 5, 6

[0029] FIG. 5 shows the applicator nozzle in use on a reference standard aerosol canister 38. At the top of the aerosol canister 38 is a reference standard dispensing nozzle 40. FIG. 6 shows the applicator nozzle above the standard dispensing nozzle 40 with a standard dispensing nozzle outlet 42 visible. The dispensing nozzle outlet 42 can be seen protruding vertically from the top of the dispensing nozzle 40. The dispensing nozzle outlet 42 has a circular cross section along its axis, a smooth outer surface, and it tapers slightly from a larger diameter at the base to a smaller diameter at the tip. This type of dispensing nozzle is standard on certain aerosol canisters, however it can also be present on other types of standard non-aerosol dispensers.

[0030] FIG. 5 also shows the stem 24 fitting over the dispensing nozzle outlet 42. The taper of the stem passageway 30 (FIG. 3) matches the taper of the dispensing nozzle outlet 42. When the stem 24 is lightly pressed onto the dispensing nozzle outlet 42, a holding force is generated by the friction between the two surfaces in contact. This holding force is strong enough to prevent the applicator nozzle from releasing from the dispensing nozzle outlet 42 when a fluid product is dispensed from the aerosol canister 38. The holding force is not too strong, so the applicator nozzle can be rotated about the dispensing nozzle outlet 42 to achieve an ergonomic position for dispensing the product.

[0031] The applicator nozzle is used by holding the aerosol canister 38 upside down with the tips of the tines 28 (FIG. 1) against the user's scalp, then dispensing the fluid product from the aerosol canister 38. As product is dispensed, it travels out of the dispensing nozzle outlet 42 (FIG. 6) and into the internal passageways of the applicator nozzle. The product travels through the internal passageways to the tips of the tines 28 (FIG. 1), where it is dispensed onto the user's scalp.

[0032] The applicator nozzle allows the user to dispense fluid product directly onto their scalp in an easy and ergonomic manner while also reducing the amount of wasted product.

Detailed Description—Alternative Embodiment—FIGS. 7, 8a, 8b, 9a, 9b, 10

[0033] Multiple alternative embodiments of the applicator nozzle can have different shapes or profiles at the end of each tine 28 (FIG. 1). FIG. 7 shows a closeup perspective view of one alternative embodiment having slanted tine ends

36b. The slanted tine ends **36b** have a flat surface at some substantial angle relative to the axis of the tine **28** (FIG. 1). FIG. **8a** and FIG. **8b** show a closeup perspective view of another alternative embodiment having concave tine ends **36c**. FIG. **9a** and FIG. **9b** show a closeup perspective view of another alternative embodiment having convex tine ends **36d**.

[0034] FIG. **10** shows an alternative embodiment where the tines **28** are not parallel with the stem **24**. The axis of stem **24** is positioned at some substantial angle relative to the axis of the tines **28**. By positioning the stem **24** in this manner, it is possible to adjust the ergonomics of the applicator nozzle depending on the configuration of the standard aerosol canister **38** (FIG. **5**) and standard dispensing nozzle **40** (FIG. **6**), as well as the preferences of the user.

CONCLUSION, RAMIFICATIONS, AND SCOPE

[0035] Thus, the reader will see that at least one embodiment of the applicator nozzle provides an easier, more efficient, and cleaner way to apply fluid product from a standard aerosol canister or other similar standard dispenser directly to the scalp.

[0036] While the above description contains many specificities, these should not be construed as limitations on the scope of any embodiment, but as exemplifications of various embodiments thereof. Many other ramifications and variations are possible within the teachings of the various embodiments.

[0037] For example, the number of tines and the length of each tine can be increased or decreased. The length of each individual tine can also be adjusted to modify the profile formed by the tine ends. For instance, the tine lengths could all be equal so that the ends of the tines form a flat profile rather than a concave profile. The cross-sectional shape of each tine can be changed as well. For example, the outer shape of each tine could be elliptical rather than circular.

[0038] Also, the positioning of the tines can be modified so that the tine axes are not coplanar. The size of the base can be increased, and the tines can be positioned in an array where the axes are substantially parallel, but not coplanar.

[0039] Additionally, the applicator nozzle could be manufactured in two halves with the body split vertically down the center through the plane formed by the tine axes. Both halves would be the same, and the base passageway would not break through either end of the base. The end caps would not be used, and the two body halves would be bonded together, ultrasonic welded, or joined by any other appropriate method.

[0040] The components of the applicator comb nozzle can be made from rigid plastic, flexible plastic, rubber, or metal using an appropriate method of manufacturing for the specific material.

[0041] Accordingly, the scope should be determined not by the embodiments illustrated, but by the appended claims and their legal equivalents.

I claim:

1. An applicator for dispensing fluid directly on the scalp of a user, comprising:

- a. a hollow base having a longitudinal axis,
- b. a plurality of substantially parallel hollow tines of predetermined length extending from said base substantially perpendicular to the longitudinal axis of said base, with each of said tines having a tip,

- c. at least one orifice in each of said tips of at least some of said tines,
- d. a stem defined on said body having an axis obliquely angularly disposed to the longitudinal axis of said body,
- e. a tapered substantially circular passageway through said stem with a predetermined diameter at the terminating end of said stem and a reduction in diameter towards said base to establish a taper of a predetermined angle,

- f. a fluid communication channel from said tapered circular passageway in said stem, through said hollow base, through at least one said hollow tine, to at least one said orifice,

whereby a standard tapered cylindrical dispensing nozzle can be inserted into said tapered circular passageway in said stem of the applicator and fluid can be dispensed through said fluid communication channel out said orifices at the tip of said tines onto the user's scalp.

2. The applicator of claim 1 wherein said tips of said tines comprise of a flat surface with said flat surface normal to the axis of said tine.

3. The applicator of claim 1 wherein said tips of said tines comprise of a flat surface with said flat surface obliquely angularly disposed to the axis of said tine.

4. The applicator of claim 1 wherein said tips of said tines comprise of a convex curved surface.

5. The applicator of claim 1 wherein said tips of said tines comprise of a concave curved surface.

6. The applicator of claim 1 wherein the plurality of said tines are all of equal length.

7. The applicator of claim 1 wherein at least one of said tines is of a different length than at least one other said tine.

8. The applicator of claim 1 wherein the axes of said tines are coplanar.

9. An applicator for dispensing fluid directly on the scalp of a user, comprising:

- a. a hollow base having a top, bottom, inside and outside,
- b. a plurality of substantially parallel hollow tines of predetermined length extending from said base substantially perpendicular to the top surface of said base, with each of said tines having a tip,

- c. at least one orifice in each of said tips of at least some of said tines,

- d. a stem defined on said body having an axis obliquely angularly disposed to the bottom face of said body,

- e. a tapered substantially circular passageway through said stem with a predetermined diameter at the terminating end of said stem and a reduction in diameter towards said base to establish a taper of a predetermined angle,

- f. a fluid communication channel from said tapered circular passageway in said stem, through said hollow base, through at least one said hollow tine, to at least one said orifice,

whereby a standard tapered cylindrical dispensing nozzle can be inserted into said tapered circular passageway in said stem of the applicator and fluid can be dispensed through said fluid communication channel out said orifices at the tip of said tines onto the user's scalp.

10. The applicator of claim 9 wherein the axes of at least two said tines lie on a single plane and the axis of at least one other said tine lies on a separate plane.

* * * * *