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(54) **NAIL POLISH REMOVAL DEVICE**

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(57) **ABSTRACT**

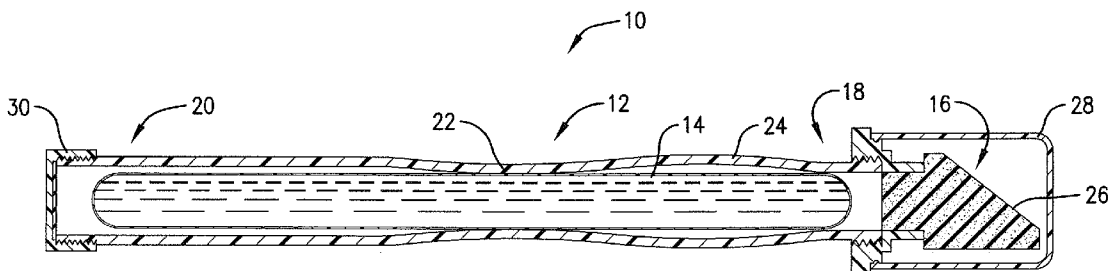
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A nail polish removal device includes a hollow applicator handle and an applicator tip. The applicator handle has an applicator end and an opposite end and releasably contains a nail solution. The applicator tip is removably attached to the applicator end of the applicator handle. The nail solution saturates or passes through the applicator tip when released from the applicator handle.

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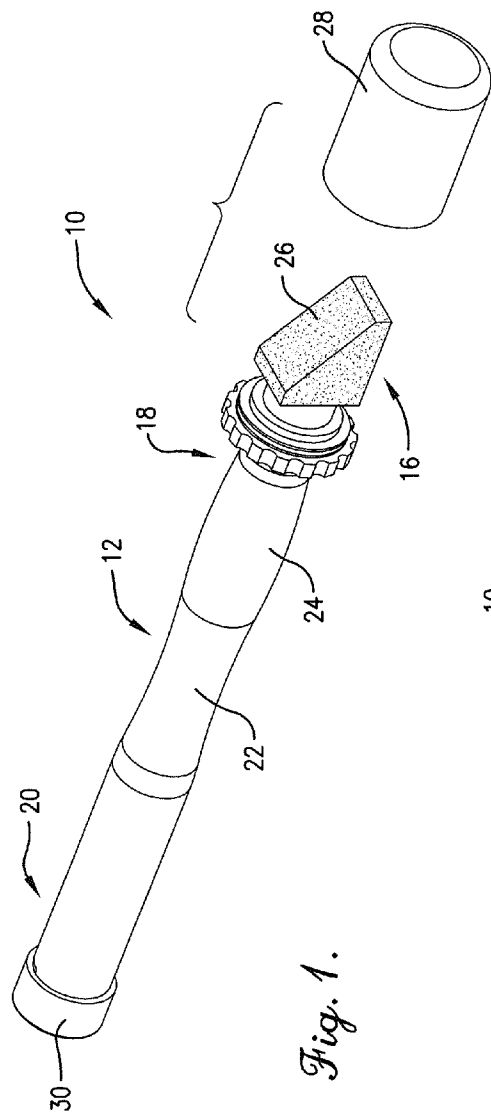


Fig. 1.

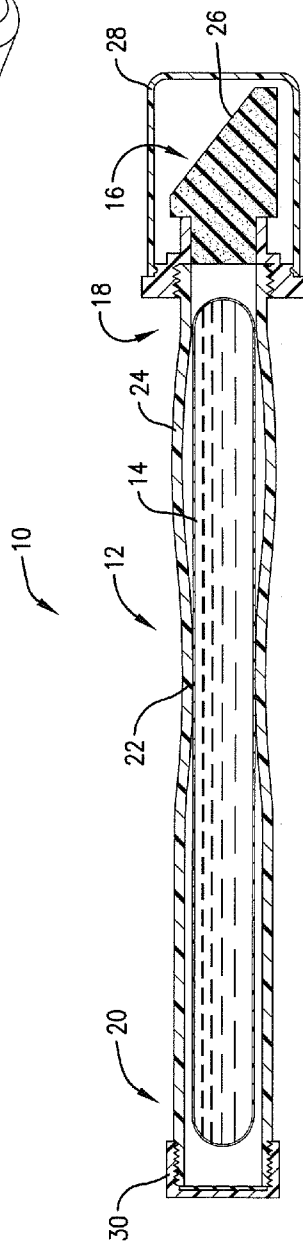


Fig. 2.

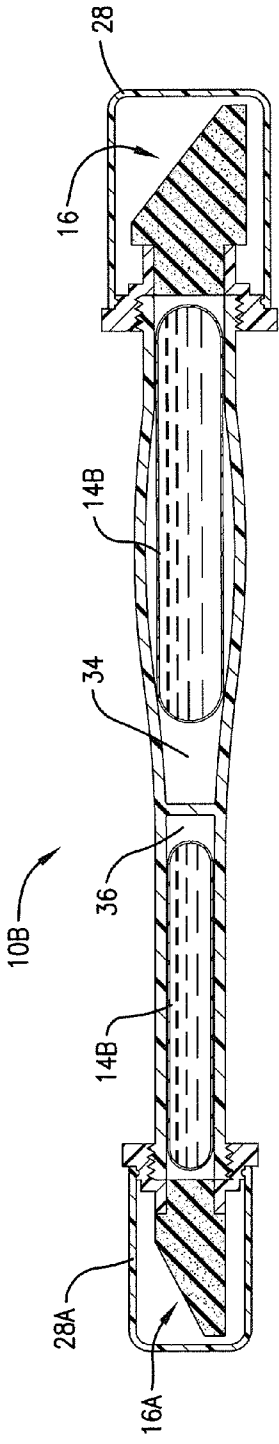
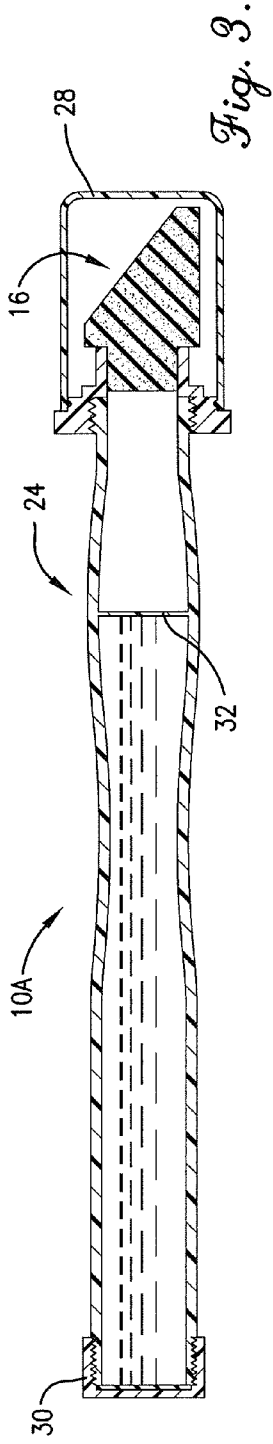


Fig. 4.



Fig. 6.

Fig. 5.

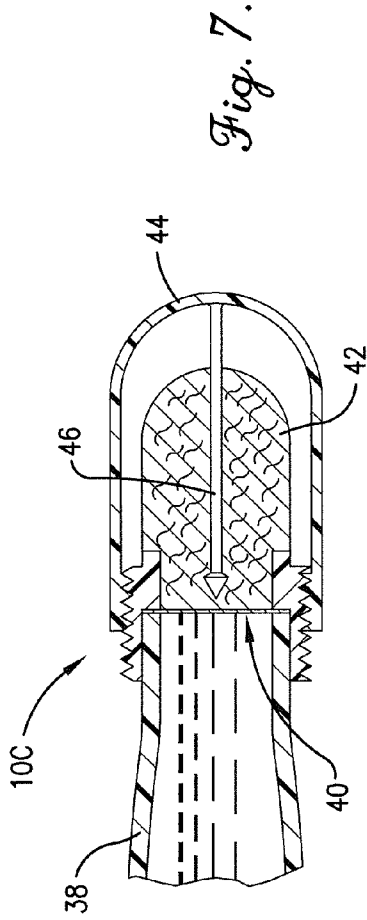


Fig. 7.

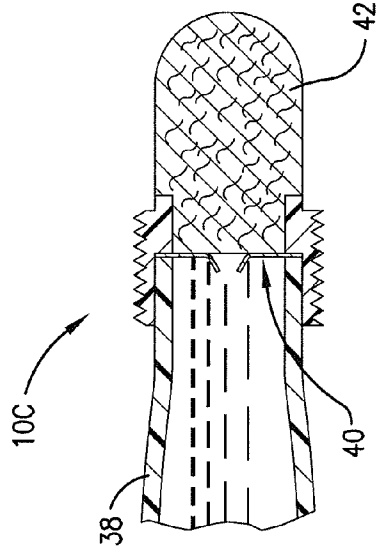


Fig. 8.

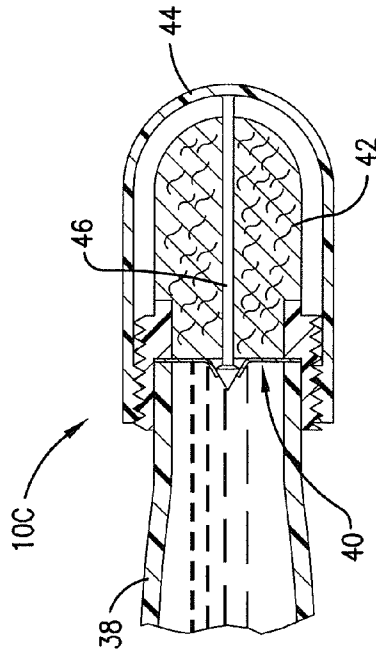


Fig. 9.

NAIL POLISH REMOVAL DEVICE

BACKGROUND

[0001] It is often desirable to remove cosmetic nail polish from fingernails and toenails, such as, for example, prior to applying a new cosmetic finish. Two popular nail polish removal systems are bottle-based systems and dipping jar-based systems. Bottle-based nail polish removal systems typically include a multiple-use bottle containing a relatively large quantity of a nail polish removal solution sufficient for numerous applications. The bottle opens at one end and must be properly secured with a cap to prevent the solution from spilling. In use, the solution must be controllably poured from the bottle onto a suitable material, such as a cotton ball or a cloth rag. Once the material is saturated with the nail polish removal solution, the user applies the material to a polished nail in order to remove the nail polish therefrom. This procedure undesirably exposes the user's fingers and nails to the solution, often resulting in removal of nail polish from nails not intended to be cleaned. Bottle-based systems are also relatively cumbersome and inconvenient to carry in a pocket or purse; are prone to potential leakage which may damage property or expose users to hazardous or flammable fumes or solutions; and are messy to apply.

[0002] Dipping jar-based systems typically include a shorter multiple-use dipping jar containing a sponge saturated with a relatively large quantity of the nail polish removal solution sufficient for numerous applications. In use, a nail finger is inserted into the dipping jar and the polished nail is rubbed against the sponge until all nail polish is removed. With this procedure, the finger is undesirably soaked in a potentially hazardous and unhealthy combination of the nail polish removal solution and dissolved nail polish.

[0003] Dipping jar-based systems also require a relatively high level of manual dexterity, which can be a concern for some people, particularly when removing toenail polish. For example, the user is required to either lower the dipping jar to the level of the toe or elevate the toe to the level of the dipping jar. Both methods require that the jar be securely held, in some manner, to prevent spillage, while the toenail is rubbed against the sponge. Lowering the dipping jar to the level of the user's toe necessitates that the user either inconveniently bend over, in order to hold the jar, or place the jar into a holding apparatus. Raising the toe to the dipping jar is equally cumbersome and may not be possible for some users, particularly the elderly or disabled.

[0004] The problems identified above are greatly compounded for a nail care professional who removes nail polish many times each day and is therefore exposed to nail polish removal solution on a substantially continuous basis. Although wearing gloves may reduce exposure to nail polish removal solutions, doing so inhibits manual dexterity.

[0005] Applicant previously invented a nail polish removal system that overcomes some of the above-described problems. This system is the subject of U.S. Pat. No. 6,405,735, hereby incorporated into the present application in its entirety by reference. The present invention provides improvements to the systems described in U.S. Pat. No. 6,405,735.

SUMMARY OF THE INVENTION

[0006] A nail polish removal device constructed in accordance with an embodiment of the present invention broadly comprises a hollow applicator handle and an applicator tip

connected to the handle. The applicator handle has an applicator end and an opposite end and releasably contains a nail polish removal solution or other nail solution. The nail solution may be held in a breakable capsule positioned in the hollow applicator handle or may be contained in the handle via a breakable seal positioned adjacent the applicator end of the handle. The nail polish removal solution saturates or passes through the applicator tip when released from the applicator handle.

[0007] The applicator tip is removably attached to the applicator end of the applicator handle. Advantageously, the applicator tip may be removed and replaced with a new applicator tip once it is saturated or coated with nail polish and no longer effective at removing additional nail polish.

[0008] A nail polish removal device constructed in accordance with another embodiment of the invention comprises a hollow applicator handle; a capsule constructed of breakable material located within the applicator handle and containing a volume of nail solution; and a plurality of interchangeable applicator tips. Each of the applicator tips is configured for removable attachment to the applicator handle for use in applying the nail solution to a nail when the capsule is broken. The applicator tips may be of various different sizes and shapes and made of various different materials so a user can pick the appropriate applicator tip for a particular task.

[0009] A nail polish removal device constructed in accordance with another embodiment of the invention includes an applicator tip that is fixedly attached to the handle and covered by a cap with an internal spike. The cap may be twisted or pushed to cause the spike to break a seal in the handle to release nail solution from the handle to the applicator tip.

[0010] A nail polish removal device constructed in accordance with another embodiment of the invention also comprises a hollow applicator handle and an applicator tip removably attached to the applicator handle. This embodiment further comprises a removable cap on the opposite end of the applicator handle for providing access to the interior of the applicator handle so that the capsule of nail solution and replacement capsules may be inserted in the hollow applicator handle.

[0011] This summary is provided to introduce a selection of concepts in a simplified form that are further described in the detailed description below. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter. Other aspects and advantages of the present invention will be apparent from the following detailed description of the embodiments and the accompanying drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Embodiment of the present invention are described in detail below with reference to the attached drawing figures, wherein:

[0013] FIG. 1 is a perspective view of a nail polish removal device constructed in accordance with an embodiment of the invention.

[0014] FIG. 2 is a vertical sectional view of the nail polish removal device of FIG. 1.

[0015] FIG. 3 is a vertical sectional view of a nail polish removal device constructed in accordance with another embodiment of the invention.

[0016] FIG. 4 is a vertical sectional view of a nail polish removal device constructed in accordance with yet another embodiment of the invention.

[0017] FIG. 5 is a vertical sectional view of an alternate applicator tip for the nail polish removal device of FIG. 1, 2, 3, or 4.

[0018] FIG. 6 is a vertical sectional view of another alternate applicator tip for the nail polish removal device of FIG. 1, 2, 3, or 4.

[0019] FIG. 7 is a vertical sectional view of another applicator tip shown with its cap in a non-punctured position.

[0020] FIG. 8 is a vertical sectional view of the applicator tip of FIG. 7 with the cap in its punctured position.

[0021] FIG. 9 is a vertical sectional view of the applicator tip of FIG. 7 with the cap removed.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0022] The following detailed description of embodiments of the invention references the accompanying drawings. The embodiments are intended to describe aspects of the invention in sufficient detail to enable those skilled in the art to practice the invention. Other embodiments can be utilized and changes can be made without departing from the scope of the claims. The following detailed description is, therefore, not to be taken in a limiting sense. The scope of the present invention is defined only by the appended claims, along with the full scope of equivalents to which such claims are entitled.

[0023] In this description, references to “one embodiment”, “an embodiment”, or “embodiments” mean that the feature or features being referred to are included in at least one embodiment of the technology. Separate references to “one embodiment”, “an embodiment”, or “embodiments” in this description do not necessarily refer to the same embodiment and are also not mutually exclusive unless so stated and/or except as will be readily apparent to those skilled in the art from the description. For example, a feature, structure, act, etc. described in one embodiment may also be included in other embodiments, but is not necessarily included. Thus, the present technology can include a variety of combinations and/or integrations of the embodiments described herein.

[0024] Turning now to the drawing figures, and initially FIGS. 1 and 2, a nail polish removal device 10 constructed in accordance with an embodiment of the present invention is shown. The nail polish removal device 10 may be used to remove nail polish from a user's fingernails or toe nails, apply nail conditioner or other solution to the nails, and/or perform other nail-related cleaning, repair, or maintenance. The nail polish removal device 10 broadly comprises an applicator handle 12, a breakable capsule 14 containing a nail solution, and an applicator tip 16 connected to the handle.

[0025] The applicator handle 12 is hollow and tubular and has an applicator end 18 and an opposite end 20. An embodiment of the applicator handle 12 is contoured and has a reduced diameter mid-section 22 and an enlarged diameter gripping area 24 that facilitate holding and gripping of the device. The mid-section 22 may be flexible and/or constructed of thinner material so that a user may squeeze it to break the capsule 14 as described below. Likewise, the gripping area 24 may be flexible and/or constructed of flexible material so the user may squeeze it to eject the nail solution from the applicator handle 12 as described below.

[0026] The applicator handle 12 is preferably constructed of plastic or rubber but may be constructed of any suitable

materials. In some embodiments, the applicator handle is clear, and in other embodiments it may be colored red, blue, or any other color. The applicator handle's length depends on the intended use. For example, a nail polish removal device designed to be used on fingernails may have an optimal length of between 1.0-6.0 inches. A nail polish removal device designed to be used on toenails may have an optimal length of between 3.0-8.0 inches, wherein the longer handle provides a longer reach with less effort. The diameter of the applicator handle 12 is optimally between $\frac{1}{8}$ - $\frac{3}{8}$ inch.

[0027] The breakable capsule 14 contains nail polish removal solution, nail conditioning solution, cleaning solutions, or any other nail solution. In some embodiments, the nail solution may be colored and/or scented. The capsule 14 is designed to be easily broken by crushing or bending and is preferably constructed of a rigid material such as thin glass or plastic or flexible material such as foil. As best shown in FIG. 2, the capsule has an outside diameter that is approximately equal to the inside diameter of the mid-section 22 of the handle 12. This facilitates breaking of the capsule 14 when a user squeezes the mid-section 22. In one embodiment, the outside diameter of the capsule and the inside diameter of the applicator handle 12 are both approximately $\frac{3}{8}$ inch, with the capsule being slightly thinner than the handle to permit it to slide into the handle.

[0028] The breakable capsule 14 may be filled with any quantity of nail polish removal solution or other nail solution. The actual quantity of nail solution is a matter of design choice, but the capsule is preferably designed to hold at least enough solution to adequately remove polish from an average fingernail, and in some embodiments is designed to hold enough solution for ten or more nails.

[0029] The applicator tip 16 is secured to the applicator end 18 of the applicator handle 12 and is configured for applying the nail polish removal solution or other nail solution to a finger nail or toe nail. The applicator tip 16 may be formed in any size and shape. For example, the embodiment of the applicator tip shown in FIGS. 1 and 2 is shaped like a wedge and has a slanted or angled nail polish removal surface 26. This of applicator tip 16 is useful for applying a relatively large amount of nail polish removal solution in one or two broad strokes to remove nail polish from a large nail and/or a large area of a nail.

[0030] An applicator tip 16A constructed in accordance with another embodiment of the invention is shown in FIG. 4. The applicator tip 16A is smaller and shaped like a knife edge. This type of applicator tip is useful for applying a relatively smaller amount of nail polish removal solution to a smaller nail or a small portion of a nail.

[0031] An applicator tip 16B constructed in accordance with yet another embodiment of the invention is shown in FIG. 5. The applicator tip 16B is shaped like a tapered cylinder and is useful for applying nail polish removal solution in a stream or line so that it can be rubbed on a nail with a cotton ball or pad.

[0032] An applicator tip 16C constructed in accordance with yet another embodiment of the invention is shown in FIG. 6. The applicator tip 16C is in the form of a brush and is useful for applying nail polish removal solution to a nail with a brushing stroke.

[0033] All embodiments of the applicator tip 16, 16A, 16B, 16C may be constructed of any suitable materials such as

foam material, natural or synthetic chamois, cotton, or wool. Moreover, other shapes and types of applicator tips may be used with the device 10.

[0034] In some embodiments, each applicator tip 16, 16A, 16B, 16C is configured to be removeably attached to the applicator end 18 of the applicator handle. This permits each applicator tip to be removed and replaced with a new tip when it becomes covered with nail polish and therefore no longer effective at removing additional nail polish. The nail polish removal device 10 may be sold with multiple interchangeable applicator tips constructed as described above. This permits a user to remove and replace an applicator tip with a differently configured tip. For example, the larger tip 16 may be initially used to remove nail polish from large surface areas of a nail or nails and may then be replaced with the smaller tip 16A to remove nail polish from smaller nails or smaller areas on a nail.

[0035] The applicator tips 16, 16A, 16B, 16C may be removably coupled to the applicator end 18 of the applicator handle 12 in a variety of manners. In one embodiment, each applicator tip has an internally threaded flange for engaging external threads on the applicator end of the applicator handle to permit the applicator tip to be screwed on and off the applicator handle. In other embodiments, the inside surface of the applicator tip may have a raised rim or shoulder that snaps over a detent or similar mechanism on the applicator end of the applicator handle.

[0036] The nail polish removal device 10 may also comprise removable caps 28, 28A, 28B, 28C that snap over the applicator tips 16, 16A, 16B, 16C to keep them clean and to keep the nail solution from dripping from the device when not in use. In one embodiment, the caps 28, 28A, 28B, 28C include internal ribs or detents that snap over slots on the applicator tips to hold the caps on the tips.

[0037] Embodiments of the nail polish removal device 10 may also comprise a removable cap 30 that screws onto the opposite end 20 of the applicator handle 12. The cap 30 allows easy insertion of the capsule 14 in the handle 12 and allows an empty capsule to be removed and replaced with a new one. In these embodiments, the capsule is preferably formed of plastic, thin foil, or other materials that do not break into small sharp pieces when the capsule is punctured.

[0038] The above-described device 10 is used by first removing it from any associated packaging and then removing the cap 28 from the applicator tip 16. The user may also elect to replace the applicator tip 16 with any of the other applicator tips 16A, 16B, 16C. The breakable capsule 14 is then broken by squeezing or bending the mid-section 22 of the hollow applicator handle, releasing the nail polish removal solution. Pieces of the breakable capsule are prevented from escaping the hollow applicator handle by the applicator tip. The user then orients the nail polish removal device, such that the applicator tip 16 is lower than the hollow applicator handle 12. The user may force nail solution out of the handle by squeezing the gripping section 24. The released nail solution saturates the applicator tip by flowing through the opening in the applicator end of the hollow applicator handle.

[0039] Once the capsule 14 is emptied, the user may refill the device 10 by removing the cap 30, discarding the empty and broken capsule, along with any pieces, into a trash container and placing another capsule in the applicator handle.

Similarly, the user may replace a worn applicator tip by unscrewing it from the applicator handle and replacing it with a new one.

[0040] A nail polish removal device 10A constructed in accordance with another embodiment of the invention is shown in FIG. 3. The nail polish removal device 10A is similar to the device 10 of FIGS. 1 and 2 except that it has no capsule. Instead, the nail solution is held in the hollow handle by a breakable seal 32 constructed of thin rigid plastic, glass, or other breakable material. In use, the breakable seal 32 is broken by squeezing the gripping portion 24 of applicator handle, thereby releasing the nail solution. Pieces of the breakable seal are prevented from escaping the hollow applicator handle by the applicator tip.

[0041] A nail polish removal device 10B constructed in accordance with another embodiment of the present invention is shown in FIG. 4. The nail polish removal device 10B comprises a hollow applicator handle with two separate compartments 34, 36 and two applicator tips 16, 16A. A breakable capsule 14B similar to the breakable capsule described above is positioned in each compartment. The breakable capsules 14B may contain different solutions, such as the nail polish removal solution, a nail conditioning solution, or a mild cleaner, for removing dissolved nail polish. The compartment 34 and its associated capsule may be larger than the compartment 36 and its associated capsule. This configuration is useful for when a larger applicator tip 16 is attached to the compartment 34 for removing nail polish from larger nails and a smaller applicator tip 16A is attached to the compartment 36 for removing nail polish from smaller nails or smaller portions of nails. As with the other embodiments, the applicator tips 16, 16A shown in FIG. 4 may be removed and replaced with other applicator tips.

[0042] A nail polish removal device 10C constructed in accordance with another embodiment of the invention is shown in FIGS. 7-9. The device 10C has a hollow handle 38 that holds a supply of nail solution and a breakable seal 40 that keeps the nail solution in the handle. The device also has an applicator tip 42 and a cap 44 that screws to the end of the handle to cover the applicator tip. The applicator tip may be round or curved and formed of cotton or other material. The cap has an internal spike 46 or other object that may break the seal 40 and is shiftable on the handle between a first position shown in FIG. 7 where the seal is unbroken and a second position shown in FIG. 8 where the spike breaks the seal to release the nail solution from the handle to the applicator tip. Once the seal 40 is broken, the cap 44 may be removed as shown in FIG. 9. After use, the cap 44 may be placed back over the applicator tip 42 for future use or the entire device 10C may simply be discarded. This embodiment may also be used with the nail solution capsules described above.

[0043] Although the invention has been described with reference to the embodiments illustrated in the attached drawings, it is noted that equivalents may be employed and substitutions made herein without departing from the scope of the invention as recited in the claims.

Having thus described the preferred embodiment of the invention, what is claimed as new and desired to be protected by Letters Patent includes the following:

1. A nail maintenance device comprising:
 - a hollow applicator handle having an applicator end and an opposite end, the applicator handle releasably containing a nail solution; and

- an applicator tip removably attached to the applicator end of the applicator handle, wherein the nail solution saturates or passes through the applicator tip when released from the applicator handle, and wherein the applicator tip may be removed from the applicator and replaced with another applicator tip.
- 2. The nail maintenance device as set forth in claim 1, further comprising a removable cap for closing the opposite end of the applicator handle and for permitting insertion of the nail solution into the applicator handle.
- 3. The nail maintenance device as set forth in claim 1, further comprising a number of differently configured applicator tips that may each be removably attached to the applicator end of the hollow applicator handle.
- 4. The nail maintenance device as set forth in claim 1, wherein the applicator handle is contoured and includes a gripping region that facilitates holding of the device by a user.
- 5. The nail maintenance device as set forth in claim 1, further comprising a breakable capsule containing the nail solution and configured for insertion in the applicator handle, the nail solution being released from the breakable capsule and the applicator handle when the breakable capsule is broken.
- 6. The nail maintenance device as set forth in claim 5, wherein the applicator tip is operable to filter pieces of the breakable capsule, after it has been broken, to contain the pieces within the applicator handle.
- 7. The nail maintenance device as set forth in claim 1, wherein the applicator end of the hollow applicator handle is sealed with a breakable seal, the nail polish removal solution being released from the applicator handle when the breakable seal is broken.
- 8. The nail maintenance device as set forth in claim 7, wherein the applicator handle includes a flexible region proximate the breakable seal to facilitate breaking of the seal.
- 9. The nail maintenance device as set forth in claim 1, wherein the hollow applicator handle is sub-divided into two compartments and wherein the device further comprises two breakable capsules, one in each of the compartments, each breakable capsule containing a different solution selected from the group consisting of: the nail polish removal solution, a nail conditioning solution, or a cleaning solution.
- 10. The nail maintenance device as set forth in claim 1, wherein the applicator handle releasably contains between ¼-2 ounces of the nail solution.
- 11. The nail maintenance device as set forth in claim 1, wherein the applicator handle is between one inch and eight inches in length and between ⅛ of an inch and ⅝ of an inch in diameter.

- 12. A nail polish removal device comprising:
 - a hollow applicator handle having an applicator end;
 - a capsule constructed of breakable material located within the hollow applicator handle and containing a volume of nail solution; and
 - a plurality of interchangeable applicator tips, each of the applicator tips configured for removable attachment to the applicator end of the applicator handle for use in applying the nail solution to a nail when the capsule is broken.
- 13. The nail polish removal device as set forth in claim 12, the applicator handle having an opposite end, the device further comprising a removable cap for closing the opposite end of the applicator handle and for permitting insertion of the nail solution into the applicator handle.
- 14. The nail polish removal device as set forth in claim 12, wherein the applicator handle is contoured and includes a gripping region that facilitates holding of the device by a user.
- 15. The nail polish removal device as set forth in claim 12, wherein the applicator handle includes a flexible region proximate the capsule to facilitate breaking of the capsule.
- 16. The nail polish removal device as set forth in claim 12, wherein the hollow applicator handle is sub-divided into two compartments and wherein the device further comprises two breakable capsules, one in each of the compartments, each breakable capsule containing a different solution selected from the group consisting of: the nail polish removal solution, a nail conditioning solution, or a cleaning solution.
- 17. A nail polish removal device comprising:
 - a hollow applicator handle having an applicator end and an opposite end, the applicator handle releasably containing a nail polish removal solution;
 - an applicator tip removably attached to the applicator end of the applicator handle, wherein the nail polish removal solution saturates or passes through the applicator tip when released from the applicator handle; and
 - a removable cap for closing the opposite end of the applicator handle and for permitting insertion of additional nail polish removal solution into the hollow applicator handle.
- 18. The nail polish removal device as set forth in claim 1, further comprising a number of differently configured applicator tips that may each be removably attached to the applicator end of the hollow applicator handle.
- 19. The nail polish removal device as set forth in claim 17, wherein the applicator handle is contoured and includes a gripping region that facilitates holding of the device by a user.
- 20. The nail polish removal device as set forth in claim 1, further comprising a breakable capsule containing the nail polish removal solution and configured for insertion in the applicator handle, the nail polish removal solution being released from the breakable capsule and the applicator handle when the breakable capsule is broken.

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