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(71) Applicant *(for all designated States except US)*: **RUFFIN, Marshall, V.** [US/US]; 11140 Highway 584, Oak Grove, LA 71263 (US).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **MCFARLIN, Mitchell** [US/US]; 2912 DeSoto Street, Monroe, LA 71201 (US).

(74) Agent: **JACOBSON, Harvey, B., Jr.**; Jacobson Holman, PLLC, 400 7th Street, NW, Washington, DC 20004-2218 (US).

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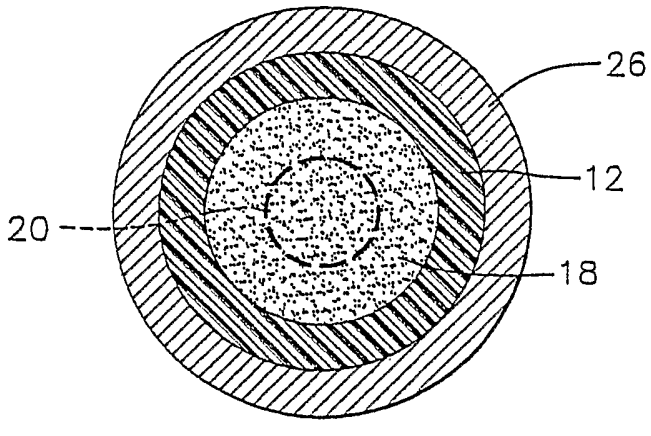
(54) Title: NAIL POLISH REMOVER DISPENSER AND METHOD



(57) Abstract: A self-contained nail polish removal dispenser having a shape-sustaining but flexible casing (12) with an opening at one end and a breakable ampule (20) containing nail polish remover (22) enclosed in the casing. An absorbent swab (18) is positioned in the opening (16) to close the casing and is covered by a dispensing cap (26) which slides over the plugged end of the casing prior to use. To use the dispenser, the dispensing cap is removed, exposing the swab, and the casing is squeezed to break the ampule and allow the nail polish to soak into the swab. Grasping the casing, the user can then apply the moistened swab to one or more painted nail surfaces to liquify and remove the polish thereon. When the desired amount of polish has been removed, the polish removal dispenser is simply discarded.

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NAIL POLISH REMOVER DISPENSER AND METHOD

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention generally relates to a dispenser and applicator for nail polish remover and to a method of removing nail polish. More particularly, the present invention relates to a breakable ampule containing a quantity of nail polish remover which is encased within a shape-sustaining flexible casing having an absorbent swab. When the ampule is broken, the nail polish remover moistens the swab which may then be used to remove polish from one's nails.

Description of the Related Art

Nail polish is applied and worn by thousands of people, primarily women, on a daily basis. When the polish becomes worn or chipped necessitating replacement, removal of the old polish is necessary before a subsequent coat of new polish may be applied.

Conventional processes of nail polish removal generally include application of nail polish remover to a tissue, cotton ball, or other absorbent material as an applicator. The moistened applicator is then wiped or rubbed against the painted nail surface to liquify the polish, after which an unmoistened applicator is typically used to wipe off the liquified polish. The process is messy and, if only one nail is to be repainted, it can be very difficult to avoid liquefying or smudging the polish on other nails through proximity with the moistened applicator.

Therefore, a need exists for a nail polish removal dispenser than allows greater control of the nail polish remover and which may be used and stored conveniently in a variety of locations.

SUMMARY OF THE INVENTION

In view of the foregoing, one object of the present invention is to overcome the difficulties of removing nail polish from nails neatly and, when desired, selectively.

Another object of the present invention is to provide a nail polish removal dispenser that is highly portable and disposable.

A further object of the present invention is to provide a method of removing nail polish unobtrusively and effectively, without the need for additional applicator and removal materials.

Yet another object of the present invention is to provide a disposable unit dose nail polish removal system that enables individuals to remove nail polish from their fingers and toes neatly and with ease.

In accordance with this and other objects, the present invention is directed to a self-contained nail polish removal dispenser which includes a shape-sustaining but flexible casing having an opening in at least one end. The casing encloses a breakable ampule containing nail polish remover. An absorbent swab is positioned in the opening to close the casing and is covered by a dispensing cap which slides over the plugged end of the casing prior to use. To use the dispenser, the dispensing cap is removed or preferably positioned on the other end of the casing opposite the plug to expose the swab. The flexible casing is squeezed to break the ampule, allowing the nail polish to soak into the swab. The user can then, using the dispensing cap overlying the casing (or the casing alone) as a holder, apply the moistened swab to one or more painted nail surfaces to liquify and remove the polish thereon. When the desired amount of polish has been removed, the dispenser is simply discarded.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter

described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a longitudinal, sectional view of the casing, breakable ampule, swab and dispensing cap constructed in accordance with a preferred embodiment of the present invention;

Figure 2 is a longitudinal, sectional view of the casing, breakable ampule, swab and dispensing cap of Figure 1, illustrating the structural relationship thereof when the ampule is broken;

Figure 3 is a transverse sectional view of the casing, porous swab and dispensing cap taken along section line 3-3 of Figure 1;

Figure 4 is a side elevational view of the dispensing cap of Figure 1;

Figure 5 is a sectional view similar to Figure 2 and illustrating the dispensing cap on the closed end of the casing to serve as a holder or handle on the casing when applying the nail polish remover to the nails;

Figure 6A is a longitudinal view of a divided casing, with two breakable ampules and dual-swab construction according to an alternative embodiment of the present invention; and

Figure 6B is a longitudinal view of the casing, single breakable ampule and dual-swab construction according to a further alternative embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In describing a preferred embodiment of the invention illustrated in the drawings, specific terminology will be resorted to for the sake of clarity. However, the invention is not intended to be limited to the specific terms so selected, and it is to be understood that each specific

term includes all technical equivalents which operate in a similar manner to accomplish a similar purpose.

Referring now specifically to the drawings of Figures 1-5, the casing, breakable ampule, porous plug applicator swab and dispensing cap of the present invention are generally designated by the reference numeral 10 and include a generally elongate, cylindrical casing 12 preferably constructed of a shape-sustaining, waterproof but flexible material. The casing 12 has a closed end 14 and an open end 16. Inserted into the open end 16 is a swab 18, which is porous, absorbent, forms a plug for the casing and acts as an applicator. The applicator swab 18 extends slightly outward beyond the edge of the open end 16 of casing 12. The casing 12 encloses a breakable ampule 20 preferably constructed of glass which contains a quantity of liquid 22 which, according to one preferred embodiment set forth herein, may be nail polish remover. The inside diameter of the casing 12 is slightly larger than the outer diameter of ampule 20 so that the casing 12 encloses the ampule 20 in slightly spaced relation thereto.

The casing 12 is constructed of waterproof material, preferably transparent plastic material, having shape-sustaining characteristics to protect the ampule 20 from breakage during normal forces encountered when transporting, storing and handling. However, opposed surfaces of the central area of the casing 12 can be deformed inwardly sufficiently to break the ampule 20 by squeezing inwardly on opposed surfaces of the casing by using the thumb and forefinger, as shown at 24 in Figure 2. The elongated wall of the ampule 20 is sized to withstand minor shocks but to break when sufficiently compressed, such as between the thumb and forefinger of a user.

According to a preferred embodiment, a dispensing cap 26 encloses the open end 16 of the casing 12 which has the porous plug applicator swab 18 therein. The cap 26 is removably and frictionally mounted externally on end 16 of

casing 12 and extends slightly beyond the end 16. The outer end of the dispensing cap 26 can be turned inwardly at 28 and covers the end of the porous plug applicator swab 18. While the dispenser is intended for a single use, the cap 26 may be formed of plastic to provide short-term storage of the polish remover or other liquid within the walls of the casing 12 once the ampule 20 has been broken. The casing 12, or the dispensing cap 26 when placed on the closed end 14 of casing 12, forms a holder or handle to enable easier application of the liquid, e.g., the nail polish remover 22 to the nails and prevents the fingers from contacting the remover. Alternatively, the dispenser may be used without the dispenser cap, but this is not the preferred embodiment.

The porous plug applicator swab 18 may be constructed of a cellulose product such as heavy duty, flexible paper or other absorbent material and extends slightly beyond the open end 16 of casing 12 to enable the liquid 22 that was sealed in the ampule 20 to first discharge from the ampule 20 into cylindrical casing 12 when the ampule 20 is broken and then pass into and through the porous plug applicator swab 18. The length, material and absorbency of the porous plug applicator swab 18 may be varied as needed to effect the desired wicking transfer of the fluid contained within the dispenser.

As constructed, the present invention represents a unit dose system for the dispensing of various fluids ranging from a liquid unit of water to liquid units of various solvents, oils, gels, lotions, fragrances, etc., namely any substance which will pass through the porous plug 18 for the dispensing, removal and application of such liquid. Preferred embodiments include nail polish remover, as already noted, as well as hair dye removal liquid. In the latter embodiment, the hair dye removal liquid may be applied, using the swab 18, to skin which has been accidentally contacted with hair dye, in order to remove such dye in an efficient yet limited-volume manner that is appropriate to such "spot cleaning".

Other dye or paint removal liquids, as well as glue removal agents, could be similarly packaged and dispensed using the liquid dispenser unit in accordance with the present invention to provide users with a highly convenient and easily used mechanism for removing various unwanted liquids from the skin that is compact so as to be readily carried and stored.

Each liquid that may be used with the dispenser has its own properties of measurement and viscosity such that the size and shape of the ampule 20 can vary depending upon the type, and hence the desired volume, of the liquid to be contained. The dispenser is preferably provided with an amount of liquid suitable for the intended use.

According to the preferred embodiment of nail polish remover, the dispenser is preferably provided with an amount of nail polish remover suitable for removing the polish from an area corresponding to ten fingernails or ten toenails of average size, although ampules and casings of other sizes may be constructed that are specifically directed to smaller or larger applications. For example, a "repair" polish removal device may be constructed having a sufficient amount of polish remover to treat fewer than five nails.

As another example, a "full service" polish removal device may be constructed having a sufficient amount of polish remover to treat all ten fingers and ten toes. In such larger application embodiments, the nail polish removal device according to the present invention may be constructed with a divided casing having two open ends, each plugged with a respective swab, as shown in Figure 6A. The casing contains two ampules 20a, 20b, with an impermeable barrier wall 30 therebetween. Each ampule may be ruptured individually to moisten a respective one of the swabs 18a, 18b with the respective volume of liquid 22a, 22b, while the other ampule remains intact for a subsequent use. Alternatively, a single ampule may be used without a barrier wall as shown in Figure

6B such that, upon breakage of the ampule, both swabs 18a, 18b are moistened and may be used to remove nail polish.

The duab-swab construction is beneficial when polish from a greater number of nail surfaces is to be removed in that a single swab may become saturated with polish, making complete transfer of the liquified polish to the swab difficult. The dual-swab construction is also advantageous when the user has different polish colors or styles on different nails, some of which are to be removed while others may require only "over-spill" clean-up and might otherwise be marred by color transfer from the removed color.

When two swabs are included, the casing may be provided with two dispensing caps, one on each end thereof, or a single cap may be used as in the primary embodiment, such cap being removed and replaced from end to end while the opposite exposed swab is used to remove polish. Alternatively, as shown in Figure 6B, the cap may be replaced by a sleeve 32 that is open on both ends. The sleeve 32 is then positioned along the center portion of the casing 12 with both swabs being simultaneously exposed on either end.

With the dual-ampule construction shown in Figure 6A, the sleeve 32 may be moved along the casing to overly the ampule to be ruptured, providing a secure covering surface through which the casing may be squeezed to break the respective ampule 20a, 20b as well as a handle portion during use of the polish removal dispenser.

In one form, the cylindrical casing 12 has a diameter of about 3/8 inch and a length of about 2 inches forming an overall length of about 2 1/4 inches including the swab 18. Smaller sizes are possible and larger sizes, such as diameters of 1/2 and 5/8 inches, can be used if larger volume nail polish remover per dose or package is desired. Generally speaking, the length of the casing is preferably between about 6 and about 10 times the diameter. Slightly longer casings are also advisable with the dual-swab embodiment when combined with the open-ended sleeve to ensure the user's ease

of use while providing sufficient clearance to avoid having one's hand come into contact with either swab.

The use of the casing, breakable ampule, porous plug applicator swab, and dispensing cap enables the liquid contained therein to be readily packaged in a sealed condition and easily transported to retail establishments, purchased and carried. In the context of nail polish remover, this provides for significant convenience to the user to a degree not possible with prior art polish removal methods. The nail polish remover dispenser is easy to pack for trips or other transitory excursions, and is also ideal as a complementary item to be offered by overnight lodging facilities. The inventive dispenser may be compactly and unobtrusively stored in a purse or desk drawer for last-minute nail repair prior to attendance at a meeting or other event at which an optimal nail care appearance is desired.

When use of the nail polish remover dispenser is desired, the user removes the cap to expose the swab, and preferably slides the cap over the closed end of the casing as a sleeve to provide an improved handle area. The casing is then squeezed, preferably through the cap sleeve, to break the ampule, release the polish remover within the casing and, through polish remover contact therewith, moisten the swab. The moistened swab is then placed against the painted nail surface to liquify the polish. Some rubbing of the swab back and forth against the nail is desirable to fully loosen the polish, which is then transferred to the swab. By rotating and changing the angle of the swab against the nail, the swab effectively collects the polish, eliminating the need for additional tissues or other materials to collect the liquified polish. Thus, with the present invention, nail polish can be conveniently liquified and removed using only the self-moistening applicator swab and polish dispenser.

The nail polish remover dispenser provides a method for removing nail polish that is neat and which directs the nail polish remover to only the polished nail surfaces

needing attention. Such dispensers are suitable not only for home but also professional use, being ideal for manicurists who might otherwise have their skin come into contact with nail polish remover on a repeated and undesired basis. The nail polish remover dispenser may be provided with any known liquid nail polish remover suitable for such purposes.

While the casing and breakable ampule are disclosed as generally cylindrical in elongated design, it will be appreciated by those skilled in the art that other cross-sectional configurations beside circular can be utilized in the present invention, such as oval and rectangular. In addition, it may also be possible to design the casing and ampule in other than elongated structures so long as the ampule can be readily broken by compressing the flexible but shape-sustaining casing. Casing and/or ampule shapes may also be adapted to suit the viscosity of the liquid, the scope of viscosity being a property of each particular liquid and indicating the force required to move one plane surface past another under specified conditions.

The foregoing descriptions and drawings should be considered as illustrative only of the principles of the invention. The invention may be configured in a variety of shapes and sizes and is not limited by the dimensions of the preferred embodiment. Numerous applications of the present invention will readily occur to those skilled in the art. For example, the nail polish remover dispenser may be used to contain oils, gels, lotions, fragrances or other liquids on a one-time and disposable basis as well as for multiple use over a short-term period with temporary storage made possible through inclusion of a cap made of plastic which is received over the open end of the casing and porous plug applicator swab. Therefore, it is not desired to limit the invention to the specific examples disclosed or the exact construction and operation shown and described. Rather, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

WHAT IS CLAIMED IS:

1. A self-contained disposable nail polish removal dispenser comprising:

a flexible, shape-sustaining casing having an opening at a first end;

a breakable ampule enclosed within said casing and containing nail polish remover;

an absorbent swab positioned in the opening to plug said first end of the casing; and

said ampule rupturing in response to squeezing of said flexible casing to allow the nail polish to soak into the swab such that the user can then, while grasping the casing, apply the moistened swab to one or more painted nail surfaces to liquify and remove the polish thereon.

2. The nail polish removal dispenser as set forth in claim 1, wherein said ampule contains a unit dose of nail polish remover suitable for removing nail polish from approximately ten fingernails.

3. The nail polish removal dispenser as set forth in claim 1, wherein said ampule contains a unit dose of nail polish remover suitable for removing nail polish from approximately ten fingernails and ten toe nails.

4. The nail polish removal dispenser as set forth in claim 3, wherein said casing has a second opening at a second end and a second absorbent swab positioned in the second opening to plug said second end of the casing, both of said swabs being usable to apply said nail polish remover to painted nail surfaces when said ampule is ruptured.

5. The nail polish removal dispenser as set forth in claim 1, wherein said ampule contains a unit dose of nail polish remover suitable for removing nail polish from approximately five fingernails as a repair dose.

6. The nail polish removal dispenser as set forth in claim 1, further comprising a dispensing cap which slides over the plugged end of the casing prior to use, said dispensing cap being removed and positioned on an end of the casing opposite the plug to expose the swab preparatory to and during use of said dispenser and acting as a handle when grasping the casing.

7. The nail polish removal dispenser as set forth in claim 6, wherein said dispensing cap is made of a plastic material such that, after rupture of said ampule and sliding of said dispenser cap back over the plugged end of the casing, said dispenser cap provides temporary moisture-retaining storage of the nail polish remover within said casing.

8. The nail polish removal dispenser as set forth in claim 4, further comprising a dispensing cap which slides over either plugged end of the casing to encase one of said swabs while leaving an exposed swab, said dispensing cap acting as a handle when grasping the casing to apply nail polish remover from the exposed swab.

9. The nail polish removal dispenser as set forth in claim 4, further comprising two breakable liquid-containing ampules enclosed within said casing and separated from one another by a barrier wall such that breakage of one ampule moistens only a respective one of said two swabs.

10. The nail polish removal dispenser as set forth in claim 1, further comprising a dispensing sleeve which slides over said casing and provides a secure covering surface through which the casing may be squeezed to break the ampule.

11. A self-contained disposable nail polish removal dispenser comprising:

a flexible, shape-sustaining casing having an opening at one end;

a breakable ampule enclosed within said casing and containing nail polish remover;

an absorbent swab positioned in the opening to plug the one end of the casing; and

a dispensing cap which slides over the plugged end of the casing prior to use, said dispensing cap being removed and positioned on an end of the casing opposite the plug to expose the swab preparatory to and during use of said dispenser;

said ampule rupturing in response to squeezing of said flexible casing to allow the nail polish to soak into the swab such that the user can then, using the dispensing cap overlying the casing as a holder, apply the moistened swab to one or more painted nail surfaces to liquify and remove the polish thereon.

12. The nail polish removal dispenser as set forth in claim 11, wherein said ampule contains a unit dose of nail polish remover suitable for removing nail polish from approximately ten fingernails.

13. The nail polish removal dispenser as set forth in claim 11, wherein said ampule contains a unit dose of nail polish remover suitable for removing nail polish from approximately ten fingernails and ten toe nails.

14. The nail polish removal dispenser as set forth in claim 13, wherein said casing has a second opening at a second end and a second absorbent swab positioned in the second opening to plug said second end of the casing, both of said swabs being usable to apply said nail polish remover to painted nail surfaces when said ampule is ruptured, said dispenser cap sliding over either plugged end of the casing to encase one of said swabs while leaving an exposed swab,

said dispensing cap acting as a handle when grasping the casing to apply nail polish remover from the exposed swab.

15. The nail polish removal dispenser as set forth in claim 11, wherein said ampule contains a unit dose of nail polish remover suitable for removing nail polish from approximately five fingernails as a repair dose.

16. The nail polish removal dispenser as set forth in claim 11, wherein said dispensing cap is made of a plastic material such that, after rupture of said ampule and sliding of said dispenser cap back over the plugged end of the casing, said dispenser cap provides temporary moisture-retaining storage of the nail polish remover within said casing.

17. A method of removing nail polish from a fingernail or toe nail, comprising the steps of:

providing a shape-sustaining flexible casing having a closed end, an internal cavity and an open end disposed in communication with said internal cavity, a porous absorbent plug applicator swab closing the open end of the cavity, a breakable ampule enclosed within said internal cavity and having a predetermined amount of nail polish remover contained therein, and a dispensing cap selectively positioned at the open end of the casing for encasing the applicator swab and at the closed end of the casing for use as a handle;

positioning said dispensing cap at the closed end of the casing to expose said applicator swab;

breaking said ampule within said casing by squeezing opposed areas of the casing inwardly to rupture said ampule to release said nail polish remover;

allowing said nail polish remover to soak into said swab;

applying the moistened swab to one or more fingernail or toe nail surfaces painted with nail polish to liquify the polish thereon; and

removing said liquified polish with said swab.

FIG. 1

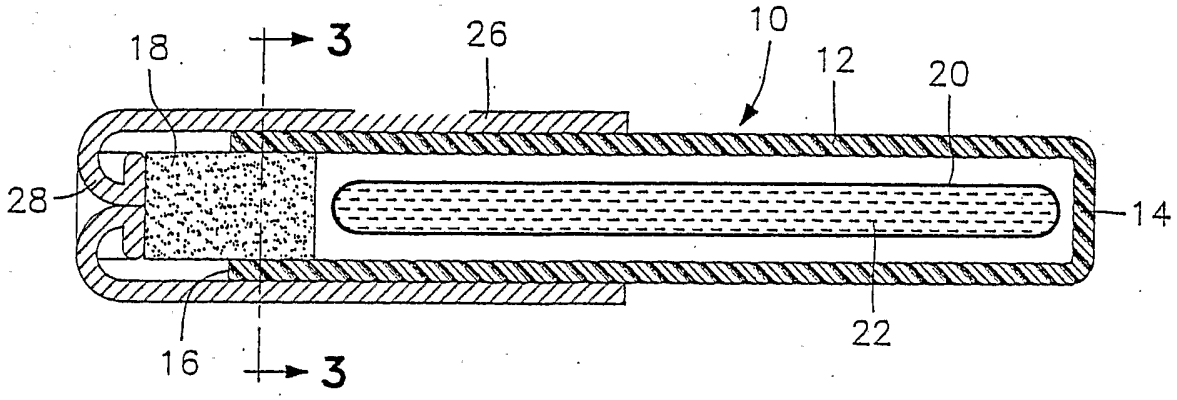


FIG. 2

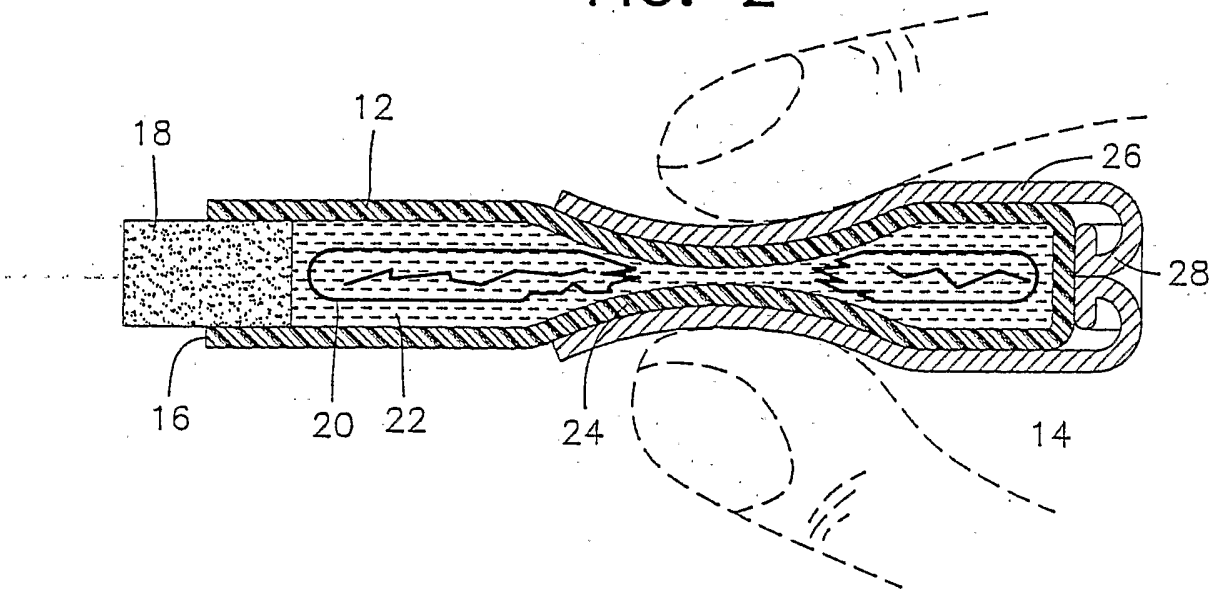


FIG. 3

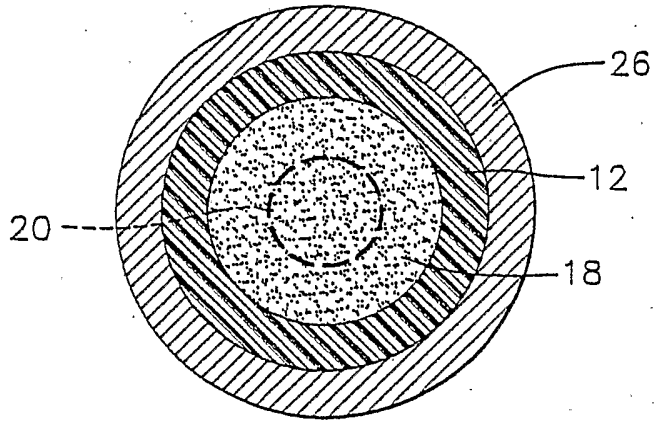


FIG. 4

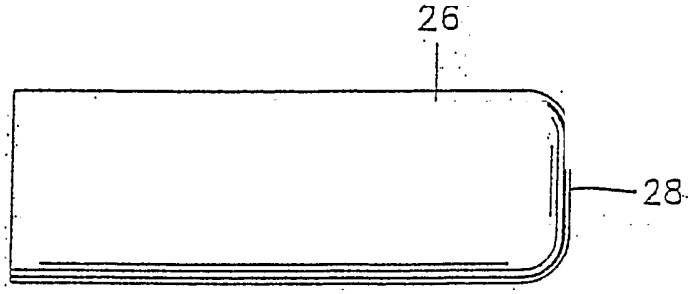


FIG. 5

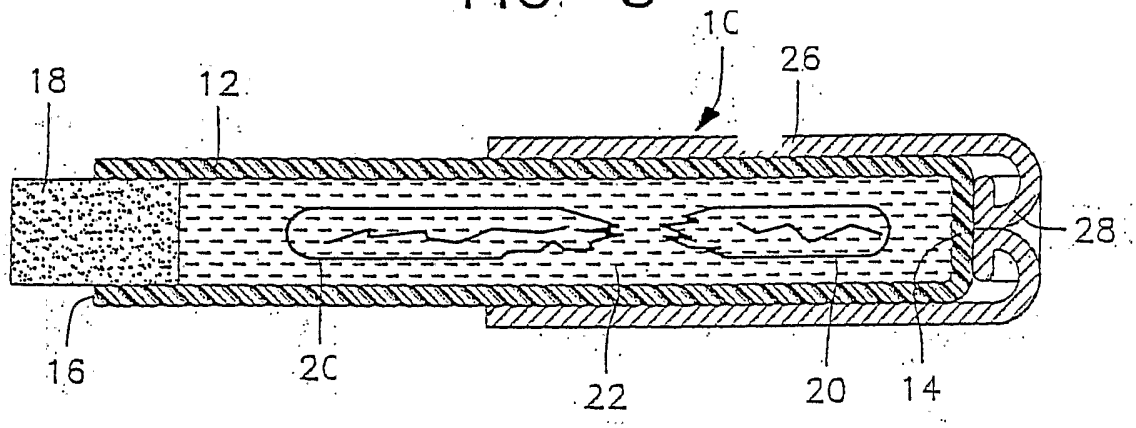


FIG 6A

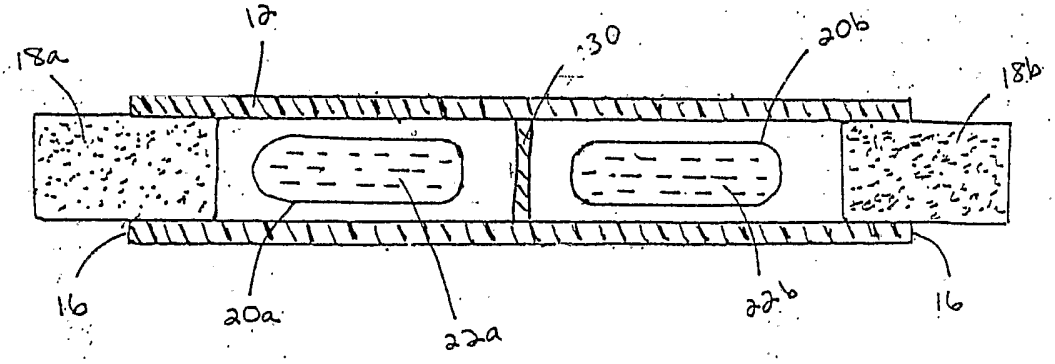
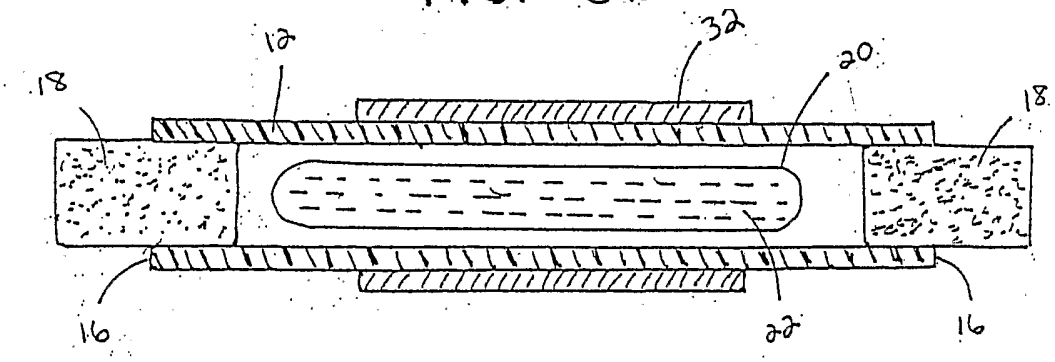


FIG. 6B



INTERNATIONAL SEARCH REPORT

Internation tion No
PCT/US2004/003313

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A45D29/00 A45D34/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A45D A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 6 405 735 B1 (DOCKERY NETRISA T P) 18 June 2002 (2002-06-18) abstract; figures 5,7 column 5, line 5 - line 50 column 6, line 12 - line 32 ---	1-5,9 6-8, 10-17
Y A	US 6 039 488 A (KRAWCZYK DWAYNE M ET AL) 21 March 2000 (2000-03-21) column 2, line 33 - line 35; figures 1,2,5 column 4, line 45 - line 48 ---	6-8, 10-17 1
A	US 3 757 782 A (AIKEN W) 11 September 1973 (1973-09-11) abstract; figure 2 --- -/--	4,14

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
2 June 2004	16/06/2004

Name and mailing address of the ISA	Authorized officer
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 098 297 A (CHARI SRINIVAS ET AL) 24 March 1992 (1992-03-24) column 4, line 34 - line 62; figures 1-5	6,8,10, 11,14,17
A	DE 35 08 388 A (STANISLAO GABRIELE DI) 19 September 1985 (1985-09-19) page 6, paragraph 5 - paragraph 6; figure	7,16
A	US 6 478 191 B1 (D ALESSIO KEITH R ET AL) 12 November 2002 (2002-11-12) column 8, line 14 - line 36; figure 7	10
A	US 4 784 506 A (KORESKA ROBERT ET AL) 15 November 1988 (1988-11-15) column 3, line 16 - line 31; figure 2	10

INTERNATIONAL SEARCH REPORT

Information on patent family members

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