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(54) Improvements relating to fabric conditioning compositions

(57) A fabric conditioning composition comprising 0.5-40% by weight of at least one unsaturated quaternary ammonium compound in combination with a package comprising a resilient material and comprising a chamber containing the fabric condition composition, said chamber having a dispensing opening which can be closed by a lid, the dispensing opening and closure comprising interengageable locking members whereby locked closure of the chamber with the lid produces an audible sound by manually forced interengagement of the locking members.

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Description

[0001] The present invention relates to fabric conditioning compositions comprising unsaturated quaternary ammonium compounds and packaging therefor.

[0002] Quaternary ammonium compounds provide effective fabric conditioning agents. Unsaturated forms are particularly advantageous (as compared with saturated forms) due to the increased formulation flexibility offered. Unsaturated quaternary ammonium compounds allow more freedom in the selection of perfume within a fabric conditioning composition than their saturated counterparts. The unsaturated compounds are also cheaper.

[0003] However such unsaturated quaternary ammonium compounds suffer the disadvantage that they decompose (rancidify) when exposed to air with resultant discolouration and malodour.

[0004] Fabric conditioning liquid formulations are often stored in bottles with screw top lids. However, such bottles are often only partially closed by the consumer in the haste to complete the job of laundering. Coupled with this problem is the habit of some consumers to use fabric conditioners infrequently. Such infrequent use arises because of the unsuitability of many fabric conditioning agents for certain articles. For example many activities are now catered for by garments manufactured from 'technical' fabrics e.g. for fast-wicking away of sweat or for synthetic waterproofing after a wash. Many of such garments carry advisory labels instructing the user to wash the garments without the use of fabric conditioners. This can mean, that for certain users, a bottle of fabric conditioner may be partially open on a shelf, window ledge for an extended period in time.

[0005] An object of the invention is therefore to provide a packaged fabric conditioning composition which offers formulation flexibility together with improved protection against rancidification.

[0006] Accordingly in a first aspect, the invention provides a fabric conditioning composition comprising 0.5-40% by weight of at least one unsaturated quaternary ammonium compound in combination with a package comprising a resilient material and comprising a chamber containing the fabric condition composition, said chamber having a dispensing opening which can be closed by a lid relative to the dispensing opening, the dispensing opening and closure incorporating interengageable locking members whereby locked closure of the chamber with the lid produces an audible sound by manually forced interengagement of the locking members.

[0007] The invention is advantageous as the user receives both tactile (by the action of manually forcing interengagement) and audible feedback that the bottle is properly shut. The provision of the combination of manually forced interengagement and an audible click informs the consumer when the bottle is properly shut. This feedback also 'teaches' the consumer to close the device properly as they become accustomed to continue closing the container until the click sound is heard.

[0008] The closure may be a push on - push off lid when is pushed onto package chamber so as to close the dispensing opening.

[0009] With push on - push off lids, the interengageable locking members may be located to ensure that they interengage no matter what the relative orientation of the lid and dispensing opening. In this respect the locking members may extend around more than half the circumference of the lid/dispensing opening so that there is always some overlap (circumferentially) no matter the relative orientation. Alternatively, the lid and dispensing opening may be configured to ensure a specific rotational orientation by e.g. a hinge (which may be a living hinge) or e.g. by respective lugs to ensure correct orientation.

[0010] However, closing may be affected by rotation, but preferably only to the extent that steps additional to that of maintaining a firm grip on the lid are not required. With the invention, the consumer is required to close the product properly by manually forcing rotation so that interengagement of the locking members is effected, the audible sound confirming the procedure is complete.

[0011] Opening of the package is preferably executed by rotation only (e.g. without additional push/pull steps often a feature of child resistant safety lids) so that a firm grip sufficient to force rotation of the lid as the locking members disengage is all that is required. Opening of the chamber may also produce an audible click by manually forced disengagement of the locking members.

[0012] The package may comprise a lidded container e.g. a bottle. The container may comprise an external screw thread proximate the dispensing opening on e.g. a neck of the container. The lid may comprise a screw-on lid, having an internal screw thread, which corresponds with the external screw thread of the container.

[0013] Preferably, respective screw threads describe a helical path around the opening.

[0014] The interengageable locking members may comprise corresponding projections e.g. lugs, flaps, ridges and recesses e.g. notches, channels, grooves.

[0015] Preferably the interengageable locking members are structurally separate from the screw threads.

[0016] Preferably the locking members comprise at least one radially outwardly (centrifugally) projection on an outer surface of the dispensing opening and at least one corresponding radially inwardly (centripetally) orientated recess on an inner surface of the lid.

[0017] The at least one recess may be continuous with an elongate guide, wherein the guide follows an arc around

the circumference of the dispensing opening. The angle of the arc may be approximately 30-180 degrees, preferably 90-180 degrees.

[0018] The guide may comprise a groove, or lip which guides the at least one projection toward the recess as the lid is screwed downwardly relative to the dispensing opening. The guide may project radially from an inner surface of the lid or outer surface of the packaging. The guide may be follow an arc of a helical path or it may follow a circumferential path of unvarying height (such that when viewed side on, it appears straight).

[0019] Preferably the recess incorporates a retaining wall over which the projection must be forced to enter the recess. The retaining wall may be located at the recess/guide intersection. The retaining wall may comprise a peak in the profile of the guide (when viewed from the side).

[0020] The guide may comprise a lip which abuts the projection during rotation of the lid. Preferably the guide abuts an upper surface of the projection so that downward application of the cap brings the guide to bear downwardly on the upper surface of the projection.

[0021] In a particularly preferred embodiment there are two projections which may be diametrically opposed (approximately 180 degrees apart) and also two corresponding recesses and associated guides.

[0022] The lid preferably incorporates a sealing mechanism for sealing engagement with the opening, whereby the sealing mechanism is aligned with the locking members such that locking and sealing both occur, either at the same time of sequentially whereby one initiates the other. For example, the action of locking may initiate sealing.

[0023] The lid may comprise an outer wall and an inner sealing wall, wherein the inner sealing wall may be generally concentric with the outer wall. The inner sealing wall or flange preferably forms a seal with the packaging opening e.g. bottle neck. Preferably the inner sealing wall fits in sealing engagement, e.g. by friction fit due to respective diameters of the flange and opening, with the inside the package opening, e.g. bottle neck. Preferably the arrangement of the screw threads, locking members and sealing wall and package opening are such that as the locking members are manually forced into engagement, the sealing wall is forced into sealing (e.g. frictional) engagement with the package opening e.g. neck.

The inner sealing wall preferably tapers radially outwardly in the direction of travel during closure. This together with the corresponding diameters and resilient material provides a close fit for good sealing.

[0024] The locking members may act as a temporary brake on angular velocity, which manual pressure overcomes and this accumulated energy then drives the screw threads into improved mutual sealing engagement. Accordingly the locking members may comprise interengaging surfaces with stepped profiles or profiles having a sharp gradient.

[0025] Preferably the packaging material has an oxygen permeability of less than 8 nmol/m.s GPA (measured at 20°C and 75% RH).

[0026] The package preferably comprises a resilient plastic material. The interengageable locking members may be resilient to allow the interengagement. However, such resilience should not be excessive as interengagement should require some force to provide the tactile feedback.

[0027] Preferable the packaging comprises a resilient polymeric material, and may comprise a polyolefin. The packaging material is preferably thermoplastic. The packaging material may be a mono-layer or multi-layer (e.g. laminate). The chamber preferably comprises polyester and further preferably it comprises polyethylene terephthalate (PET). The invention is particularly applicable to rigid, shaped, containers, and especially injection stretch blow molded biaxially oriented hollow thermoplastic containers, such as bottles, formed from synthetic linear polyesters, such as polyethylene terephthalate, polybutylene terephthalate, polyethylene naphthalate, and the like, including homopolymers and copolymers of ethylene terephthalate and ethylene naphthalate. PET packaging materials are preferably in the range 200-400 microns thick.

[0028] The lid is preferably opaque and may comprise polypropylene.

Fabric Conditioning Composition

[0029] Compositions with higher levels of unsaturated quaternary ammonium compounds are more prone to such disadvantages. Accordingly the fabric conditioning composition preferably comprises 1-40% by weight, more preferably 30-40% by weight of the unsaturated quaternary ammonium compound.

[0030] The fabric treatment composition of the invention is suitable for use in a laundry process. Examples include a softening-in-the-wash main wash composition, a rinse treatment (e.g. conditioner or finisher), or a posttreatment 'wet tissue' type product. The compositions of the present invention are preferably laundry compositions, especially softening-in-the-wash compositions or rinse-added softening compositions.

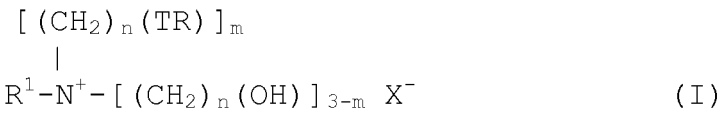
[0031] The compositions of the invention may be in any physical form e.g. a solid such as a powder or granules, a tablet, a solid bar, a paste, gel or liquid, especially, an aqueous based liquid, spray, stick, impregnated substrates, foam or mousse. In particular the compositions may be liquid, powder, or unit dose such as tablet laundry compositions. The liquid products of the invention may have pH ranging from 2.5 (for fabric care compositions) to 12 (for fabric softening-in-the-wash compositions). This pH range preferably remains stable over the shelf life of the product.

The Quaternary Ammonium Compound

[0032] The quaternary ammonium fabric softening material for use in compositions of the present invention can be an ester-linked triethanolamine (TEA) quaternary ammonium compound comprising a mixture of mono-, di- and tri-ester linked components.

[0033] Typically, TEA-based fabric softening compounds comprise a mixture of mono, di- and tri-ester forms of the compound where the di-ester linked component comprises no more than 70% by weight of the fabric softening compound, preferably no more than 60%, e.g. no more than 55%, or even no more than 45% of the fabric softening compound and at least 10 % of the monoester linked component by weight of the fabric softening compound.

[0034] A first group of quaternary ammonium compounds (QACs) suitable for use in the present invention is represented by formula (I):



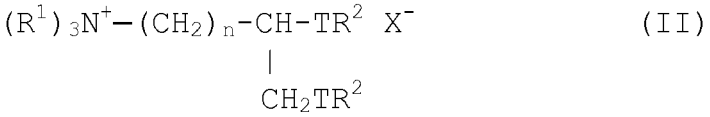
(I)

wherein each R is independently selected from a C_{5-35} alkyl or alkenyl group; R^1 represents a C_{1-4} alkyl, C_{2-4} alkenyl or a C_{1-4} hydroxyalkyl group; T is generally O-CO. (i.e. an ester group bound to R via its carbon atom), but may alternatively be CO-O (i.e. an ester group bound to R via its oxygen atom); n is a number selected from 1 to 4; m is a number selected from 1, 2, or 3; and X^- is an anionic counter-ion, such as a halide or alkyl sulphate, e.g. chloride or methylsulphate. Di-esters variants of formula I (i.e. m = 2) are preferred and typically have mono- and tri-ester analogues associated with them. Such materials are particularly suitable for use in the present invention.

[0035] Especially preferred agents are di-esters of triethanolamine methylsulphate, otherwise referred to as "TEA ester quats.". Commercial examples include Prapagen TQ (ex Clariant), Tetranyl L1-90 (ex Kao), Stepantex VT-90 and VK-90 (ex Stepan), Rewoquat WE18 (ex Evonik) all di-[partially hardened tallow ester] of triethanolamine methylsulphate).

[0036] Preferred are Au57 ex Cognis and Stepantex SP-90 both (di-[palm ester] of triethanolamine methylsulphate).

[0037] The second group of QACs suitable for use in the invention is represented by formula (II):



(II)

wherein each R^1 group is independently selected from C_{1-4} alkyl, hydroxyalkyl or C_{2-4} alkenyl groups; and wherein each R^2 group is independently selected from C_{8-28} alkyl or alkenyl groups; and wherein n, T, and X^- are as defined above. Preferred materials of this second group include 1,2 *bis*[tallowoyloxy]-3-trimethylamine propane chloride, 1,2 *bis*[hardened tallowoyloxy]-3-trimethylamine propane chloride, 1,2-*bis*[oleoyloxy]-3-trimethylamine propane chloride, and 1,2 *bis*[stearoyloxy]-3-trimethylamine propane chloride. Such materials are described in US 4,137,180 (Lever Brothers). Preferably, these materials also comprise an amount of the corresponding mono-ester.

[0038] A third group of QACs suitable for use in the invention is represented by formula (III):

$$(R^1)_2\text{-}N^+\text{-}[(CH_2)_n\text{-}T\text{-}R^2]_2X^- \qquad \text{(III)}$$

wherein each R^1 group is independently selected from C_{1-4} alkyl, or C_{2-4} alkenyl groups; and wherein each R^2 group is independently selected from C_{8-28} alkyl or alkenyl groups; and n, T, and X^- are as defined above. Preferred materials of this third group include bis(2-tallowoyloxyethyl)dimethyl ammonium chloride and hardened versions thereof. A commercial example of this material is Armosoft DEQ (ex AKZO).

[0039] The iodine value of the quaternary ammonium fabric softening material is preferably from 20 to 60, more preferably from 20 to 40.

[0040] Iodine value is defined as the number of grams of iodine absorbed per 100 g of test material.

[0041] Iodine value as used in the context of the present invention refers to the measurement of the degree of unsaturation present in a material by a method of nmr spectroscopy as described in Anal. Chem., 34, 1136 (1962) Johnson

and Shoolery.

[0042] Iodine value is defined as the number of grams of iodine absorbed per 100g of the test material. Olefinic materials absorb 1 gram of iodine per atom of olefinic hydrogen. Hence measurement can be converted to the equivalent Iodine Value. The hydrogen nmr spectrum at 360 MHz is obtained for the test material. The integral intensity, I_s, of the band derived from olefinic hydrogen in the alkyl chain and the integral intensity, I_m, of the band derived from terminal methyl groups in the alkyl chains are measured.

[0043] The number of olefinic hydrogens per molecule is given by:

$$\frac{I_s \times 6}{I_m}$$

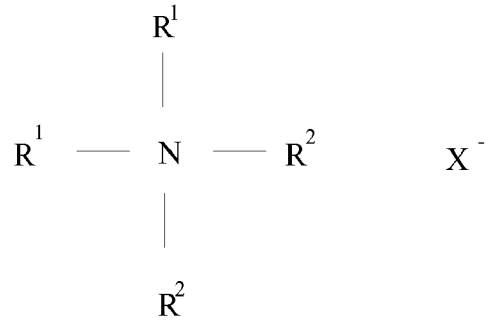
and the Iodine Value is given by:

$$\frac{I_s \times 127 \times 100 \times 6}{I_m \times MMW}$$

where MMW is the mean molecular weight of the test material.

[0044] The non-ester softening compound preferably has the alkyl or alkenyl chain lengths referred to above for the non-ester softening compound. One preferred type of non-ester softening compound is a quaternary ammonium material represented by formula (IV):-

(IV)



wherein each R^1 group is independently selected from C_{1-4} alkyl, hydroxyalkyl or C_{2-4} alkenyl groups; R^2 group is independently selected from C_{8-28} alkyl or alkenyl groups, and X- is as defined above.

[0045] The compositions may alternatively or additionally contain nonionic fabric softening agents such as lanolin and derivatives thereof. A further nonionic fabric softening agent suitable for use in the compositions of the invention is Castor oil, for example, from Now Chemicals.

[0046] Lecithins and other phospholipids are also suitable softening compounds.

[0047] In fabric softening compositions nonionic stabilising agent may be present. Suitable nonionic stabilising agents may be present such as linear C8 to C22 alcohols alkoxylated with 10 to 20 moles of alkylene oxide, C10 to C20 alcohols, or mixtures thereof. Other stabilising agents include the deflocculating polymers as described in EP 0415698A2 and

[0048] EP 0458599 B1.

[0049] Advantageously the nonionic stabilising agent is a linear C8 to C22 alcohol alkoxylated with 10 to 20 moles of alkylene oxide. Preferably, the level of nonionic stabiliser is within the range from 0.1 to 10% by weight, more preferably from 0.5 to 5% by weight, most preferably from 1 to 4% by weight. The mole ratio of the quaternary ammonium compound and/or other cationic softening agent to the nonionic stabilising agent is suitably within the range from 40:1 to about 1:

1, preferably within the range from 18:1 to about 3:1.

[0050] The composition can also contain fatty acids, for example C8 to C24 alkyl or alkenyl monocarboxylic acids or polymers thereof. Preferably the fatty acid is non-saponified, more preferably the fatty acid is free, for example oleic acid, lauric acid or tallow fatty acid. The level of fatty acid material is preferably more than 0.1% by weight, more preferably more than 0.2% by weight. Concentrated compositions may comprise from 0.5 to 20% by weight of fatty acid, more preferably 1% to 10% by weight. The weight ratio of quaternary ammonium material or other cationic softening agent to fatty acid material is preferably from 10:1 to 1:10.

[0051] It is also possible to include certain mono-alkyl cationic surfactants which can be used in main-wash compositions for fabrics. Cationic surfactants that may be used include quaternary ammonium salts of the general formula $R1R2R3R4N^+ X^-$ wherein the R groups are long or short hydrocarbon chains, typically alkyl, hydroxyalkyl or ethoxylated alkyl groups, and X is a counter-ion (for example, compounds in which R1 is a C8-C22 alkyl group, preferably a C8-C10 or C12-C14 alkyl group, R2 is a methyl group, and R3 and R4, which may be the same or different, are methyl or hydroxyethyl groups); and cationic esters (for example, choline esters). Softening in the wash compositions in accordance with the invention comprise a surface-active compound, selected from anionic surfactants, cationic surfactants, non-ionic surfactants, zwitterionic surfactants, amphoteric surfactants and mixtures thereof. The choice of surface-active compound (surfactant), and the amount present, will depend on the intended use of the detergent composition. In fabric washing compositions, different surfactant systems may be chosen, as is well known to the skilled formulator, for hand-washing products and for products intended for use in different types of washing machine.

[0052] The total amount of surfactant present will also depend on the intended end use and may be as high as 60 wt%, for example, in a composition for washing fabrics by hand. In compositions for machine washing of fabrics, an amount of from 5 to 40 wt% is generally appropriate. Typically the compositions will comprise at least 2 wt% surfactant e.g. 2-60%, preferably 15-40% most preferably 25-35%, by weight of the composition.

[0053] The fabric treatment compositions of the invention can also contain adjuvants that are normal in the cosmetic, pharmaceutical and/or dermatological field, such as hydrophilic or lipophilic gelling agents, hydrophilic or lipophilic active agents, preserving agents, antioxidants, solvents, fragrances, fillers, screening agents, bactericides, odour absorbers, photobleaches (singlet oxygen or radical type) and dyestuffs. The amounts of these various adjuvants are those conventionally used in the field under consideration and are, for example, from 0.01 to 20 % of the total weight of the composition. Depending on their nature, these adjuvants can be introduced into the fatty phase and/or into the aqueous phase. Examples of suitable biocides for use in the present invention include Proxel (1,2-benzisothiazolin-3-one), available from, for example, Univar, Avecia and Uniqema; and Kathon CG (Methylchloroisothiazolinone and Methylisothiazolinone), available from Rhom and Haas.

[0054] Various non-limiting embodiments of the invention will now be more particularly described with reference to the following figures in which:

Figure 1 shows a cross sectional view of a package according to one embodiment of the invention, the lid shown in closed position;

Figure 2 shows an enlarged cross sectional view of the locking members of figure 1;

Figure 3 shows a perspective view of the bottle only (neck region) of figure 1;

Figure 4 shows a perspective view of an annular section of the inner attachment surface of the cap of figure 1, to illustrate the guide formation.

[0055] Referring to the drawings, a package 1 is shown. The package contains a liquid fabric conditioning composition (not shown) comprising unsaturated quaternary ammonium compounds which may be according to any of the examples hereinbelow.

[0056] The package 1 comprises a bottle 5 and a lid which is a screw-on cap 7. The bottle 5 has a chamber 9 (shown only partially) containing the fabric condition composition 3.

[0057] The chamber 9 has a dispensing opening 11 which has a neck region 10 and which can be closed by rotating the cap 7 (which fits over the neck 10) relative to the dispensing opening 11. The dispensing opening 11 and cap 7 incorporate interengageable locking members 13, 15 (see figures 3 and 4) whereby locked closure of the chamber 9 with the cap 7 produces an audible sound by manually forced interengagement of the locking members 13, 15.

[0058] The bottle has an external screw thread 20 proximate the dispensing opening 11 i.e. around the neck 10. The cap 7 has a corresponding internal screw thread 22 on an outer attachment wall 8.

[0059] The respective screw threads 20, 22 describe a 520 degree helical path around the opening.

[0060] The interengageable locking members 13, 15 are structurally separate from the screw threads.

[0061] The locking members 13, 15 comprise two radially outwardly (centrifugally) projections 15 on an outer surface

of the dispensing opening 11 i.e. neck 10 and two corresponding radially inwardly (centripetally) orientated recesses 13 on an inner surface of the lid 7. There are two projections, diametrically opposed (180 degrees apart) and also two corresponding recesses and associated guides.

[0062] As shown more clearly in figure 4, each recess is continuous with a respective elongate guide 17, wherein the guide follows an arc (shown only partially in figure 4 around the circumference of the neck. The angle of the arc is approximately 170-180 degrees.

[0063] Each guide 17 comprises a lip 17 projecting radially from the inner surface of the attachment wall 8 of the cap 7 and this guides the projection 15 toward the recess 13 during rotation of the cap 7 in closure. Thus, as the lid 7 is screwed downwardly relative to the bottle, each guide 17 abuts an upper surface 15a of a respective projection 15 so that downward application of the cap brings the lower surface 17a of each guide 17 to bear downwardly on the upper surface 15a of each projection 15.

[0064] The profile of each guide (i.e. it's height relative to the cap 7 when viewed from the side) tapers circumferentially to ease location of a respective projection 15 in to the guide 17 (see ref 50 in fig 4).

[0065] Each recess 13 incorporates a retaining wall 19 over which the projection 15 must be forced to enter the recess 13. The retaining wall 19 is located at the recess/guide intersection 21. The retaining wall 19 comprises a peak in the elevation profile of the guide 17 (when viewed from the side).

[0066] An alternative arrangement (not shown) is where the retaining wall is configured to abut an under surface of the projection 15 and so give upward support.

[0067] The cap 7 incorporates a sealing mechanism comprising a sealing wall 30 of the cap 7 and corresponding neck portion 32 of the bottle.

[0068] The sealing wall 30 is generally concentric with the attachment wall 8, and tapers radially outwardly in the direction of travel during closure i.e. forming a truncated cone. This shape together with the corresponding diameters of the wall 30 and neck portion 32 (i.e. wall 30 diameter slightly exceeds neck portion 32 diameter) and the resilience of the material so that the wall 30 flexes to provide a close friction fit for good sealing.

[0069] The sealing mechanism is aligned positionally with the locking members such that locking and sealing both occur generally at the same time.

[0070] The packaging material comprises a monolayer polyethylene terephthalate (PET) and has an oxygen transmission rate of less than 8 nmole/m.s.GPA (20°C, 75% RH).

[0071] PET provides the interengageable locking members with sufficient resilience to allow the interengagement under manual force for audio and tactile feedback.

[0072] The PET is preferably in the range 200-400 microns thick and is in this embodiment 0.2 mm thick.

[0073] The lid comprises polypropylene.

[0074] Non-limiting Examples of Fabric conditioning compositions according to embodiments of the invention as described above.

[0075] Unless stated otherwise, all proportions are given in weight percent by weight of the total composition.

Exemplary: Fabric conditioner compositions 1, 2 and 3

[0076]

Composition	1	2	3
Softener			
Soft TEA Quat*	16.5	10	16.5
Fatty alcohol**	-	0.5	
Other components			
Electrolyte (CaCl2)	0.015	0.015	0.015
Perfume	1.00	1.00	1.00

(continued)

Other components			
Water	to 100	to 100	to 100
* Soft TEA quat is a cationic softener based on triethanolamine with tallow and 15% IPA as solvent. Compositions 1 and 2: (VT-90 ex Stepan) Composition 3: Soft DEEDMAC (Armosoft DEQ ex Akzo) ** C16C18 fatty alcohol (Hydrenol D ex Cognis)			

[0077] It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment which are described by way of example only.

Claims

1. A fabric conditioning composition comprising 0.5-40% by weight of at least one unsaturated quaternary ammonium compound in combination with a package comprising a resilient material and comprising a chamber containing the fabric condition composition, said chamber having a dispensing opening which can be closed by a lid, the dispensing opening and closure comprising interengageable locking members whereby locked closure of the chamber with the lid produces an audible sound by manually forced interengagement of the locking members.

2. The combination of claim 1 wherein the package comprises a lidded container having an external screw thread proximate the dispensing opening and a screw-on lid, having an internal screw thread, which corresponds with the external screw thread of the container.

4. A combination according to claim 2 wherein the locking members comprise corresponding projections and recesses which are structurally independent of the screw threads.

5. A combination according to any of claims 2-4 wherein the screw threads describe a helical path around the opening having a maximum of 720 degrees such that less than two 360 degree rotations of the lid are required to secure closure.

6. A combination according to any preceding claim wherein the lid incorporates a sealing mechanism for sealing engagement with the opening, whereby the sealing mechanism is aligned with the locking members such that locking and sealing both occur, either at the same time of sequentially whereby one initiates the other.

7. A combination according to claim 6 wherein the lid comprises an outer wall and an inner sealing wall or flange, wherein the inner sealing wall or flange is generally concentric with the outer wall and forms a seal with the packaging opening.

8. A combination according to claim 7 wherein the screw threads, locking members and sealing wall/flange and package opening are arranged such that as the locking members are manually forced into engagement, the sealing flange/wall is forced into sealing engagement with the package opening.

9. A combination according to any preceding claim wherein the packaging material has an oxygen permeability of less than 8 nmol/m.s.GPA (20°C, 75% RH).

10. A combination according to any preceding claim wherein the package comprises a resilient plastic material.

11. A combination according to any preceding claim wherein the at least one unsaturated quaternary ammonium compound comprises an ester-linked triethanolamine (TEA) quaternary ammonium compound comprising a mixture of mono-, di- and tri-ester linked components.

12. A combination according to any preceding claim wherein the iodine value of the quaternary ammonium fabric

compound is from 20 to 60.

13. A combination according to claim 12 wherein the iodine value of the unsaturated quaternary ammonium fabric softening compound is from 20 to 40.

14. A combination according to any preceding claim wherein the composition comprises a total amount of between 20-40 % by weight of the unsaturated quaternary ammonium compounds.

15. A combination according to claim 14 wherein the composition comprises a total amount of between 30-40 % by wt by weight of the unsaturated quaternary ammonium compounds.

16. A process comprising the step of treating a fabric article using the combination according to any preceding step, the process including the step of closing the package by rotating the lid relative to the dispensing opening such that closure of the chamber with the lid produces an audible sound by manually forced interengagement of the locking members.

Fig.1.

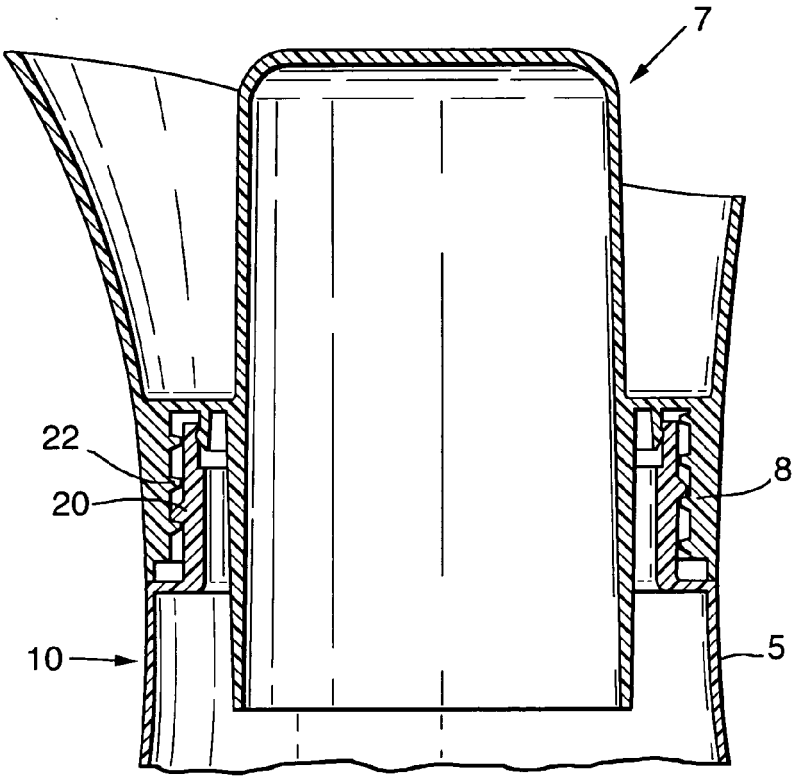


Fig.2.

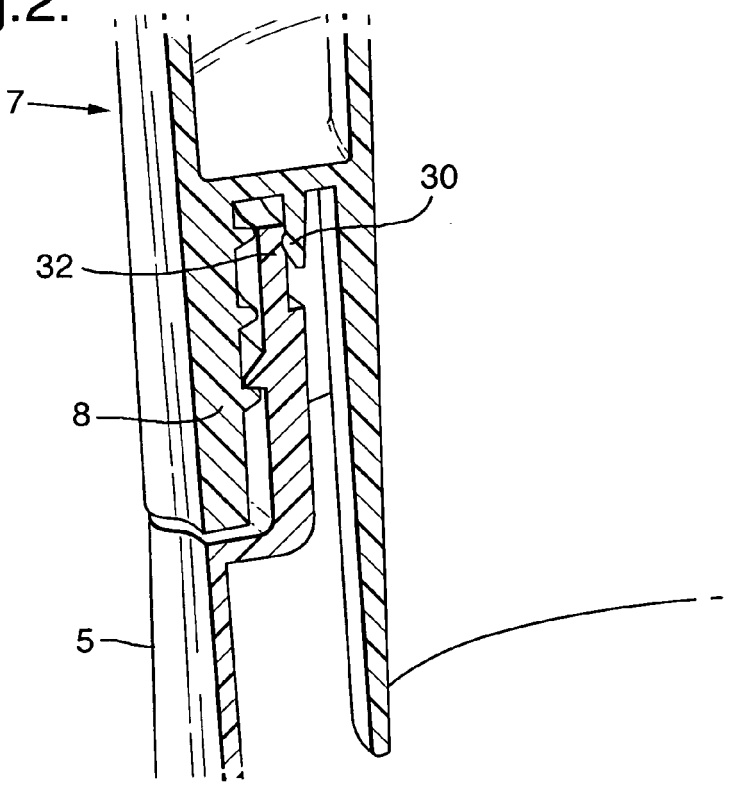


Fig.3.

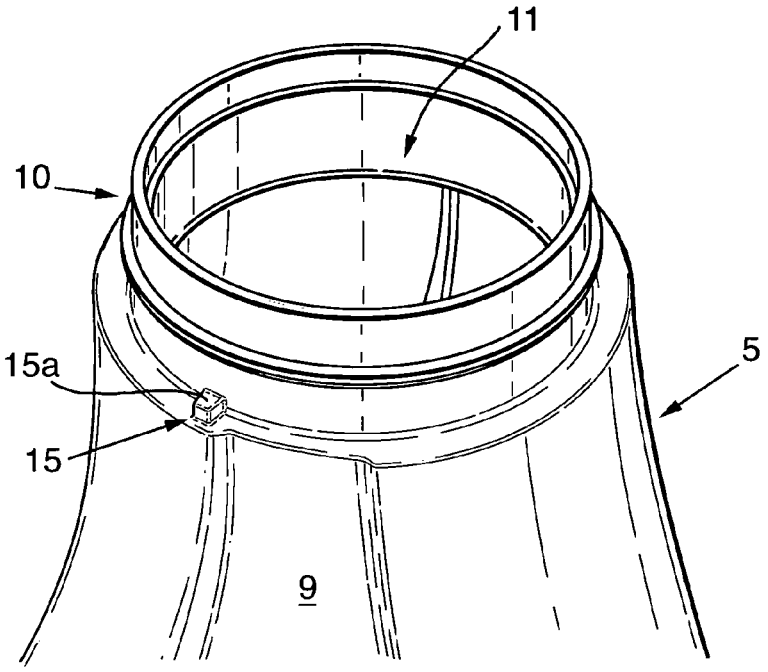
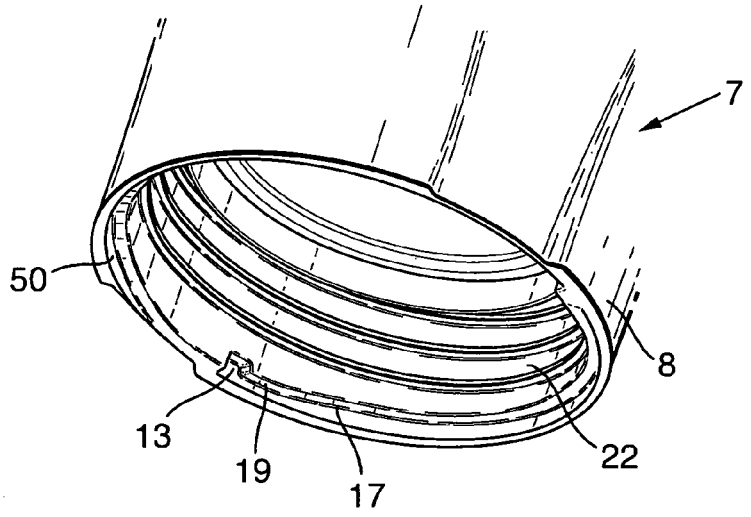


Fig.4.



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Application Number
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