

[54] **ODOR SEALING METHOD**
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3,113,924	12/1963	Mendus.....	21/60.5 R X
2,998,390	8/1961	Hamilton	424/76
3,208,936	9/1965	Hamilton	252/106 X
3,509,254	4/1970	Krotinger et al.....	424/76

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[56] **References Cited**
UNITED STATES PATENTS

3,107,216	10/1963	Hamilton	21/55 X
2,796,399	6/1957	Sanders et al.....	21/60.5 R X
2,907,627	10/1959	Cummings	21/60.5 A

[57] **ABSTRACT**

An odor-sealing composition which contains a foam-forming agent which forms an odor-sealing foam cushion on contact with water. The composition may additionally contain deodorizing, odor-improving, disinfecting, and/or cleaning additives. It is used in liquid, pulverulent, granulated, or compressed shaped form or as an aerosol. It can be applied upon a sheet-like carrier such as paper or the carrier can be impregnated therewith. The method involves forming a layer of foam on the surface of the water in a toilet bowl before using the toilet.

6 Claims, No Drawings

ODOR SEALING METHOD

BACKGROUND OF THE INVENTION

1 Field of the Invention

The present invention relates to a deodorizing composition and more particularly to a composition having an odor sealing effect which is especially useful in odorless distribution, deposition, and/or discharging of malodorous products and materials of disagreeable or offensive smell such as excrements, and to a method of deodorizing such products and materials.

2 Description of the Prior Art

Heretofore there have been employed for improving the odor in closed rooms and spaces preparations in the form of aerosols or of solid or, respectively, compressed bodies which contain and give off or release agents having an odor-improving effect. Such odor modifying agents are, for instance, perfumes which are released by the known preparations into the surrounding air. The result achieved by such odor modifiers consists merely in more or less masking existing disagreeable odors.

However, the known odor modifiers are not able to prevent bad odors to spread and dissipate throughout the space immediately when they are formed or originate.

Furthermore, heretofore, disinfection and cleaning of toilets, and especially of toilet bowls, had to be carried out in a working step separately from the odor improving step.

SUMMARY OF THE INVENTION

It is one object of the present invention to prevent spreading and/or dissipation of disagreeable and bad odors and especially of odors due to the discharge of excrements whereby, if required, disinfection and cleaning can be effected at the same time.

Another object of the present invention is to provide a composition for preventing dissipation and spreading of disagreeable and bad odors.

Other objects of the present invention and advantageous features thereof will become apparent as the description proceeds.

These objects of the present invention are achieved by providing a composition which contains foam-forming agents and especially agents which form foam with water and on contact with water. Such compositions produce, when introduced into the toilet bowl, a foam pad or cushion which covers and encloses the excrements, seals the same, and prevents dissipation of the odor into the surrounding atmosphere. Such a composition can also contain disinfecting and cleaning agents.

Preferably the composition according to the present invention contains vigorously foaming, surface-active agents which are substantially stable against hydrolysis and which, if required for specific purposes, can also be granulated. The most preferred agents for this purpose are anionic and amphoteric surface-active agents, such as alkyl sulfonates, alkyl aryl sulfonates, aryl sulfonates, or the respective sulfates, betaines, saponins, or protein hydrolyzation products, or mixtures of such agents which have strongly foaming properties. Especially useful have proved, for instance, the water soluble salts and especially the alkali metal and ammonium salts of organic reaction products with sulfuric acid which contain an alkyl radical with 8 to 22 carbon atoms and a

sulfonic acid or sulfuric acid ester group. Preferred examples of such anionic synthetic detergents are the sodium and potassium alkyl sulfates especially those which are obtained by sulfating of higher alcohols with 8 to 18 carbon atoms. Such alcohols are obtained, for instance, by reduction of the glycerides of tallow or coconut oil; the sodium or potassium alkyl benzene sulfonates in which the alkyl group can be a straight chain or branched alkyl radical with 9 to 15 carbon atoms, especially with 12 to 14 carbon atoms; sodium or potassium alkyl glycerol ether sulfonates, especially ethers of higher alcohols obtained from tallow or coconut oil; sodium coconut oil fatty acid monoglyceride sulfates or sulfonates; sodium or potassium salts of sulfuric acid esters of the reaction product of one mole of a higher fatty alcohol such as tallow or coconut oil alcohols with from 1 to 6 moles of ethylene oxide; sodium or potassium alkyl phenol ethylene oxide ether sulfonates with 1 to 10 ethylene oxide units per molecule in which the alkyl radical contains 8 to 12 carbon atoms; sodium or potassium salts of the fatty acid amide of a methyl tauride in which the fatty acid amides are, for instance, derived from coconut oil; sodium or potassium salts of SO_3 -sulfonated α -olefines with 10 to 24 carbon atoms. Derivatives of sulfosuccinic acid such as its salts can be used especially successfully. The most preferred anionic agents are, for instance, tri-ethanolamine lauryl sulfate, the linear alkyl benzene sulfonate sold under the trademark "LANITOL F" by the firm Arkansas Co., Inc., sodium lauryl sulfate, the diethanolamide of coconut fatty acids.

Suitable amphoteric compounds are the alkyl betaines and the sulfo betaines whereby the most effective agents are the octyl sulfo succinates or the hexyl sulfo succinates. In general all known and commercial anionic surfactants which are distinguished by their excellent foaming power, as they are listed, for instance, under the heading "Surfactants" in "Encyclopedia of Chemical Technology" by Kirk-Othmer, second edition, published by Interscience Publishers of New York, vol. 19, pages 507 to 593, have proved to be useful foaming agents, especially those agents the functions of which are indicated in the Tables given in said chapter by F and Ff. Of the anionic surfactants listed in the various tables given in this chapter there can be employed for the purpose of this invention the N-cocoyl, N-lauroyl, N-oleoyl, N-stearoyl, N-talloil acyl sarcosinates of Table 4; the sodium, potassium, ammonium, magnesium, diethanolamine, or triethanolamine salts of lauryl sulfates, or the sodium cetyl sulfate as given in Table 12; the sulfated polyoxyethylene alkyl phenols such as the nonyl phenyl tetraoxyethylene sulfates as given in Table 14; the alkyl phenoxy polyoxyethylene sulfates such as the ethoxylated and sulfated lauryl or myristyl alcohols of Table 15; the diethanolamides of fatty acids as given in Table 29; the mono-alkanolamides of lauric, coconut, or other fatty acids as given in Table 30; the amine oxides as given in Table 33; and the amphoteric surfactants as given in Table 41; and the like compounds.

For increasing the foaming power of such agents there are preferably added to the compositions according to the present invention agents which dissolve with the formation of gas in the presence of an acid foaming agent. Examples of such foaming power-increasing agents are the carbonates and bicarbonates of alkali metals or of ammonium.

Furthermore, it is advisable to add to the compositions fatty alcohols or alkanolamides which are known for their foam-stabilizing activity. Especially useful foam-stabilizing agents are, for instance, the amides of fatty acids with 8 to 20 carbon atoms such as lauric acid, oleic acid, stearic acid amides or the corresponding ethanolamides. Suitable fatty alcohols are those which have a chain length of 10 to 14 carbon atoms. If required, fillers such as water soluble starch or modified starches, for instance, starches which have been partly oxidized by heating or are hydrolyzed by reaction with an acid or an enzyme can be admixed.

Odor improving or scenting additives can also be added to the compositions according to this invention. Such additives are, for instance, dwarf pine needle oil or other essential oils or perfumes. Deodorizing additives such as kieselguhr combined with formaldehyde or iron sulfate which bind ammonia and hydrogen sulfide, can also be admixed. Likewise, the compositions according to the present invention can contain disinfecting and/or pharmaceutical additives.

Any disinfectant agent which does not react with the surface-active agent foaming agent and the other components of the compositions can be used. Especially suitable agents for this purpose are, for instance, hexachlorophene or products of the type of chlorinated phenol ethers. Other useful agents are, for instance trichloro carbanilide, undecylenic acid monoethanolamide; the phenolic polyoxy methylene derivative sold under the trademark "MOVIN DC" by Farbenfabriken Bayer of Leverkusen, Germany; and others.

In order to improve the cleaning effect of the compositions according to the present invention, they may contain an acid component, for instance, an inorganic or organic acid such as hydrochloric acid, phosphoric acid, sulfuric acid, citric acid, tartaric acid, gluconic acid, and others, or the acid salts of such acids, for instance, sodium bisulfate.

The amount of the acid additive added is preferably sufficient to set free carbon dioxide from the added carbonates or bicarbonates whereby a small excess of the acid agent is usually required to achieve the desired cleaning effect.

A composition capable of forming foam on contact with water can contain, for instance, a fatty alcohol sulfate, sodium bicarbonate, an organic acid and, if desired, starch. The composition can be in liquid form, in the form of a powder, or in granulated or compressed form.

To produce sprayable foam-forming compositions according to the present invention, for instance, aerosols, the surface active agents and the other additives are placed together with compressed air, carbon dioxide, or other propellants into pressure-resistant containers.

The composition according to the present invention can also be applied to a sheet-like carrier, for instance, to paper which is wet-tear proof, or the paper may be impregnated therewith. Such a paper, when deposited, for instance, into the toilet bowl, produces on contact with water the desired foam cushion and, at the same time, prevents residues of the excrements to adhere to the bowl on flushing.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following examples serve to illustrate the present invention without, however, being limited thereto.

EXAMPLE 1

Aerosol-type compositions are composed as follows:

EXAMPLE 1a

15.00 parts of 40 percent triethanolamine lauryl sulfate
2.00 parts of coconut fatty acid diethanolamide,
0.10 parts of hexachlorophene,
1.00 part of alcohol,
80.35 parts of water,
1.50 parts of perfume (of the type sold by the firm Haarmann & Reimer under the trademark "Wald-duft 8441 WL").

EXAMPLE 1b

21.40 parts of 28 percent sodium lauryl sulfate, 2.00 parts of coconut fatty acid polydiethanolamide, obtained by condensing one mole of coconut fatty acid with 2 moles of diethanolamine,
0.10 parts of 2,4,4'-trichloro-2'-hydroxydiphenyl ether,
1.00 parts of alcohol,
73.95 parts of water,
1.50 parts of perfume (of the type sold by the firm Dragoko under the trademark "Citrus 0/152370").

EXAMPLE 1c

22.20 parts of the anionic surfactant sold under the trademark "STEINAPOL FLM" by the firm REWO which is a di- and triamine salt of tallow alcohol sulfonate with lauric acid ethanolamide as foam-stabilizing agent,
0.05 parts of 2,4,4'-trichloro-2'-hydroxydiphenyl ether,
0.10 parts of hexachlorophene, 1.00 part of alcohol,
75.15 parts of water,
1.50 parts of perfume of the type sold by the firm Haarmann & Reimer under the trademark "OZONODOR 28441 SB/WL".

For producing a foam spray, i.e., aerosol preparation according to the present invention, the alcohol and hexachlorophene are mixed with each other and are homogenized by gently heating the mixture. Thereafter, the other components are admixed in the order in which they are listed hereinabove.

80 parts of the concentrated compositions of Examples 1a, 1b, or 1c are filled with 20 parts of a conventional propellant, for instance, a halogenated hydrocarbon and especially a fluorinated hydrocarbon, which is resistant to corrosion and hydrolysis, into corrosion-proof aerosol cans, for instance, aluminum or stainless steel containers.

Suitable propellants are, for instance, dichloro difluoro methane, trichloro monofluoro methane, monochloro difluoro methane, 1,2-dichloro-1,1,2,2-tetrafluoro ethane, 1,1-dichloro-1,2,2,2-tetrafluoro ethane, octafluoro cyclobutane, decafluoro butane, or hydrocarbon propellants such as propane, isobutane, n-butane, or nonliquefied propellants such as carbon dioxide, nitrogen.

By spraying the odor-sealing composition according to the present invention from such aerosol cans, elimination of bad odors is readily achieved due to the foam produced by spraying.

The solutions obtained according to Example 1 can also be applied from stationary systems which operate like dry-foam fire-extinguishers. For this purpose the above described solutions of Examples 1a, 1b, and 1c are diluted with water in the proportion of about 1 : 10. The resulting solutions are converted into the desired foam cushions by means of such non-inflammable gases which do not react with their components, for instance, with carbon dioxide, compressed air, and the like.

EXAMPLE 2

Fluid-fluid composition. Component A. 20 percent aqueous ammonium carbonate solution. Component B. 24 parts of p-dodecyl phenyl sulfonic acid 12 parts of 40 percent cumene sulfonate (p-isopropyl phenyl sulfonate),

12 parts of 80 percent phosphoric acid,
10 parts of 36 percent hydrochloric acid,
42 parts of water.

The solution B is prepared by mixing its components in the order given and homogenizing the mixture by heating to about 30° C. The components A and B are filled separately into suitable containers. In order to produce the desired foam cushion, about 30 cc. of solution A and 30 cc. of solution B are discharged from their containers and are combined with each other.

EXAMPLE 3

Pulverulent-liquid composition. Component A. Solid sodium bicarbonate. Component B. 24 parts of p-dodecylphenyl sulfonic acid,

12 parts of 40 percent cumene sulfonate,
12 parts of 80 percent phosphoric acid,
10 parts of 36 percent hydrochloric acid,
42 parts of water.

The components A and B are separately provided. For producing the desired foam cushion, about 30 g. to 70 g. of component B are poured over about 8 g. to 10 g. of component A.

EXAMPLE 4

Powder or, respectively, granulated composition.

40 parts of sodium bicarbonate,
40 parts of citric acid,
20 parts of 90 percent sodium lauryl sulfate,
0.3 parts of a fatty alcohol of a mean chain length of 10 to 14 carbon atoms.

These components are mixed with each other and the resulting powder is granulated, if desired, in a manner known per se. About 30 to 50 g. of said composition are placed into the toilet bowl to produce the odor sealing foam cushion.

EXAMPLE 5

30 parts of sodium bicarbonate,
50 parts of sodium bisulfate,
20 parts of 90 percent of sodium lauryl sulfate,
0.3 parts of the fatty alcohol of Example 4.

The components are mixed with each other and with conventional binding and expanding agents. The resulting mixture is compressed to tablets of 20 g. to 40 g. each. Placing one of these tablets into the toilet bowl produces the desired odor-sealing foam cushion.

Suitable binding and expanding agents are, for instance, highly voluminous, finely divided silica or silicates, such as magnesium silicate or finely comminuted talc. Furthermore, solid organic compounds which are inert with respect to, and are not affected by, the other components of the tablets or the like shaped bodies and which are soluble in water or at least are swellable therein, such as urea, starch and starch reaction products, agar, and others can also be used for this purpose.

The preferred mode of application of the compositions according to the present invention for eliminating bad odors on using toilets, for instance, consists in placing a predetermined amount (single unit portion) into the toilet bowl before using it. If the composition is used as a spray or a liquid, addition of water is not required for forming the foam cushion. If solid compositions are used, their solubility is sufficient to produce the desired foam cushion with the water present in the toilet bowl.

I claim:

1. In a method of substantially eliminating bad odors on using toilets and preventing their dissipation into the atmosphere, the step which comprises placing a composition containing a foam-forming agent into the toilet bowl before using it, thereby forming a foam cushion, the preformed foam cushion enveloping and sealing the discharged excrements on subsequently using the toilet so as to eliminate bad odors.

2. In a method of substantially eliminating bad odors on using toilets and preventing their dissipation into the atmosphere, the steps which comprise:

- a. placing a composition into the toilet bowl before using the toilet, said composition forming a foam by the interaction of an acidic agent and an agent yielding a gas on contact with said acidic agent, and
- b. producing a stable foam cushion in said toilet bowl, said preformed foam cushion enveloping and sealing the excrements discharged on using the toilet, thereby substantially eliminating bad odor caused by said excrements.

3. The method of claim 2, in which the acidic agent is an agent selected from the group consisting of an inorganic acid, an organic acid, and an acid salt of said acids, while the agent yielding a gas with said acidic agent is an agent selected from the group consisting of an alkali metal carbonate, an alkali metal bicarbonate, ammonium carbonate, and ammonium bicarbonate.

4. In a method of substantially eliminating bad odors on using toilets and preventing their dissipation into the atmosphere, the steps which comprise

- a. spraying a composition into the toilet bowl before using the toilet, said composition being an aerosol composition, said aerosol composition containing a vigorously foaming surface active agent and a propellant, and
- b. producing a stable foam cushion in said toilet bowl, said preformed foam cushion enveloping and sealing the excrements discharged on using the toilet, thereby substantially eliminating bad odor caused by said excrements.

5. The method of claim 4, in which the vigorously foaming surface active agent is an agent selected from the group consisting of an anionic surface active agent and an amphoteric surface active agent and the propellant is a propellant selected from the group consisting of a hydrocarbon propellant, a halogenated hydrocarbon propellant, carbon dioxide, and nitrogen.

6. The method of claim 4, in which the vigorously foaming surface active agent is an agent selected from the group consisting of an alkyl sulfonate, an alkyl aryl sulfonate, an aryl sulfonate, an alkyl sulfate, an alkyl aryl sulfate, an aryl sulfate, and a betaine while the propellant is a fluorinated hydrocarbon.

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