The present invention relates to treatment of fabrics and it particularly relates to water-repellent treatment of fabrics. Although the present invention will be particularly directed to the treatment of textile fibers, yarns and woven or knitted materials to give them water repellency, the invention also has broader application to treatment of many different types of material to give them water-repellent properties, such as paper, sheet material of various characters, various types of surfaces or walls, etc.

The present invention will also be particularly described in connection with water-repellent compositions in which a wax or wax-like material is combined with a polyvalent metal salt, and in which such emulsions are stabilized to prevent a precipitate from forming, as for example with an anionic surface active agent such as soap as the emulsifying agent. Where soap was employed protective colloids primarily consisting of water soluble protein were also required, such protein material, for example, taking the form of gel or gelatin.

Such protective colloid, whether glue or gelatin, was designed to prevent or to disperse the precipitate which would normally be formed as a result of the combination of the soap used as an emulsifier and the polyvalent metal salt. However, even in this instance, although an apparently homogeneous heavy paste might result by blending the wax, the polyvalent metal salt, the soap and the protective colloid with vigorous agitation, upon dilution the stability would decrease.

Moreover, the emulsion or heavy paste would be quite thick and not readily flowable, as is desirable, nor would it be stable on storage, and it would tend to lose its ability to be diluted with water. Moreover, it would tend to acquire a putrid odor and render the goods to which it was applied readily subject to attack by mildew. At high temperature too there would be a complete breakdown of the emulsion after a relatively short period of time.

It was found readily possible to use more stable types of colloids such as polyvinyl alcohol or methyl cellulose. These last mentioned protective colloids had the tendency of thickening and decreasing the flowability of emulsion and moreover after application and drying on the textile still tended to retain their water dispersibility which decreased the water repellency of the coating.

On the other hand, where cationic emulsifying agents or non-ionic emulsifying agents were employed it was found that there was not a satisfactory emulsification of the wax or wax-like material and the wax was dispersed in such coarse particles that there was a great tendency for it to precipitate out of the emulsion.

It is therefore among the objects of the present invention to provide a novel water-repellent emulsion of the character described which will most effectively be dilutable and which may be handled, stored or shipped with varying climatic conditions over extended periods without loss of strength or its desirable properties and without premature precipitation or decomposition which will avoid the above objectionable characteristics.

Another object is to provide a novel water-repellent treatment for textile fabrics and other materials which will give water repellency of much greater effectiveness and of more durability without substantial increase in the amount of wax or other water-repellent solid which must be employed and without the need for using protective colloids, such as glue, gelatin, polyvinyl alcohol or methyl cellulose.

Another object is to provide a novel water-repellent composition and water-repellent treatment which will altogether eliminate the necessity of utilizing protective colloids giving rise to objectionable odors and tending to putrefy upon storage, and likely to render the water-proofed fabric readily attacked by mildew and other microorganisms, and which most objectionably may tend to decrease the tensile strength of fabric materials.

A further object of the present invention is to provide a stable wax emulsion containing an aluminum or zirconium salt, which emulsion is thin and pourable, stable on storage, does not putrefy, and may be readily diluted at the time of its use without breakdown and without precipitation of wax particles and which may be stored indefinitely at elevated temperatures without loss of stability.

A still further object of the invention is to provide a textile treating process by which textile fibers, fabrics, yarns and similar materials may be rendered water-repellent with an emulsion of a wax and an aluminum or zirconium salt, without rendering the materials susceptible to attack by micro-organisms, without imparting to the materials objectionable odor in standing and without decreasing their tensile strength on storage.

It has been found that the above objects may
be most satisfactorily accomplished where small amounts of synthetic, non-soap, non-ionic emulsifying agents are added to or combined with a wax, a water soluble polyvalent metal salt and an anionic surface active agent.

The most satisfactory composition consists of a combination of wax, soap as an anionic agent, a solution of a water soluble polyvalent metal salt and a non-ionic surface-active agent of the synthetic type.

The wax employed in preparing the emulsion may be mineral, vegetable, or animal wax, having a melting point above room temperature. It is preferably hard and of amorphous, crystalline or microcrystalline structure at room temperature.

Unctuous materials, like lanolin or petrolatum—although sometimes classified as waxes—are preferably not employed.

Examples of suitable waxes are:

- Paraffin
- Beeswax
- Carnauba wax
- Candelilla wax
- Ouirouncy wax

Mixtures of two or more waxes may be employed if desired. Paraffin wax of a melting point between 50° and 60° C. is preferred.

The anionic agent is desirably an alkali metal, ammonium, or organic amine soap. Amino soaps are preferred because they decompose on the fiber, increasing in this way the hydrophilic properties. Ammonium soaps are usually not preferred since they are less stable and more difficult to control, on account of the greater volatility.

The amine component of the soap may be a primary, secondary, or tertiary amine, a polyamine, or a substituted amine, such as a hydroxy amine. Examples of such products are:

- Methyamine
- Dimethyamine
- Trimethylamine
- Butylamine
- Ethylenediamine
- Morpholine
- Monoethanolamine
- Diethanolamine
- Triethanolamine
- Isopropanolamine
- Hydroxyethyl-ethylenediamine
- Diethylenimine-ethanol
- 2-ethyl-2-amino-1-propanol
- 2-methyl-2-amino-1-3-propanediol

Amines which are volatile with water vapors are preferred.

The fatty acid component of the soap is a fatty acid of 12 or more carbon atoms, as derived from natural fats and oils. Saturated fatty acids are preferred since they emulsify waxes more readily than unsaturated acids. Examples of such acids are:

- Lauric acid
- Myristic acid
- Palmitic acid
- Stearic acid
- Arachidic acid
- Behenic acid

Mixtures of such fatty acids may be employed, such as the fatty acids from fish oil which have been hydrogenated to a very low iodine number.

For the purpose of this invention, it is not neces-

sary to prepare the anionic agent separately. The anionic agent may also be formed in situ, by adding the amine to the water phase, melting the fatty acid together with the wax, and combining the two phases at a temperature above the melting point of the wax and the fatty acid.

The polyvalent metal salt may be a water soluble salt of any metal of group II to group VIII in the periodic table of elements, with a short chain, volatile organic acid, like formic or acetic acid. The salts of aluminum and zinc are preferred.

The non-ionic surface-active agents used in the emulsion should be water dispersible. They may be:

(a) polyvalent alcohols and their anhydrides partly esterified with a long chain carboxylic acid, containing at least 12 carbon atoms, such as manmitan monopalmitate, sorbitan monoo-

myristate;

(b) or an ethylene oxide addition compound of such a product, containing, for example, 10 or more recurring CH₂CH₂O units to form a polyoxy-ethylene ether;

(c) or a condensation product of an alkylphenol with ethylene oxide, such as the reaction product of iso-octylphenol with 6, or more, CH₃CH₂O units to form polyoxy-ethylene ethers of the formula R-C₆H₄-O-(CH₂CH₂O)ₓH, in which R is an alkyl and x is an integer, e.g. 6 or more;

(d) or a condensation product of alkyl-thio-

phenol with 10 or 15 ethylene oxide units forming a polyoxy-ethylene ether of the formula

$$R-C₆H₄-S-(CH₂CH₂O)ₓH$$

in which R is an alkyl and y is an integer, e.g. 10 to 15;  

(e) or a reaction product of a long chain fatty alcohol with ethylene oxide (10 to 15 molecules) of the formula R-O-(CH₂CH₂O)ₓH, in which R is the radicle of a long fatty alcohol, and x is an integer, e.g. 10 to 15;

(f) or a mono- or di-ester of long chain fatty acids containing at least 12 carbon atoms with a polyalkylene glycol of a molecular weight of between 400 and 1840, such as nona-ethylene glycol monolaurate, trideca-ethylene glycol monola-

urate, trideca-ethylene glycol dilaurate, the mono-

stearic ester of “Carbowax” 1000 (a polyethylene glycol of an average molecular weight of 1000), the dipalmitic ester of Carbowax 1000, the monoo-

leic ester of Carbowax 1540 (a poly-ethylene-

clycol of an average molecular weight of 1540), the dioleinoleic ester of Carbowax 1540;

(g) or a non-ionic condensation product of a long chain fatty acid, or its derivative, with at least two molecules of a hydroxylated amine.

Mixtures of two or more of these non-ionic surface active agents may be employed. Products which contain ethylene oxide chains in their molecules are preferred. Water soluble resin-like products and thickening agents, like poly-

vinyl alcohol, or methyl cellulose, however, are generally not desirable.

The ingredients described above may be em-

ployed in varying proportions. The amount of wax should not be substantially above 30% in the case of paraffin wax, or 25% in the case of animal or vegetable wax, by weight of the total

composition.

The amount of anine soap may vary from about 8 parts to about 25 parts for 100 parts of the wax. The amine and the fatty acid, from which ingredients this amine soap is made, may be used in stoichiometric proportions, or a slight
excess of the fatty acid over the amine may be employed. An excess of the amine over the fatty acid should only be employed if the amine is highly volatile and might be partially lost during the manufacture of the emulsion. Higher amounts of the amine soap may be used, but this is not necessary and will detract from the hydrophobic properties of the materials treated with the emulsion.

The polyvalent metal salt is preferably used in form of the aqueous solution. The metal salt solution may constitute between 10 and 30% by weight, of the total composition. A 20% aluminum formate or 24% aluminum acetate solution may be used; or between 8 and 25%, by weight, of the total composition may consist of zirconium acetate solution of 1.288 specific gravity (containing 15% ZrO2 per liter).

The non-ionic surface active agent may be used from about 0.25% up to 3%, on an anhydrous basis, by weight of the total composition. The optimum amount will somewhat depend on the nature of the non-ionic agent. Some non-ionic agents, like ethylene oxide addition products of sorbitan monofatty acid esters, are active at a lower concentration than others, e. g., non-fatty acid-hydroxylated amine condensation products.

Higher proportions of the non-ionic agents may be employed. The amount of non-ionic agent required to thin out and disperse a precipitate already formed is smaller than the amount necessary to entirely prevent formation of a precipitate. For most purposes, using enough non-ionic agent to avoid entirely formation of a precipitate is preferred over just adding enough to thin out and disperse the precipitate.

The wax-amine soap emulsion may be prepared by heating fatty acid, and wax together and then adding gradually the water while stirring and cooling. Mixing the molten wax into the hot aqueous soap solution or melting wax and fatty acid together and pouring them into a hot mixture of water and amine are alternate procedures.

The wax-amine soap emulsion is desirably cooled to not substantially above room temperature before it is mixed with the solution of the polyvalent metal salt.

The non-ionic agent may be added:
(a) To the wax-amine soap emulsion while it is molten, or
(b) To the aqueous phase before mixing, or
(c) To the wax phase before mixing, or
(d) To the wax-amine soap emulsion while cooling, or after cooling, or
(e) To the polyvalent metal salt solution, or
(f) To the final emulsion after the polyvalent metal salt has been mixed with the other ingredients.

It is, however, preferred to add the non-ionic agent to the wax-amine soap emulsion during or after cooling, and before mixing with the polyvalent metal salt solution.

It is also preferred to pour the amine soap—wax emulsion into the solution of the polyvalent metal salt at or below room temperature, with vigorous agitation.

The final emulsion may be passed through a colloid mill or similar homogenizing equipment, if desired. This is, however, not required since the emulsion is smooth and homogeneous. Other ingredients useful in treating textiles and paper may be added to improve or modify the properties of these materials; e. g. materials to reduce inflammability, to improve mildew resistance, hand, and appearance. As mentioned later, these novel emulsions are compatible with a great number of other ingredients, and, unexpectedly, also with synthetic latexes.

The invention may be illustrated by the following examples, in which "parts" mean parts by weight:

Example I

An emulsion is prepared from 20 parts of paraffin (melting point, 52 to 55° C.), 3 parts of stearic acid, 1.5 parts of triethanolamine and 55 parts of water. The emulsion is cooled to room temperature, and 20 parts of aluminum acetate solution (24%) are added, with agitation. A heavy precipitate first forms, which disperses, however, on continued agitation to form a heavy paste, which cannot be poured, and cannot be diluted with water without breakdown.

To 100 parts of this paste, 1 part of monolauryl acid ester of a polyethylene glycol of an average molecular weight of 600 is added, with vigorous agitation. After a short while, the heavy paste changes its consistency and forms a thin, pourable, milky liquid, which is stable on storage and easily dilutable with water.

Example II

22 parts of paraffin wax (melting point, 60 to 62° C.) are heated together with 3 parts of a hydrogenated fish oil fatty acid fraction of acid value 179 (corresponding to a fatty acid of an average chain length of 20 carbon atoms) and poured into a solution of 0.7 part of morpholine in 24.3 parts of water, with vigorous agitation at a temperature of between 80 and 90° C.

The mixture is allowed to cool with stirring. When the emulsion has reached room temperature, a solution of 1.5 parts of mono-oleic acid ester of a polyethylene glycol of average molecular weight of 1540 in 22.5 parts of water is added. Then the mixture is poured, with stirring, into 15 parts of a zirconium acetate solution of specific gravity 1.238.

The resulting emulsion is thin and pourable, and stable on storage.

Example III

25 parts of an emulsion of copolymer of 60% styrene and 40% butadiene (available as "Dow Latex 512" from Dow Chemical Co.) are gradually added to 100 parts of the emulsion of Example II.

The resulting product is thin, readily dilutable with water, and stable for a period of many months without breakdown.

Example IV

22 parts of paraffin of melting point 52 to 55° C. and 2 parts of hydrogenated fish oil fatty acid are melted together and poured into a boiling solution of 0.5 part of monoolesopropoalamine in 35.5 parts of water.

The mixture is allowed to cool to room temperature. Then 0.5 part of the ethylene oxide addition product of iso-octyl phenol, dissolved in 19.5 parts of water, are added. The mixture is finally poured into 20 parts of a 20% aluminum formate solution.

The emulsion has a similar appearance as the emulsions described in the previous examples.

Example V

21 parts of paraffin (melting point, 52 to 55° C.) are melted together with 2 parts of palmite
acid and poured into a boiling solution of 1.2 parts of triethanolamine in 35.8 parts of water, with agitation.

After cooling to room temperature, 2 parts of the coconut fatty acid diester of a polyethylene glycol of average molecular weight 1000, dispersed in 16 parts of water, are added. This emulsion is poured into a solution of 6 parts of copper acetate and 1 part of glacial acetic acid in 19 parts of water. This emulsion may be used—after dilution with water—to increase the mildew resistance of textiles.

**Example VI**

1.9 parts of triethanolamine, 3.6 parts of stearic acid and 50.5 parts of water are heated to 100° C. 20 parts of beeswax are melted separately and added, with good agitation, to the boiling amine soap solution and allowed to cool. 2 parts of the mono-myristic acid ester of a polyethylene glycol of average molecular weight 1000, dissolved in 2 parts of water, are added. The mixture is then poured into 20 parts of 24% aluminum acetate solution, with stirring. A smooth emulsion is formed.

**Example VII**

1.4 parts of triethanolamine, 2.6 parts of hydrogenated fish oil fatty acid and 60 parts of water are heated to 100° C. 15 parts of carnauba wax are heated separately to 100° C and added, with good agitation, to the boiling soap solution. The mixture is stirred until cool. 1 part of the ethylene oxide addition product of sorbitan monolaureate is added, and the mixture is poured into 20 parts of a 24% aluminum acetate solution, with stirring. A smooth emulsion is formed, easily dilutable with water.

**Example VIII**

21 parts of "scale wax" are melted together with 2 parts of stearic acid; 0.6 part of morpholine are added. Then 36.4 parts of water are poured into the mixture, slowly, and a little at a time.

After cooling, 2.5 parts of a non-ionic amine condensation product—prepared by heating equal weights of coconut fatty acid and diethanolamine 2 hours at 160° C.—dissolved in 17.5 parts of water, are added. This emulsion is stirred into 20 parts of a zirconium acetate solution containing 15% ZrO₂, yielding a smooth, pourable emulsion.

**Example IX**

27 parts of paraffin (melting point, 55 to 60° C.) are melted together with 3.8 parts of a hydrogenated fish oil fatty acid fraction of acid value 179, and stirred into a boiling mixture of 0.9 part of morpohline and 44.3 parts of water.

After cooling, a dispersion of 2 parts of non-ethyleneglycol monolaureate in 2 parts of water is added and the mixture is stirred into 20 parts of a zirconium acetate solution containing 15% ZrO₂.

**Example X**

29 parts of paraffin and 2 parts of candlewax are emulsified in a mixture of 1 part 2-methyl-3-amino-1-3-propanediol, 3 parts of hydrogenated fish oil fatty acid and 40 parts of water. To the cooled emulsion a solution of 1 part of the monolaureic acid ester of polyethylene glycol of average molecular weight of 1000 and 0.35 part of the coconut fatty acid reaction product with diethanolamine, prepared as described in Example VIII, in 12.75 parts of water, is added.

Then the emulsion is stirred into a mixture of 12 parts zirconium acetate solution containing 15% ZrO₂ and 8 parts of water.

**Example XI**

21 parts of paraffin (melting point, 60 to 65° C.) are melted with 3 parts of behenic acid and stirred into a boiling mixture of 0.5 part of monooctanoin and 35.5 parts of water. After cooling, a dispersion of 2.5 parts of mannihite monopalmitate in 17.5 parts of water is added. Then the emulsion is stirred into 20 parts of 29% aluminum formiate solution.

**Example XII**

5 parts of the emulsion described in Example II are diluted with 95 parts of water of 55° C. A textile fabric is impregnated with this solution, squeezed to remove excess liquid, and dried at 100° C. The fabric shows an excellent water repellency. A short heat treatment, for example, at 3 minutes at 150° C. will improve the permanency of this effect.

Generally, the inclusion of the non-ionic agent results in quite unusual properties. If a small amount of non-ionic surface active agents is added to a heavy paste resulting after addition of a solution of a water soluble polyvalent metal salt to a wax emulsion containing soap as emulsifier, the heavy paste thins out to a pourable consistency, and may be diluted with water without breakdown.

If a small amount of said non-ionic agent is added to a soap containing wax emulsion, prior to the addition of the polyvalent metal salt, the precipitate of the polyvalent metal-soap-wax complex will not form at all, or if it does form, it will readily disappear on stirring, forming a water-thin mixture, which is readily dilutable with water.

Moreover, such an emulsion is perfectly stable on storage. It does neither cream, nor show any signs of breakdown, nor lose its property of being readily dilutable with water, for a period of many months, or longer. Besides, the diluted emulsion yields a superior water-repellent effect on textiles and paper, and does not show any greasy spots.

Synthetic resin latices, prepared from vinyl acetate, or butadiene and styrene, or butadiene and acrylonitrile, by the so-called emulsion polymerization, may also be added to the above emulsion without coagulation of the mixture. Since these latices are very sensitive to polyvalent metal ions, and usually coagulate immediately in presence of these ions, this behavior is quite unexpected.

The mixture of latex and the above wax emulsions may be used to impart a very desirable finish to textile materials in a one-bath procedure.

The present invention is most valuable in treating materials to render them water-repellent. The wax emulsions of this invention are quite different from those containing glue or gelatin. Such glue or gelatin emulsions do not flow freely at the higher wax concentrations, are heavy pastes, and are not readily dilutable with water before use.

The wax emulsions of the present invention, on the other hand, are thin and flowable, may readily be diluted with water to any desired concentration by simple mixing.
Generally, in summary, the present applicant has found that most satisfactory water-repellent compositions are not obtained by using as the dispersing or emulsifying agents combinations of cationic surface active agents and protein protective colloids, non-ionic surface active agents and protein colloids and anionic surface active agents and protein protective colloids since not only do they permit ready break-down of the wax emulsion with poor dilutability and undesirable thickening with the additional defect of resulting in putrefaction of the emulsion and mildew attack upon the treated cloth.

Moreover, it is not readily possible to employ as such, for example, cationic or non-ionic surface active agents by themselves, since these agents give coarse emulsions which tend to break-down or become disrupted quite readily. The present invention is particularly directed to an emulsion in which an anionic surface active agent and a non-ionic surface active agent excluding a cationic agent and protein protective colloids are employed to give a stable wax water-proofing emulsion.

Generally, the preferred anionic agent is an ethoxylated soap while the preferred non-ionic surface active agents are alkylene oxide condensation products containing at least 6 alkylene oxide groups which are generally known by the trade-marks of Tween, Igepal, Triton N. E., Sharplene Non-Nonoic No. 218, Emulphor, Percox, or Carbocow esters.

The non-ionic agents may also be anhydrides of polyhydric alcohols which are partly esterified such as those known as Span, or condensation products of alkylamines and high molecular weight fatty acids, known in the trade as Ninol, Ufagard, Corfak N-100, and Arosol.

Generally, the compounds known as Tween, Igepal and Carbocow 1000 monolaurate are most satisfactorily employed.

Not only may the present emulsions be used for flame-proofing or water repellent treatment, but they also may be utilized in connection with leather goods, metal goods and to sheet plastics.

While there has been herein described a preferred form of the invention, it should be understood that the same may be altered in details and in relative arrangement of parts within the scope of the appended claims.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed, what is claimed is:

1. An aqueous emulsion of the oil-in-water type suitable for waterproofing textiles and the like, comprising about 10 to 30% of a wax, about 0.8 to 7.5% of an amine soap of a saturated fatty acid having at least 12 carbon atoms, about 8 to 30% of a solution of a water soluble polyvalent metal salt of an organic acid of about 4 to 15% strength (calculated as the oxide of said metal), about 0.25 to 3% of a water soluble non-ionic surface active agent, the balance being water said polyvalent metal salt being selected from the group consisting of aluminum zirconium and copper.

2. An aqueous emulsion of the oil-in-water type suitable for waterproofing textiles and the like, as described in claim 1, in which the wax is paraffin wax, and in which the non-ionic agent contains a high molecular weight polyoxyalkylene ether containing at least five recurring alkylene oxide units said polyvalent metal salt being selected from the group consisting of aluminum zirconium and copper.

3. A textile treating aqueous wax emulsion of the oil in water type containing a water-soluble soap and a water-soluble polyvalent heavy metal salt without mutual inter-prediction in concentrated and diluted form and upon storage, said emulsion including a wax, an amine soap of a high molecular weight fatty acid, a water soluble polyvalent metal salt of an organic acid and a sufficient quantity of a water soluble non-ionic surface active agent to prevent said inter-prediction.

4. A textile treating aqueous wax emulsion of the oil in water type containing a water-soluble soap and a water-soluble polyvalent heavy metal salt without mutual inter-prediction in concentrated and diluted form and upon storage, said emulsion including paraffin, morpholine salt of the fatty acids of hydroxylated fish oil and zirconium acetate and a sufficient quantity of a water soluble non-ionic surface active agent to prevent said inter-prediction.

5. A textile treating aqueous wax emulsion of the oil in water type containing a water-soluble soap and a water-soluble polyvalent heavy metal salt without mutual inter-prediction in concentrated and diluted form and upon storage, said emulsion including paraffin, morpholine salt of the fatty acids of hydroxylated fish oil and zirconium acetate and a sufficient quantity of a water soluble non-ionic surface active agent to prevent said inter-prediction.

6. A textile treating aqueous wax emulsion of the oil in water type containing a water-soluble soap and a water-soluble polyvalent heavy metal salt without mutual inter-prediction in concentration and diluted form and upon storage, said emulsion including a wax, an amine soap of a high molecular weight fatty acid, a water soluble polyvalent metal salt of an organic acid and a sufficient quantity of a non-ionic surface active agent to prevent said inter-prediction, said non-ionic surface agent being an alkylene oxide condensation product containing at least five recurring ethylene oxide units in an ether-like linkage.

7. A thin pourable water repellant concentrated emulsion for textiles and the like containing a dispersion of about 10 to 30% of a wax together with a water-soluble soap, a water soluble polyvalent metal salt of an organic acid and a synthetic water soluble non-ionic surface active agent, said emulsion being stable in storage and readily dilutable with water without precipitation said polyvalent metal salt being selected from the group consisting of aluminum zirconium and copper.

8. The emulsion of claim 7, in which the soap is an amine soap.

9. The emulsion of claim 7, in which the soap is a morpholine compound of saturated high molecular weight fatty acid.

10. The emulsion of claim 7, in which the soap is an ethoxylated compound of saturated high molecular weight fatty acid.

11. The emulsion of claim 7, in which the wax is paraffin.
11. The emulsion of claim 7, in which the polyvalent metal salt is zirconium acetate.
12. The emulsion of claim 7, in which the polyvalent metal salt is aluminum acetate.
13. The emulsion of claim 7, in which the polyvalent metal salt is aluminum formate.
14. The emulsion of claim 7, in which the polyvalent metal salt is aluminum formate.
15. An aqueous emulsion of the oil-in-water type suitable for waterproofing textiles and the like, as described in claim 1, in which the wax is paraffin wax and in which the non-ionic agent is a condensation product of a long chain fatty acid with at least 2 molecules of a hydroxylated amine.
16. An aqueous emulsion of the oil-in-water type suitable for waterproofing textiles and the like, as described in claim 15, in which the long chain fatty acid is coconut fatty acid, and the amine is diethanolamine.

HANS G. FIGDOR.

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