

UNITED STATES PATENT OFFICE.

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THE CHEMICAL FOUNDATION, INC., A CORPORATION OF DELAWARE.

WASHING, CLEANSING, AND LUBRICATING MEDIUM.

1,395,902.

Specification of Letters Patent.

Patented Nov. 1, 1921.

No Drawing.

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To all whom it may concern:

Be it known that I, Dr. MAX BUCHNER, chemist, a subject of the German Empire, and resident of Heidelberg, Grand Duchy of Baden, Germany, have invented certain new and useful Improvements in a Washing, Cleansing, and Lubricating Medium; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to the use of inorganic colloids of a jelly-like consistence highly saturated with water as a cleansing, washing and lubricating means, both alone and mixed with other substances suited for the respective purpose.

For ages soap has been used for cleansing the skin, the clothes and many other things. Soaps are, as is generally known, alkali salts of the higher fatty acids. Their cleansing effect is supposed to be the result of the fact that, under the influence of water they will split up hydrolytically into alkali and acid, the alkali having a dirt-removing effect in which action it is assisted by the soap sud. Although soap has a number of disadvantages, it has heretofore not been possible to find a suitable substitute for it.

The applicant has now found that inorganic colloidal substances of jelly-like consistence may serve as cleansing and washing means, and as a perfect substitute for soap, in fact, even, offer certain advantages over the latter. The most advantageous form in which they are used is a slimy or jellylike form containing much water. Such colloids are the jellylike hydroxids, and in particular hydroxid of aluminium. In addition there may be mentioned the hydroxid of magnesium, the hydrate of silicon and the hydroxids of the heavy metals. They will remove dirt from the skin as well as from clothes and other articles of use, from wood, metal, leather, furs, hair readily and quickly. It is only necessary to apply the jellylike hydroxid, for example hydroxid of aluminium, to the article to be cleansed and to rub it thereon, whereupon the dirt is removed in the form of an emulsion. The substance, which itself is not water-repelling, will penetrate into the finest pores, it will have a softening effect on organic tissues and therefore have an intense cleansing effect. After

having been rinsed with water the material or article treated in such a manner will appear bright and clean. Above all the human skin is cleansed by means of hydroxid of aluminium thoroughly in the manner described, without any injury thereto and even causing an agreeable sensation of warmth and smoothness. The skin is, thus, not in any way affected as it is when alkalinous or alkaliferous soaps are used.

As hereinbefore stated hair may also be cleansed and softened by means of inorganic colloids of a jelly-like consistence. In consequence thereof these colloids, and in particular hydroxid of aluminium, may also be used as shaving pastes in place of shaving soap.

The colloids, particularly hydroxid of aluminium, have the advantage of being chemically inert, so that they have no destructive effect on organic substances such as the skin, cellulose, hair and the like. They may be used either alone, or with an admixture of other substances and compounds, either scents or certain chemical agents, such as oils, fats, alkalis and the like. The fat-like hydroxid of aluminium is a very permanent compound and will not change into the unsuited crystalline form, so that its valuable cleansing property will last for an unlimited time. This property will neither be annulled by the presence of chemical substances such as oxygen-yielding substances, organic dyes, essential oils or other cosmetically valuable admixtures.

The importance of the consistency of the hydroxid of aluminium is apparent from the fact that dry crystallized hydroxid, containing little water is quite unsuited for the purpose; for the latter only jelly-like pasty hydroxid of aluminium, in other words the hereinbefore named colloid is necessary. Such colloid is preferably obtained by precipitation with ammonia from a diluted solution of an aluminium salt. By such precipitation jelly-like substances, rich in water and with only a small percentage of the hydroxid itself are obtained, the latter appearing as a swollen hydrate of a fatty character in an extremely favorable form—as an inorganic fat proper. This hydroxid of aluminium will then have the same property as organic fats of forming emulsions, namely both with such fats and with oils and hydrocarbons. It will mix almost at any ratio with pe-

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troleum, benzin, heavy or light oil, vaseline, fat, tetrachlorid of carbon, although it has itself a large content of water. The emulsions thus formed will not be destroyed even by very large quantities of water.

5 When hydroxid of aluminium is to be produced for washing, cleansing and lubricating purposes, it is preferable, as hereinbefore stated, to precipitate it by means of ammonia from dilute solutions of aluminium salts, because the formation of basic or complex compounds should be avoided, as these would impair the washing and lubricating capacity of the hydrate. A hydroxid particularly rich in water and suited for the said purposes is obtained by precipitation from the dilute solution of an aluminium salt by means of an excessive quantity of ammonia, or, vice versa, by introducing a solution of aluminium salt into a highly diluted ammoniacal liquid, which, however, should have an excess of ammonia. The precipitate thus obtained may, then, also be easily filtered.

25 For illustrating the degree of dilution to be employed the following example may be quoted: 100 grams of sulfate of aluminium are dissolved in 6000 grams of water, and to this solution 77 grams of aqueous ammonia with 17.7 grams of ammonia are added. Or the 77 grams of ammoniacal liquid with the contents of ammonia specified may be diluted with water to 6000 cubic centimeters, whereupon the 100 grams of sulfate of aluminium are added in form of a strong aqueous solution.

As the soft form of the jelly-like colloids would render their transport very difficult, silicate of alumina or magnesia is kneaded into them for washing and cleansing purposes. Both fat and lean and moist clays may be used. Particularly suited are clays of a medium degree of fattiness, which have the character of kaolin clay.

45 According to the quantity of such admixtures the new washing preparation may be made moist, pasty or tough, and it is a surprising fact that such admixture of clay not only does not affect the washing capacity, but has even a favorable effect on it. A further valuable feature consists in the fact that by varying the kind of clay added the character of the soap may be varied according to the purpose it is intended for, for example as a common washing soap, as a fine toilet soap or as a mechanical or frictional scrubbing soap. Silicate of magnesia, which has also a fatty character, will have the same effect as clay.

60 When the said inorganic colloids, in particular hydroxid of aluminium, which may

also be used alone, are employed as lubricants, hydrocarbons and graphite may be added besides the hereinbefore named fats and oils. In fact, any substance which tends to reduce friction may be worked into the lubricating colloids. So, for example, light and heavy aliphatic and aromatic hydrocarbons and their derivatives might be employed, also tetrachlorid of carbon, chloroform, sulfid of carbon, benzene, mineral oil, coal tar oils, residues from distillation.

The same as graphite, which is added to the colloids, preferably in a fine pulverulent form, either alone or in presence of fats and oils, also other friction reducing substances may be employed for preparing these new lubricant substitutes.

I claim:

1. A washing, cleansing and lubricating medium consisting of a hydrated inorganic hydroxid of a jelly-like consistence and rich in water.

2. A washing, cleansing and lubricating medium consisting of a hydroxid of the aluminum group of a jelly-like consistence and rich in water.

3. A washing, cleansing and lubricating medium consisting of an inorganic hydroxid of a jelly-like consistence and rich in water mixed with oils, fats.

4. A washing, cleansing and lubricating medium consisting of a hydroxid of the aluminum group of a jelly-like consistence and rich in water mixed with oils, fats.

5. A shaving medium consisting of a hydroxid of the aluminium group of a jelly-like consistence and rich in water.

6. A washing and cleansing medium consisting of an inorganic hydroxid of a jelly-like consistence and rich in water mixed with clay.

7. A washing and cleansing medium consisting of aluminium hydroxid of a jelly-like consistence and rich in water mixed with clay.

8. A washing and cleansing medium, consisting of inorganic hydroxids of a jelly-like consistence and rich in water mixed with a silicate.

9. A washing and cleansing medium consisting of aluminium hydroxid of a jelly-like consistence and rich in water mixed with a silicate of a metal.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of subscribing witnesses.

DR. MAX BUCHNER.

Witnesses:

Dr. NAUEN.

C. INNESS BROWN.