

## UNITED STATES PATENT OFFICE.

ROBERT GUSTAV GROPPNER, OF BERLIN, GERMANY.

PROCESS OF PRODUCING COMPOUNDS FOR DISINFECTING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 740,424, dated October 6, 1903.

Application filed August 11, 1900. Serial No. 26,552. (No specimens.)

*To all whom it may concern:*

Be it known that I, ROBERT GUSTAV GROPPNER, a subject of the King of Prussia, Emperor of Germany, residing at Berlin, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Processes of Producing Compounds for Disinfecting Purposes, (for which I have applied for patents in Germany dated February 20, 1900; in England dated May 3, 1900, and in France dated April 24, 1900,) of which the following is a specification.

The disinfectant soaps hitherto known and which are combinations with substances of the phenol class have all had the disadvantage of being evil-smelling, poisonous, and caustic.

This invention refers to a liquid soap with a minimum of water, and it makes it possible to obtain fairly concentrated soap solutions, and it avoids the decomposition of the soap into its constituents, which otherwise takes place in aqueous solutions of soap.

My invention is based upon the property of the compound called "formaldehyde" of liquefying soap and of combining therewith in presence of but a minimum of water to a liquid mass of great stability and which contains the soap in its original composition, no decomposition taking place in such solutions, as may be judged from the fact that the resultant product possesses no caustic properties, while both formaldehyde alone and an aqueous solution of soap exhibit very marked caustic properties when left in contact with the skin for some time. I am thus enabled by my invention to liquefy soap with a considerably smaller amount of liquid solvent than it was possible before my invention. I have also found that in this solution the formaldehyde has lost its penetrating odor without any detriment, however, to its well-known disinfecting properties. Furthermore, the hitherto unknown property of formaldehyde has been observed of having a highly-bleaching effect upon a colored solution of soap—for instance, liquefies yellow soap—and the longer formaldehyde is allowed to act in a suitable manner upon the said solution the greater becomes the bleaching effect, resulting in almost complete removal of the color.

By the liquefaction of soap by means of formaldehyde a disinfectant is obtained which is not only odorless, but also free from caustic characteristics and must be described as non-poisonous. In this novel combination the keratolytic or horn-dissolving properties of the soap are opposed to the keratoplastic or horn-forming properties of the formaldehyde, so that the disagreeable effects of the formaldehyde are removed.

For producing an effective disinfectant possessing the properties mentioned the following method, for instance, is used: Four parts of a forty-per-cent. aqueous solution of formaldehyde are mixed thoroughly with six parts of soap until a mixture of pasty consistency is obtained. This mixture is then warmed until it represents a fluid of approximately the consistency of glycerin. This liquid dissolves under all conditions in water, so that the new disinfectant can be produced in any degree of dilution. The new disinfectant possesses great disinfecting and deodorizing qualities without showing the disagreeable characteristics of tar preparations.

The mixing proportions mentioned above can of course be varied in many ways. Instead of using a solution of formaldehyde a certain quantity of water, alcohol, glycerin, or other liquid may be added to the soap and formaldehyde in gaseous form introduced into it, or the formaldehyde may be added and liquefied in polymeric form—for instance, a paraformaldehyde or trioxymethylene—or in some other form of combination.

To the new disinfectant various substances suitable to the requirements of the trade can be added, such as perfumes or substances, which will increase its disinfecting qualities.

I am aware that it is not new to incorporate formaldehyde with soaps, and I make no broad claim to such mixtures of soap and formaldehyde; but in all such mixtures as manufactured before my invention formaldehyde was merely used as a disinfectant, but never as a solvent for soap. The mixtures of soap and other constituents containing formaldehyde as heretofore compounded were solid and could only be liquefied by the ordinary processes of liquefying soap—that is to say, by the application of some solvent



for the soap, such as water, or by the application of heat. In the latter case, however, the valuable properties of formaldehyde were destroyed, and, moreover, the liquid mass would again solidify on cooling. I am also aware of formaldehyde having been used for effecting the solution of albumin and that such solutions of albumin in formaldehyde have been compounded with soap; but this is entirely different from my invention, inasmuch as in this case the soap was not liquefied, but remained solid, while in my invention formaldehyde is used as a direct solvent for finished soap and not as a mere cursory addition without any effect on the physical condition of the soap, as was the case before my invention.

What I claim, and desire to secure by Letters Patent of the United States, is—

The process of liquefying soap and keeping the same in solution which consists in preparing a strong solution of formaldehyde in water, mixing a quantity of the solution with a greater quantity of soap, heating the mixture at a suitable temperature until liquefaction of the soap takes place and cooling the liquid.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

ROBERT GUSTAV GROPPNER.

Witnesses:

MAX WENZEL,  
ALFRED S. CRISTY.