

UNITED STATES PATENT OFFICE.

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DETERGENT.

No Drawing.

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To all whom it may concern:

Be it known that I, ROBERT WOTHERSPOON, a citizen of the United States, residing at Brooklyn, county of Kings, city of New York, and State of New York, have invented new and useful Improvements in Detergents, of which the following is a full, clear, and exact specification.

My invention refers to detergents and refers particularly to detergent soaps.

I have found that the sulpho acids of xylene and their salts possess extraordinary and highly valuable detergent properties capable of practical application either alone or when combined with saponaceous bodies.

The value of these products for detergent purposes is enhanced by my discovery that they are soluble, or miscible, in saponaceous bodies, thus making them suitable for incorporation with saponified fat and saponified oil, with the production of products having detergent values greatly in excess of the soaps not so incorporated.

Without entering into a discussion of the several theories regarding the chemical and physical conditions and reactions incident to detergent bodies and their use, I would state that the sulpho acids of the xylenes and the salts of the sulpho acids of xylenes have the characteristics of colloids, possessing high viscosity and low surface tension, in addition to which they possess strong emulsifying properties.

I have found that the sulpho acids or the salts thereof may be incorporated with saponaceous bodies, either after or during their saponification, producing resulting compounds or mixtures highly detergent, antiseptic and germicidal.

I have further found that the sulpho acids of xylenes and the salts thereof have strong odor destroying properties and that their use in conjunction with odoriferous saponaceous bodies will destroy the odors, thus producing odorless or practically odorless compounds.

I have found, for example, that when an equal part of a sodium salt of the mixed xylene sulphonic acids is added to an equal quantity of a soap composed of saponified fat, the detergent properties of the original saponified fats have been increased to a large degree and that, at the same time, the resulting product is odorless, antiseptic and germicidal, thus possessing greatly in-

creased value over the original saponified fats.

The addition of the salts of the sulpho acids of xylene will convert soft soap, such as oleic acid soaps, into hard soaps, irrespective of whether the salt of the sulpho acids of xylene is added during, or after, the production of the soap. This is a most valuable attribute of these chemicals.

By the "sulpho acids of xylenes," I mean the mixture of the three xylenes, principally meta xylene, found in commercial xylol, which is sulphonated, producing a mixture of the sulphonic acids of ortho, meta, and para xylene. Because of the fact that each one of the xylenes can be sulphonated in one or more positions, I thus produce a mixture containing several sulphonic acids of the xylenes.

I have found that the individual mono sulpho acids of each of the pure xylenes—ortho, meta, and para—have like properties and refer particularly to the sulpho acids of the mixed xylenes for the reason that the mixed xylenes are a commercial article of manufacture, while the individual xylenes are obtained with difficulty, hence are not easily obtainable in commercial quantities.

By "salts of the sulpho acids of xylenes," I mean those salts of the mono or multi sulpho acids of xylene, which are dissolvable, or miscible, with the particular saponaceous body with which they are employed, producing results having detergent powers equal or greater than the employed saponaceous body.

Among the salts of the sulpho acids of the xylenes which I have found particularly valuable are the alkali salts such as sodium, potassium and ammonium salts of the sulpho acids, although other salts have valuable properties for particular uses.

I have found, for example, that the sodium salts or the sulpho acids of the xylenes have a strong alkaline reaction and are very useful in themselves for detergent purposes, such as the scouring of cotton. When made neutral or slightly acid by the addition of any acid, it is equally effective for scouring wool or silk. This property of being able to use these salts in either an acid or alkaline medium is extremely important, since the ordinary soaps can only be used in an alkaline or neutral medium.

By saponaceous bodies, as referred to in

my specification and claims, I mean saponaceous products obtained from animal and vegetable oils and fats and from their compounds capable of saponification.

5 In the following of my process, any one salt of the sulpho acids of any of the xylenes, or a mixture of several, may be employed, and a single saponaceous body or a mixture of several may be employed.

10 I do not limit myself to the particular chemicals and steps of process particularly described, all of which may be varied with-

out going beyond the scope of my invention as described and claimed.

What I claim is:—

1. A soap containing an alkali salt of a sulpho acid of xylene. 15

2. A soap containing sodium salt of a sulpho acid of xylene.

Signed at New York city, in the county of New York and State of New York, this 20
27th day of May, 1924.

ROBERT WOTHERSPOON.