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METHOD OF LAUNDERING.

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To all whom it may concern:

Be it known that I, RALPH A. AIRHEART, a citizen of the United States, and resident of Seneca, in the county of Newton and State of Missouri, have invented certain new and useful Improvements in Methods of Laundering, of which the following is a specification.

In the laundering of clothes, linens and other fabrics in most of the well known and common types of commercial or so called domestic washing machines, the washing operation is primarily performed by the frictional effect of the detergent solution over the fabric and through the meshes or interstices thereof, this frictional effect being obtained by the adhesion between the solution and the fabric and the cohesion between the molecules of the solution. The cleansing operation is of course assisted by the solvent effect of the soap or other detergent used. Experience, however, has demonstrated that it is practically impossible with any of the known machines to remove all the stains and dirt from badly soiled fabrics without employing very strong detergents which are highly injurious to the fabrics or by restoring to hand or "spot" rubbing of the badly soiled portions of the pieces.

The principal object of this invention is to provide a new and improved method of laundering which will increase the frictional effects during the washing operations thereby producing a great saving in the time required for the washing operation, as well as an appreciable saving in the amount of soap and detergents used, and also obviating the use of injurious detergents and the necessity of resorting to "spot" rubbing.

My invention consists in the addition to the washing solution of suitable amounts of a mild, absorbent abrasive of the character hereinafter stated in a very finely powdered form which will increase the frictional effects of the washing solution. Such an abrasive must necessarily be possessed of such properties that it will be inert with respect to any chemical reactions in the presence of heat and alkaline solutions and furthermore must not be of a harsh or gritty nature such as would cause the particles of the abrasive to cut into and destroy the fabric or to become firmly imbedded in the meshes thereof. After considerable experimentation I have discovered that the amorphous siliceous deposit such as is mined extensively at Seneca, Missouri and commonly known as a tripoli powder, possesses the necessary properties above enumerated as while it possesses abrasive properties, it is not harsh or gritty and is inert in a chemical sense in the presence of alkaline solutions.

Analysis of such material shows it to be composed of

Silica	98.10—	98.28
Alumina	.17—	.24
Iron oxide	.27—	.53
Lime	trace—	.33
Potash	.17—	
Soda	.27—	.23
Ignition	.5 —	1.17
Organic matter		.008
Total	99.48	100.788

Tripoli powder of that character is highly absorbent and being in a very finely powdered and soft condition, it not only comes into rubbing contact with the fabrics but will pass through the interstices of most fabrics, carrying with it the detergent solution thereby producing an added frictional effect which effectually cleanses and removes the soil and dirt from the fabrics in a very short time. All traces and particles of the powder are easily removed by the ordinary rinsing operations and exhaustive experiments to date have failed to show that the use of such tripoli produces any injurious effect upon the fabrics.

The preferred method of using the powder is as follows, the water is run into the tub and the desired amount of detergents, soap, soda or bleach are added in suitable amounts, the machine is operated until a good suds or lather is obtained, an amount of powder, varying from 1 to 4 pounds

according to the character of the goods to be laundered is then added, the operation of the machine being continued until the powder is thoroughly mixed with the washing solution. The machine is operated for a suitable time varying from 5 to 15 minutes according to the work to be done. After the washing operation is completed the goods are thoroughly rinsed in two or three rinse waters and blued and starched according to the usual methods.

It will be understood that the amount of tripoli powder added and the length of time of the washing operation must to a large extent be governed by the experience of the operator just as with the old methods as to the amount of soap, blue and etc. to be used. Very excellent results have been obtained with the following proportions and operations which it will be understood are cited as illustrative and may be considerably varied or modified according to conditions.

For washing "flat work" and light colored goods.

Cold rinse 5 minutes, 5 inches water inside cylinder.

Suds 10 minutes, 2 inches water inside cylinder.

Run in 2″ water, add soda, bleach and soap; as soon as soap lathers add from 1 to 2 pounds tripoli washing powder. Brings suds to boil in 5 minutes and hold as close to boiling as possible.

Rinse 3 minutes, 5 inches water inside cylinder.

Rinse 3 minutes, 5 inches water inside cylinder.

Rinse 3 minutes, 5 inches water inside cylinder.

Blue 5 minutes, 4 inches water inside cylinder.

White shirts and collars.

Same as flat work, only bleach in 3rd rinse for 10 minutes, scour and blue.

Flannels and socks.

Cold rinse, 3 minutes, 5 inches water inside cylinder.

Cold suds, 5 minutes, 4 inches water inside cylinder, as soon as soap lathers, add 2 to 3 pounds tripoli powder.

Cold rinse 3 minutes, 5 inches water inside cylinder.

Cold rinse 3 minutes, 5 inches water inside cylinder.

Overalls.

Cold rinses, two or three of 5 minutes with 5″ of water in cylinder.

Suds 15 minutes, 2″ of water inside cylinder, add soda and soap, as soon as soap lathers add 2 to 4 pounds tripoli powder bring to boil and hold there.

Rinses, 3 of 3 minutes, with 5″ of water in cylinder.

Starch 3 minutes, ½″ of water in cylinder.

Dark colored clothes.

Same as light except no bleach, and do not heat hotter than the hand will stand.

It will be understood that the action of the powder is purely mechanical and performs its function in the method by its abrasive or scouring properties.

In the commercial laundries the clothes are usually given a preliminary rinsing in the washing machine and after the rinse water is run off, fresh water is run in, the soap or other detergents added and the machine operated until a good lather is produced after which the powder is added, the clothes remaining in the machine. For domestic or home machine washing where the preliminary machine rinsing is usually dispensed with, the lather will be produced first the powder added and the clothes then inserted after the powder is thoroughly mixed with the detergent solution. It will be obvious that it is immaterial as far as the method is concerned whether the clothes are inserted in the machine before or after the powder is add.

I claim:—

1. A method of laundering fabrics which consists in producing a detergent solution, adding to said solution a quantity of soft cryptocrystalline silica and agitating said solution to mix said silica in suspension therein.

2. A method of machine laundering of clothes, fabrics or the like which consists in producing a detergent solution in a washing machine, in which the articles to be washed are placed, operating the machine to produce a lather, adding to said solution a quantity of an absorbent abrasive material in a finely powdered condition, agitating said solution to thoroughly mix said abrasive material in suspension in said solution, and operating the machine to agitate the contents thereof.

3. A method of machine laundering of clothes, fabrics or the like which consists in producing a detergent solution in a washing machine, in which the articles to be washed are placed, operating the machine to produce a lather, adding to said solution a quantity of tripoli powder, agitating said solution to thoroughly mix said tripoli powder in suspension in said solution, and operating the machine to agitate the contents thereof.

4. A method of machine laundering of clothes, fabrics or the like which consists in producing a detergent solution in a washing machine in which the articles to be washed are placed, operating the machine to produce a lather, adding to said solution a quantity of absorbent amorphous silicia

in finely powdered condition, agitating said solution to thoroughly mix said powdered silica in suspension in said solution, and operating the machine to agitate the contents thereof.

5. A method of machine laundering of clothes, fabrics or the like which consists in producing a detergent solution in a washing machine in which the articles to be washed are placed, operating the machine to produce a lather, adding to said solution a quantity of soft cryptocrystalline silica agitating said solution to thoroughly mix said silica in suspension of said solution, and operating the machine to agitate the contents thereof.

6. A method of machine laundering of clothes, fabrics or the like, which consists in producing a detergent solution in a washing machine in which the articles to be washed are placed, operating the machine to produce a lather, adding to said solution a quantity of absorbent amorphous silica in a finely powdered and soft condition, agitating said solution to thoroughly mix said powdered and soft silica in suspension in said solution, and operating the machine to agitate the contents thereof.

Signed at Seneca in the county of Newton and State of Missouri this 22 day of April A. D. 1922.

RALPH A. AIRHEART.