

UNITED STATES PATENT OFFICE

1,925,843

COMPOUND FOR USE IN CLOTHES
WASHINGOliver Mitchell and Emmett M. Flood, Palos
Park, Ill., assignors to Sterling Borax Com-
pany, Chicago, Ill., a corporation of DelawareNo Drawing. Application April 10, 1930
Serial No. 443,245

3 Claims. (Cl. 8-6)

This invention relates to compounds for use in washing cloth or clothes and particularly to compounds for neutralizing any alkali which may be present and for producing an acid condition preparatory to the bluing operation, and for use in bluing.

Alkali is present in cloth or clothes from the soap and other washing compounds used in degreasing or washing. The alkali contained in the fabric, even when relatively weak, acts upon the cellulose of the fiber, producing a yellow color. It also converts starch to dextrine and glucose, which decompose from the heat of ironing and pressing, into yellow substances. To guard against this yellow color the alkali must be removed or neutralized and then bluing resorted to for the purpose of giving to the fabric a pearl white appearance. Basic aniline dyes are used for bluing, and as such dyes are decomposed by alkalies, it is doubly necessary to treat the cloth or clothes with an acid solution before they are subjected to the bluing operation. This acidulating process, which is known in the art at the present time as "souring" is used to neutralize the alkali or produce an acid condition so that the cloth or clothes may be blued evenly and completely.

In the souring operation mineral acids have been used, such as sulphuric and hydrochloric, in very dilute solution. Organic acids, such as acetic, lactic, and oxalic, have been used in varying proportions, and some salts of acid reaction, such as sodium silico flouride and acid sodium sulphate have also been used to counteract the alkali.

The mineral acids referred to are corrosive and dangerous unless used with skill and extreme care. Most of the organic acids in neutralizing the alkali, form compounds that are decomposed by the heat of ironing and the products of such decomposition weaken or destroy the fibers of the fabric or yellow the fabric and the starch. In this decomposition, gases or fumes are formed, some of which are irritating and disagreeable to workers on ironers and pressing machines, and others leave an offensive odor in the fabric.

Another objection common to practically all of the souring agents heretofore used, is that they require skillful manipulation, particularly

where a variety of fabrics are run in the same wash, and if not manipulated with skill the clothes will not be properly prepared for the next operation—bluing—consequently, the application of the blue is uneven and unsatisfactory.

Whereas the compounds formed by the neutralizing action of the organic acids now being used as souring agents decompose under the heat of ironing with harm or discoloration to the fabric, the compounds of the souring agent used in the present invention, are not so decomposed, are harmless, non-odorous, and even beneficial in many ways.

It is customary to sour in excess to insure even bluing and it is considered necessary in good laundering practice to give one or two rinses after bluing to remove the excess souring agent. Owing to the fact that the compound employed in the present invention is harmless to the fabric, will not affect colors, is entirely odorless, and is non-irritating to the skin of the human body, even when used greatly in excess of the amount actually required for neutralizing, it is not necessary to provide one or more rinses subsequent to the souring and bluing operation.

The present invention provides a new and novel compound which will not only counteract or neutralize the residual alkali, and produce acidity if desired, to permit the goods to be evenly and completely blued, but also contains the necessary dye for bluing the cloth or clothes in proper and permanent proportion to the amount of sour. The effect of this combination of the souring agent and the bluing agent is to produce simultaneous action upon the fibers of the cloth so that no piece or part of the fabric can be exposed to the dye except in conjunction with the souring agent, thus assuring an even and uniform blue. Whereas the use of separate substances or compounds for the purpose of souring and bluing, as now practiced, often results in discoloration or damage to fabric, and lack of even or uniform bluing, unless used with skill and extreme care; the product of this invention is so simple in application, so safe and harmless, that successful results do not depend upon its being used by those having technical education and skill.

The object of the invention is to provide a new

and novel compound which is used as a neutralizing or souring agent and a bluing or dyeing agent.

Another object is to provide a compound containing boric acid and aniline dye in permanent and proper proportions and relation to simultaneously and evenly neutralize or acidulate, and blue or dye the cloth or clothes, or fabric of any and all kinds.

Another object is to provide a compound which has the proportions and relation of boric acid and dye so fixed that they are permanent and stable, which form a dry granular compound which is free running, to facilitate weighing and measuring, and available for merchandising to the public, safely, economically, and without hazard; which is easily and conveniently dissolved for use in any desired concentration within the limits of the solubility of its components, and which is safe and harmless so that no particular skill or caution in handling is required, to avoid danger or damage.

A further object is to provide a compound which is odorless, which is harmless to fabric, and which can be readily and economically manufactured or compounded.

A still further object of the invention is to provide the method of making, as an article of manufacture, a composition of matter or a mixture including a souring agent and a bluing agent which method consists in diluting a highly concentrated aniline dye in a solution of water or other liquid and then spraying the blued liquid into a mass of boric acid while the boric acid is being agitated to evenly and thoroughly incorporate the dye with the boric acid to make a stabilized mixture which will not separate and in which the proper proportion of dye relative to the souring agent is fixed.

In carrying out the invention, a blue aniline dye is combined with a sufficient quantity of boric acid to provide a compound which neutralizes the alkali remaining in the fabric, provides acidity, and blues the fabric thoroughly and evenly. A purely mechanical mixture of the dry powdered dye and the dry granular boric acid, we found could not be depended upon for uniformity. Natural settling caused by vibration in shipping or handling destroys the homogeneity of the mixture, due to difference in size and shape of the particles of the components and differences in their specific gravity. To insure evenness and stability, and to cause the dye to be thoroughly incorporated with the boric acid and to insure a fixed and proper proportion of dye and souring agent, we either wet the dried mixture with water or other solvent or dissolve the dye in water or other solvent, and mix the compound wet, subsequently drying the product, all as hereinafter described. In use the dried compound is dissolved in water by the user in such quantity and concentration as best suits the individual purpose or requirement.

Boric acid may be used either in crystal, granular, or powdered form. We prefer to use a fine rather porous granular form for the reason that it absorbs the dye more evenly and thoroughly, is free running when dry, and makes the compound more readily and quickly soluble for preparing the combined souring and bluing solution for use.

The compound may be made by mixing powdered dye and the dry granular boric acid, in any suitable type of mechanical mixer, and then when the dye and boric acid are completely and

intimately mixed, and while the mass is still being agitated, sprayed by means of an atomizer with sufficient water or other solvent to dissolve the dye and cause it to be absorbed by and/or adhere to the particles of boric acid.

We prefer, however, to dissolve the dye in a small quantity of water or other solvent to form a concentrated solution of the dye and spray this solution through an atomizer into a mass of granular boric acid while the same is being stirred or agitated in the mixer.

Following the mixing by either the dry or wet process, and subsequent wetting in the former method, the compound is then dried in a suitable dryer, either of the rotary or shelf type, and by atmospheric or vacuum method. After the drying operation, the compound is run through a sifter to restore the free running granular condition. The compound is then packed in suitable containers for market. The effect of the carrying out of this method is to produce a compound which will remain stable in proportion, which causes the dye to be evenly and thoroughly incorporated in the boric acid, which will not cake, and which will be free running to facilitate easy and rapid weighing or measuring when making the souring and bluing solution for use.

The proportions in which we prefer to mix the compound is six (6) ounces of aniline dye to one hundred (100) pounds of boric acid, these proportions being best suited for souring and bluing under ordinary conditions, but the proportions of dye and boric acid can be increased or decreased as may be found necessary to completely neutralize the residual alkali in the cloth or clothes, and provide the proper degree or extent of acidity and bluing.

The invention provides a new product which may be packed for commercial and domestic use. The product being non-corrosive, free running, and harmless, is safely handled, can be easily weighed or measured, and overcomes the hazard of using strong acids and/or acid salts for the souring operation. The use of the product efficiently and completely neutralizes all the alkali contained in the cloth or clothes, provides acidity if desired or needed, thoroughly and evenly blues the cloth or clothes, cuts down the number of rinsing operations, and preserves the fabric.

Changes may be made in the various steps in carrying out the invention and the quantities may be varied without departing from the spirit of the invention or sacrificing any of the advantages thereof, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. An agent used in connection with washing articles including clothes, clothing and cloth and comprising a souring agent in sufficient proportion for neutralizing the residual alkali and soap remaining in the articles from the result of washing, and a bluing agent for tinting the articles, said souring agent comprising boric acid and the bluing agent comprising an aniline dye.

2. A new article of manufacture for use in washing articles made of cloth comprising a souring agent for neutralizing the residual alkali and soap remaining in the articles from the result of washing, and a bluing agent for tinting the articles, the souring agent comprising boric acid, and the bluing agent comprising an aniline dye, there being approximately six (6) ounces of aniline dye incorporated with approximately one hundred (100) pounds of boric acid.

3. An agent used in connection with washing articles including clothes, clothing and cloth and comprising a souring agent in sufficient proportion for neutralizing the residual alkali and soap remaining in the articles from the result of washing, and a bluing agent for tinting the articles, said substances having a free running granular characteristic, said souring agent comprising boric acid and the bluing agent comprising an aniline dye.

OLIVER MITCHELL.
EMMETT M. FLOOD.

10

15

20

25

30

35

40

45

50

55

60

65

70