

UNITED STATES PATENT OFFICE

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LAUNDERING METHOD

No Drawing.

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In ordinary laundering operations the goods are given a bath in which are introduced a bleach, soap, and an alkali, these agents serving particularly to remove stains. 5 After such a bath the goods are ordinarily rinsed very thoroughly and in several successive waters to remove the alkali. Such removal is important in order to prevent a discoloration of the goods. 10 My present invention is directed to the more easy and effective avoiding of such discoloration and has other points of advantage referred to hereinafter in detail.

A specific example of a process utilizing 15 my invention is the following:

The goods are first given a bath in cold water with soap and trisodium phosphate or other softener which reduces the surface tension of the water.

20 The goods are then subjected to a second bath of hot water (say 118 degrees F.) and soap serving chiefly for the removal of dirt.

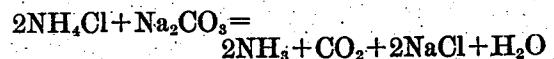
They are then subjected to a third bath containing a bleach, such as hypochlorite liquor, soap and usually an alkali such as 25 sodium carbonate. The principal purpose of this bath is to remove stains. It is used also to assist in getting any soap out of the goods and into solution in the water.

30 The next stage of the process is a succession of rinses. Usually this has been four successive rinses in clear water, for the purposes of getting out the alkali and the bleach.

According to my process, in one or more 35 of these rinsing operations after application of the bleach and alkali, I propose instead of trying to get all the alkali out by merely rinsing with water as a solvent, to modify the alkali by the addition of an agent 40 which will convert it into a harmless and easily removed substance.

For example, I add ammonium sulfate or 45 chloride or other salt of ammonium. There are also various equivalents for ammonium salts in this operation, such for example as

what are known as "substituted ammonium salts". Using ammonium chloride, the combination with the sodium carbonate will be in accordance with the following formula



The ammonia is much less alkaline than sodium carbonate and other usual laundry alkalies; or it escapes as a gas. The carbon dioxide of course is a gas. The sodium chloride passes easily into solution and is neutral. Thus there is nothing left which, like the original alkali, might develop a spot in the goods.

After the rinsing operations described the laundering operations may be continued by a fifth step in which the goods are subjected to a souring and bluing bath. Finally they are subjected to hot and cold rinsing.

As an alternative to the above process, after the bleach and alkali bath I propose to introduce into one or more of the rinse waters an antichlor such for example as sodium sulfite, sodium bisulfite or sodium thiosulfate 70 or some other salt or salts which are reducing to chlorine in an alkaline solution.

Or I may add such a chlorine reducing agent and the alkali-modifying salt in the same rinse water. In fact in order to secure the two effects referred to I may use an agent which combines them. For example ammonium sulfite or ammonium thiosulfate will serve not only as an antichlor but also as a modifying agent for the sodium carbonate or other alkali. This use of an agent which combines the two effects referred to is not claimed specifically in the present application, being covered in a divisional application No. 742,268.

Another alternative is in the use of the sodium carbonate in one or more of the succeeding rinse operations, in combination with the antichlor. In this alternative method, as well as in the method first de-

scribed, it will be understood that there are many known alkalies which are the equivalent of sodium carbonate in this work and also a variety of known antichlors; and 5 any known or suitable agents may be substituted for those specifically referred to. Where the alkali and the antichlor are added together in the rinse water, we will generally, but not necessarily, omit the alkali 10 which, according to the process first described above, was added with the bleach.

Though I have described with great particularity of detail certain embodiments of my invention, yet it is not to be understood 15 therefrom that the invention is restricted to the particular embodiments disclosed. Various modifications thereof in detail and in the order of the steps described may be made without departing from the invention 20 as defined in the following claims.

What I claim is:

1. In laundering, the method which includes subjecting the goods to a bath containing soap and an alkali adapted to remove 25 stains, converting the alkali into a harmless and more easily removed substance, rinsing to remove such substance and thereafter subjecting the goods to a souring and bluing bath.

2. In laundering, the method which includes subjecting the goods to a bath containing soap and an alkali adapted to remove stains and converting such alkali into ammonia and an easily removable salt by the addition of a salt of ammonium and rinsing out said easily removable salt.

3. In laundering, the method which includes subjecting the goods to a bath containing soap, a bleach and an alkali adapted to remove stains and thereafter applying an antichlor and converting the alkali into a harmless and easily removed substance and rinsing out such substance.

4. In laundering, the method which includes subjecting the goods to a bath containing soap, a bleach and an alkali adapted to remove stains and thereafter applying an antichlor and a salt of ammonium which converts the alkali into ammonia and an easily removable salt and rinsing out said salt.

5. In laundering, the method which includes subjecting the goods to a bath containing soap, a bleach and an alkali adapted to remove stains, adding an agent which is reducing to the bleach and an agent which converts the alkali into a harmless and more easily removed substance and rinsing out such substance.

In witness whereof, I have hereunto signed my name.

ROBERT A. PHAIR.