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UNITED STATES PATENT OFFICE

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CELLULOSIC MATERIALS AND PROCESS OF MAKING SAME

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The present invention relates to new cellulosic materials. It comprises the new products, their process of manufacture, their application in the textile industry, and particularly the mixed fabrics made with the aid of the new products.

Hitherto textile fibers of vegetable origin have been immunized either by firstly transforming same into an alkaline derivative, and then treating same with esterifying agents, or by directly treating same with esterifying agents in presence of a catalyst having an acid reaction.

All these processes are either complicated or involve the danger of more or less transforming the fiber into hydrocellulose.

The observation has now been made that textile fibers of vegetable origin, such as cotton, linen, or artificial silks from regenerated cellulose, can be transformed in one single operation, without danger for the fiber itself, into products which have no affinity for substantive dyestuffs, if the fiber is esterified by subjecting it, in the presence of tertiary amines, to the action of a group of derivatives from organic carboxylic acids comprising the anhydrides and halides of such acids. This process has the advantage that it does not require a preliminary treatment of the fiber with alkalies or acids. Moreover, it has the further advantage to yield products which are very stable to storing, because an accidental saponification of the fiber causes no deposition of an acid on the same which would destroy the cellulose.

Among the anhydrides and halides of the carboxylic acids used for this invention there may be cited phthalic anhydride, maleic anhydride, succinic anhydride, benzoyl chloride and benzoic anhydride, as well as their homologues or analogues deriving from benzoic acids substituted in the aromatic nucleus, such as the halogenated and nitrated benzoic acids, or the methyl-benzoic acids, phthalic chloride, etc.; among the tertiary bases pyridine, quinoline, triethylamine, etc., may be mentioned.

Example.

15 parts of cotton are treated during 4 hours at 60° C. in a mixture of 100 parts of pyridine and 10 parts of phthalic anhydride, or 10 parts of cotton are treated in a mixture previously heated to 40° C. of 10 parts of benzoyl-chloride and 100 parts of pyridine. The whole is carefully stirred while the temperature is raised to 80°, and kept at this temperature during 1 hour. The cotton is then hydro-extracted, carefully washed, and dried. The cotton has lost all affinity for substantive dyestuffs, and has also no affinity for acid dyestuffs, whereas, in the case where it had been treated with phthalic anhydride, the cotton has acquired a very strong affinity for basic dyestuffs.

Similar effects are obtained with other halides and other anhydrides of carboxylic acids.

The mentioned proportions can of course be varied within large limits, and one can also employ mixtures of esterifying agents.

What I claim is:—

1. As a new process the immunization of vegetable textile fibers by esterification, consisting in heating such cellulose fibers, which have not been converted into alkali cellulose in the presence of a tertiary amine, and in the absence of solvents which dissolve the esters formed, and of catalysts, with a group of derivatives from organic carboxylic acids consisting of the anhydrides and halides of such acids, the process being carried out in the absence of water.

2. As a new process the immunization of vegetable textile fibers by esterification, consisting in heating such cellulose fibers, which have not been converted into alkali cellulose in the presence of a tertiary amine, and in the absence of solvents which dissolve the esters formed, and of catalysts, with a group of derivatives from organic carboxylic acids

containing at least 3 carbon atoms consisting of the anhydrides and halides of such acids, the process being carried out in the absence of water.

3. As a new process the immunization of vegetable textile fibers by esterification, consisting in treating such cellulose fibers, which have not been converted into alkali cellulose in the presence of a tertiary amine, and in the absence of solvents which dissolve the esters formed, and of catalysts, with a group of derivatives from aromatic carboxylic acids consisting of the anhydrides and halides of such acids, the process being carried out in the absence of water.

4. As a new process the immunization of vegetable textile fibers by esterification, consisting in treating such cellulose fibers, which have not been converted into alkali cellulose in the presence of pyridine, and in the absence of solvents which dissolve the esters formed, and of catalysts, with a group of derivatives from benzoic acids consisting of the anhydrides and halides of such acids, the process being carried out in the absence of water.

5. As a new process the immunization of vegetable textile fibers by esterification, consisting in treating such cellulose fibers, which have not been converted into alkali cellulose, in the presence of pyridine, and in the absence of solvents which dissolve the esters formed, and of catalysts, with benzoyl chloride, the process being carried out in the absence of water.

In witness whereof I have hereunto signed my name this 21st day of August 1929.

ALBERT LANDOLT.