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GEORGES HEBERLEIN AND ALBERT BODMER, OF WATTWIL, SWITZERLAND

METHOD OF TREATING VEGETABLE FIBROUS MATERIAL AND RESULTING PRODUCT

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This invention relates to method of treating vegetable fibrous material and resulting product, and more particularly to subjecting such material to a plurality of acid treatments to produce swelling actions for the production of permanent finish effects.

The object of the invention is to produce improved permanent finish effects in cellulosic or vegetable fibrous material by swelling actions.

Further objects and advantages of the invention will more fully appear from the following description wherein a preferred manner of carrying out the invention to produce a linen effect is set forth by way of example; but the invention will be more particularly pointed out in the appended claims.

It is already a well known practice to treat vegetable fibrous materials with various mineral acids such for example as nitric, sulphuric and hydrochloric acids, for the purpose of attaining by swelling actions, various permanent finish effects, for example transparent effects, linen effects and other effects. Even a plurality of treatments with acid have been used, combined if necessary with a treatment with caustic alkali.

In all these well known processes the procedure has hitherto been, without exception, that in each instance after a swelling reaction has taken place by one acid treatment the swelling was interrupted before the next acid treatment was commenced. The interposed washing process in every instance resulted in bringing about a coagulation of the material that was subjected to the swelling action.

Now, it has been found that various novel, technically valuable effects are produced if, in case of a twofold or multiple swelling with acids, this coagulation between two swelling operations is obviated, i. e., if the swelling action by the second acid treatment is a direct continuation of the first without interruption, so that one swelling stage merges directly into another. These novel effects may be attained by means of various concentrated mineral acids under suitable conditions, by means of alternating their swelling action upon cotton without any intermediate coagulation. Between the acid treatments the excess of the first acid is removed while maintaining the swelling process. This operation consists in the fact that the acid in the material is pressed out, squeezed out, or centrifuged, etc., whereupon a further treatment with acid immediately ensues without any intermediate washing or otherwise permitting a coagulation of the material.

On economic grounds the removal of the first acid must be effected as exhaustively as possible, but on the other hand only to such an extent that the state of swelling is not interrupted thereby.

The applicability of the process comprises all possible vegetable fibrous materials in any form. Thus, for example, cotton may be improved either raw, bleached, or mercerized, as a fabric or loose. The effects that are obtained are different according to the type of the fabric and of the swelling agents employed. In this way wool-like and soft, stiff and transparent, and also linen-like qualities may be obtained with or without a lustrous effect. By means of suitable handling, as will be understood by those skilled in the art in the light of this disclosure. it is also possible to proceed in such manner that in the action of the swelling agents the fabric is not changed through and through, but that the swelling takes place only on one side and superficially. With this invention there is always produced an increased effect of the swelling in comparison with that due to an individual swelling action by one of the acids used, or to the same number of swelling actions where an intermediate coagulation is permitted between such acid actions.

Example of execution

Fine previously treated cotton muslin is first laid loosely into sulphuric acid of 50° Baumé and after the swelling has taken place the muslin is freed from the excess of sulphuric acid by squeezing out, and is immediately immersed in nitric acid of 43° Baumé. Whereas the two agents applied by themselves are capable of effecting merely a densification of the fabric, there is produced by

the new process a stiff semi-transparent effect of a peculiar character with considerable contraction of the fabric.

While we have described the invention in detail with respect to one embodiment thereof, it will be understood by those skilled in the art, after understanding the invention, that various changes and modifications may be made without departing from the spirit or scope of the invention, and in the appended claims we aim to cover all such changes and modifications.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. Method of producing permanent finish effects on cellulosic material which comprises subjecting the material to a plurality of swelling actions, each by concentrated mineral acid under swelling conditions, and without permitting an intermediate coagulation of the material between such actions.

2. Method of producing permanent finish effects on cellulosic fabric, which comprises subjecting the fabric to a swelling action by a concentrated mineral acid, removing the excess acid from the material and again subjecting the material to a swelling action by a concentrated mineral acid without permitting an intermediate coagulation of the material between such actions.

3. Method of producing permanent finish effects on cotton fabric, which comprises subjecting the material to a plurality of swelling actions each by a different concentrated mineral acid, and without permitting an intermediate coagulation of the material between such actions, and before the second of said actions removing the excess acid from said material.

4. The method of producing permanent finished effects on cellulosic material which comprises subjecting the material to a plurality of swelling actions, each by concentrated mineral acid under swelling conditions, the acid employed in one treatment differing from the acid employed in the succeeding treatment and without permitting an intermediate coagulation of the material between such actions.

In testimony whereof we have signed our names to this specification.

GEORGES HEBERLEIN.
ALBERT BODMER.