

# UNITED STATES PATENT OFFICE.

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## METHOD OF TREATING FIBERS.

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Specification of Letters Patent.

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No Drawing.

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*To all whom it may concern:*

Be it known that we, HERBERT R. MOODY and LEWIS HENRY FRIEDBURG, both citizens of the United States, residing, respectively, at No. 330 Convent avenue, New York city, and No. 601 West 148th street, New York city, New York, have invented certain new and useful Improvements in Methods of Treating Fibers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the treatment of tropical fibers and particularly such fibers as those of the various varieties of banana tree and similar tropical vegetation in order to produce a material adapted for use as paper stock or for other purposes.

We have found that from such tropical fibers the constituents of the trunk or stalk other than the fibers can be dissolved or removed, by a simple procedure and treatment, so as to leave the fibers free for use either as paper stock or for other purposes.

The treatment to which such fibers are accorded comprises the immersion of the material in an electrolyzed brine such as electrolyzed sea water so that the material is sufficiently disintegrated to separate the fibers and leave them in good condition for the purposes mentioned.

In the preferred practice of the invention the material is subjected to such a liquid by immersing it in sea water and passing an electric current of proper strength through the solution to effect the electrolysis. For this purpose proper electrodes are used, such as magnetite electrodes, which will not act upon or be acted upon by the liquor, thereby obviating any pollution of the final product by particles or products of disintegration of the electrodes. We have found that by a simple treatment of the material with the solution resulting from the electrolysis, and preferably with such solution resulting from electrolysis in the presence of the material, and by suitable electrolysis without contamination or pollution of the liquor by products of disintegration from the electrodes, it is possible to disintegrate the material sufficiently to leave the inclosed fibers separated, and also bleached by the same operation. The entire procedure thus takes place in a single operation. Where the electrolysis is first performed and the material

then immersed in the resulting liquor, a similar action takes place with similar or corresponding advantages; but we consider it more advantageous to produce the treating liquor by electrolysis while the material to be treated is immersed therein.

The material to be treated is thus, according to the present invention, subjected to the liquid solution formed by the electrolysis of the mother liquor, and, when the material is immersed in the liquor during the electrolysis, to the gases produced by the electrolysis as well as to the products resulting from the interaction of the gases and other products of the electrolysis. During the treatment, the amperage used is suitably regulated, this being kept below 10 in practice.

It will thus be seen that the novel process of the invention is one of notable economy, using as it does a material such as sea water and requiring a simple apparatus for the electrolysis and for the immersion of the material to be treated. Sea water is not only available in unlimited amount, but it is of a composition which particularly adapts it for use in the process of the invention; such sea water containing not merely sodium chlorid but other useful constituents.

It will further be noted that the process of the invention is one which is effected without subjecting the material to digestion at high temperatures under pressure and without subdivision or dissection mechanically of the cellular tissue of the material but that the disintegrating and bleaching operation can be effected at ordinary temperatures by simply bringing the material to be treated into proper reacting relation with the solution such as the liquor which is undergoing electrolysis, this treatment being continued until sufficient electrolysis and disintegration has taken place.

At the end of the operation the fibers may be subjected to such familiar operations as beating, washing, and drying and then used for paper making or as fabric material or for various other purposes for which they are adapted.

Prior to their treatment in the manner above described, the tropical fibers are preliminarily separated from any adhering outer husks or substances not adapted for treatment according to the invention and the material to be treated is sliced. Thus, the only additional apparatus for the practice of the invention, aside from the apparatus for

producing the electrolysis and for subjecting the material to the electrolyzed solution, is a suitable device such as a slicer. However, even the slicer may be unnecessary where the slicing of the material is done by hand.

We claim:

The method of treating the fibers of banana trees and similar tropical fibers for the production of paper pulp or stock or other purposes, which comprises subjecting

such fibers to the disintegrating action of an electrolyzed sea water by electrolyzing such saline water with the material immersed therein and thereby bleaching and disintegrating the same; substantially as described.

In testimony whereof we affix our signatures.

HERBERT RAYMOND MOODY.  
L. HENRY FRIEDBURG.

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