

CLASSIFICATION OF TEXTILES & FIBERS, FOR MISSING COPY.

United States Patent Office.

EDWIN T. RICE, OF NEW YORK, N. Y.

*Letters Patent No. 100,071, dated February 22, 1870; antedated February 10, 1870.***IMPROVED PROCESS OF BLEACHING AND CLEANING VEGETABLE FIBERS.***The Schedule referred to in these Letters Patent and making part of the same.**To all whom it may concern.*

Be it known that I, EDWIN T. RICE, of the city and State of New York, have invented and made certain Improvements in the Process of Treating and Bleaching cotton flax and other vegetable fibers; and I do hereby declare the following to be a full, clear, and exact description of the said invention and of the features that distinguish the same from previous processes.

There are found in cotton, as well as in most vegetable fibers adapted to textile fabrics or to paper stock, certain resinous or gummy substances which impede the action of the usual bleaching agents, and it is necessary to modify or to remove these substances from the fibers in order to prepare and bleach them successfully.

To effect this object the fibers are sometimes boiled in alkaline solutions, and are sometimes subjected to fermentation and then boiled in alkaline solutions.

Cotton yarns and fabrics are usually boiled repeatedly and for several hours at a time in alkaline solutions, to prepare them for the action of chlorine or other bleaching agents. Acid solutions also have been used in treating vegetable fibers, to neutralize the alkaline substances or bleaching agents that remain in the fibers after the alkaline or bleaching applications have been made, in order to prevent injury or damage to the fibers, as well as to promote the bleaching operation.

It is well known, however, that the processes referred to now commonly in use embrace many distinct operations, and require much time, apparatus, and skill. They are also relatively expensive, and they impair the strength, quality, and substance of the fibers, and the yarns and fabrics made from such fibers.

I have used with success acid solutions and heat to soften and remove the resinous or gummy substances of vegetable fibers, applied as is described in the specification attached to Letters Patent No. 92,098, issued to me by the United States Patent Office and bearing date June 29, 1869, and I have found this process especially valuable to soften and remove the resinous or gummy substances of cotton fibers.

My invention consists in combining the first two following operations, and with them the other operations named.

First, I steep the fibers, yarn, or fabric, in a weak acid solution in the manner and to the degree directed in the specification before referred to.

Second, I steep, wash, or scrub the fibers, yarn, or fabric in ordinary soap-suds, or in a weak alkaline solution, at a temperature above 100° and below 212° Fahrenheit.

(At this stage I find that a wash or scrub in this solution continued from ten to twenty minutes, or a steep

continued from thirty to sixty minutes, affords sufficient treatment.)

Third, I then apply in the usual manner chlorine or other bleaching agents.

Fourth, I then apply in the usual manner an acid solution.

Fifth, I then repeat the second operation above described.

After each of the operations above named, I prefer to rinse thoroughly the fibers, yarn, or fabric in cold or heated water, so that as little as possible of one solution shall be carried by the fibers, yarn, or fabric to the next solution.

The several operations named may be conducted in the vats ordinarily used in treating and bleaching fibers, yarns, or fabrics, and with or without mechanical appliances for squeezing, working, or wringing the same, or for carrying them in and out of the solutions used during the treatment.

By this combined process I am enabled to shorten and make cheaper the bleaching operation, and to finish yarns or fabrics without impairing materially their strength, quality, or substance. For example, by steeping cotton yarns or fabrics in the souring solution, as prescribed, for about one hour, the resinous or gummy substances of the fibers are so acted upon that they are readily removed. Then, after a rinse, by washing the yarn or fabric in ordinary soap-suds at a temperature of about 160° or 170° Fahrenheit, or by steeping the yarn or fabric in such soap-suds or a weak alkaline solution at the same temperature for about an hour, and by rinsing the same thoroughly in pure water, the yarn or fabric will be so thoroughly prepared that the action of chlorine in bleaching the fibers will be more prompt and effective than when the fibers, yarn, or fabric are prepared in the usual manner.

A bath given to cotton yarns or fabrics thus prepared in chlorinated water of the strength of about 2° Twaddels, continued for about ten or fifteen minutes, will usually be sufficient, with the subsequent souring bath and soap-suds or alkaline wash, to complete the bleaching operation.

The yarns or fabrics, while under treatment in the soap-suds or alkaline solutions, may be boiled. I prefer, however, that the temperature be kept below the boiling point in this as in every other stage of my treatment. The strength, substance, and beauty of the fibers are better preserved by carefully avoiding the boiling point of temperature.

In treating and bleaching fibers having a heavier resinous or gummy protection or coating than cotton, the duration of the several operations above detailed should be increased, but the bleaching of such fibers treated and prepared in this way will be found to be

much shorter, simpler, and cheaper than when treated and prepared in the ordinary manner.

When the fibers, yarn, or fabric are not sufficiently treated or bleached by a single course of treatment, the operations named may be wholly or partially repeated with safety and advantage until satisfactory results are attained.

Different grades and conditions of fibers, yarns, or fabrics, and different conditions of chemical solutions, will require somewhat varied applications of the treatment described, in order to insure uniform results.

Some of the advantages of this method of treating and bleaching vegetable fibers are these: Less apparatus, less space, less time, less fuel, less chemicals in quantity and value, and less labor are required to treat and bleach vegetable fibers by this than by other known methods, and the fibers, yarn, and fabric are, when

bleached, left in better condition than when treated and bleached in the usual ways.

What I claim and desire to secure by Letters Patent is—

1. The combined process of treating vegetable fibers, yarns, or fabrics, substantially as herein described, preliminary to the application of chlorine or other bleaching agents.

2. The combined process of treating and bleaching vegetable fibers, yarns, or fabrics, substantially as described herein.

Dated August 2, 1869.

EDWIN T. RICE.

Witnesses:

GEO. D. WALKER,
GEO. T. PINCKNEY.