UNITED STATES PATENT OFFICE.

JOHN D. CHEEVER, OF NEW YORK, N. Y., ASSIGNOR TO THE NEW YORK BELTING AND PACKING COMPANY, LIMITED, OF ENGLAND.

PROCESS OF TREATING FIBROUS MATERIALS FOR PRESERVING SAME.

SPECIFICATION forming part of Letters Patent No. 504,199, dated August 29, 1893.

Application filed April 22, 1892. Serial No. 430,264. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN D. CHEEVER, of the city, county, and State of New York, have invented a new and useful Improvement in Processes of Treating Fibrous Materials for Preserving the Same, which is fully set forth in the following specification.

My invention relates to the preparation of woven cotton or other fibrous material, suitable for that class of hose, or tubing, or pipes, which consists of a tube woven from such fibrous material, and having an interior tube or lining of india rubber or its compounds, or other analogous substances. Such woven cotton or other fibrous material, may also be used for belting and packing, and for other purposes.

The principal object of my invention is to render the fabric, and the articles into which it enters, more durable and lasting, when exposed to dampness, water and other deteriorating influences.

My invention also has a secondary advantage, in that it gives to the fabric and to the articles into which the fabric goes, a better finish and commercial value. This is especially true of hose, tubing and pipes.

I will now describe how my invention may be used and practiced, by one skilled in the art to which it pertains. As a matter of convenience, I will describe it in connection with the manufacture of hose, but this description will be sufficient to enable it to be used and practiced in connection with the manufacture of other articles by those skilled in the art. I prepare a solution of catechu or cutch in hot water, in about the proportion of four pounds of catechu or cutch to ten gallons of water. A fibrous tube, made by methods well known to those skilled in the art, is immersed in this solution, and when the immersion has lasted a proper length of time, it is drawn through rollers to remove the liquid. I have found that an immersion of twenty to thirty minutes and a temperature of about 212° Fahrenheit, will ordinarily be sufficient and effective, but the proportionate amount of catechu or cutch, the temperature, and the period of immersion, may be greatly varied. The fibrous tube is then immersed in a solution of bi-chromate of potassium in water, in the proportion of about two pounds to ten gallons of water. When the immersion has lasted a proper length of time, it is drawn through rollers to remove the liquid. I have found that an immersion of twenty to thirty minutes, and a temperature of about 212° Fahrenheit, will ordinarily be sufficient and effective, but the proportionate amount of bi-chromate of potassium, the temperature and the period of immersion, may be greatly varied. The fibrous tube is then rinsed off in a bath consisting of a solution of creosote in cold water, in the proportion of about four pounds to ten gallons of water, but these proportions may be greatly varied. The fibrous tube is then dried and lined, by methods well known to those skilled in the art.

The separate as well as the co-operative effects of the above described baths upon the material under treatment are as follows:—The catechu bath, containing about fifty per cent. of tannic acid and about forty-four per cent. of mucilaginous and resinous matter, imparts to the fiber (through the effect of the tannic acid) a dull orange color. The mucilaginous and resinous matter in this solution becomes incorporated into the fiber, filling the interstices thereof, thereby making the goods stronger and more durable, as well as water-repellent, and tending to a certain extent to make it also insect repellent. The principle office of the bath in the solution of bi-chromate of potassium is to set the mucilaginous and resinous matter which is deposited somewhat temporarily by the catechu solution, making this matter insoluble, and acting by itself to strengthen and set the fiber. The bath in this solution also changes the color of the material to a very serviceable dark maroon. If desirable the last bath in the creosote solution may be omitted, but it is advantageous on account of the antiseptic qualities which creosote has. It is insect repellent, but as regards these two properties, they are developed to a sufficient degree for ordinary purposes by the action of the first two solutions. As a precautionary step it is advisable to subject the material to the creosote bath, but I do not limit my invention to this last step.

The fiber from which the tubes are braided or woven, may be treated in thread or twine previous to braiding, with like advantages. The treatment is substantially the same as that heretofore described for the fibrous tube.

The fibrous tube which has been treated as hereinbefore set forth will possess the following characteristics, by which it may be distinguished: It is more durable and less liable to decay and deterioration from the elements, it has a peculiar reddish brown color, without any coloring matter being applied other than that which is contained in the baths with which it is treated, which color is quite durable, and the article has a neat appearance and finish.

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

1. The herein described process of treating fibrous material for the purposes specified consisting in successively subjecting it to the action of solutions of catechu and bichromate of potassium, substantially as described.

2. The herein described process of treating fibrous materials for the purposes specified consisting of successively subjecting it to the action of solutions of catechu, bichromate of potassium, and creosote, substantially as and for the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN D. CHEEVER.

Witnesses:
VICTOR E. BURKE,
ROBERT J. CUMMINGS.