UNITED STATES PATENT OFFICE.

FRANCIS J. OAKES, OF NEW YORK, N. Y.

PROCESS OF MORDANTING.

SPECIFICATION forming part of Letters Patent No. 601,673, dated April 5, 1898.

Application filed June 11, 1897. Serial No. 640,365. (No specimens.)

To all whom it may concern:

Be it known that I, FRANCIS J. OAKES, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Mordanting Processes, of which the following is a specification.

This invention relates to a method for producing a mordant deposit of a chromium compound on any textile material, using for this purpose commercial tannic acid and either soluble chromates or bichromates in an acid or neutral bath.

According to my improvement, after appropriate cleansing, the textile material, whether fiber or fabric of vegetable or animal origin or a mixture of fibers or fabrics of different origins, is first placed into a bath consisting of a solution of commercial tannic acid, such as extracts of hemlock, chestnut, nutgalls, sumac, or any other product consisting of tannic acid. The textile material thus treated is freed from the surplus tannic-acid liquor and is then passed into a chrome-bath, when a rapid change takes place and chromium is deposited in an insoluble form upon the fiber or fabric. Upon this mordanted material the desired color is then dyed.

In carrying out my improvement, after suitable cleansing, the fiber or fabric is immersed in a bath consisting of a solution of tannic acid, such as hemlock, chestnut, nutgalls, sumac, or pure tannic acid.

I may make a suitable solution by dissolving twenty-five pounds of commercially-pure sumac extract in a sufficient quantity of water to enable me to immerse one hundred pounds of the fiber or fabric. The temperature of this bath will vary from an ordinary room temperature to the boiling-point of the solution. The length of time of immersion will also vary from a few minutes to twenty-four hours, both temperature and time depending upon the nature and texture of the material under treatment. The material is now freed from the surplus tannic-acid liquor in a suitable manner—as, for example, by wringing with the hands or by nipping between rollers or by subjecting to the action of a centrifugal machine. Then the fiber or fabric will be subjected to a chrome-bath—as, for instance, to a solution consisting of bichromate of soda or potash or ammonia, either with or without a free acid, or to chromic acid. Upon immersion in this bath a rapid change takes place and chromium in an insoluble form will be deposited on the fiber. The temperature of this bath will vary from room temperature to the boiling-point of the solution, and the time from a few minutes to several hours, depending upon the nature and manufacture of the fiber or fabric. The amount of tannic acid or of chrome taken will depend upon the depth of the shade to be subsequently dyed upon the mordanted fiber or fabric. When this process is completed, the material is washed and is then ready for the actual dyeing operation. The fiber or fabric thus prepared will be thoroughly and evenly impregnated with the chromium compound, having great affinity for dyestuffs. For example, I may wish to produce a black, and use for this purpose twenty pounds of logwood extract dissolved in an amount of boiling water sufficient to cover the one hundred pounds of textile material, and after immersing the material boil the same gently for one hour, when it will be dyed a full black.

As my process is suited alike to animal and vegetable fiber, it is applicable and of course advantageous for fabrics composed of both.

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

The process of mordanting a fiber or fabric consisting in first subjecting it to a solution of tannic acid, and afterward subjecting it to a bichromate or chromic-acid bath, thus fitting it for dyeing with any desired color, substantially as specified.

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

FRANCIS J. OAKES.

Witnesses:

WM. R. CHRISTMAS,

JOHN L. GOLDEN.