

# UNITED STATES PATENT OFFICE.

DWIGHT ASHLEY, OF PATERSON, NEW JERSEY, ASSIGNOR TO THE ASHLEY  
& BAILEY COMPANY, OF SAME PLACE.

## PROCESS OF SILKIFYING COTTON.

SPECIFICATION forming part of Letters Patent No. 653,014, dated July 3, 1900.

Application filed October 6, 1899. Serial No. 732,784. (No specimens.)

*To all whom it may concern:*

Be it known that I, DWIGHT ASHLEY, a citizen of the United States, residing in Paterson, county of Passaic, and State of New Jersey, have invented a new Process of Treating Cellulose Substances; and I 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.

The object of this invention is to impart to cotton or other cellulose material employed in the textile art a luster and "feel" such as animal filaments, and particularly silk, inartificially or naturally possess as compared with vegetable fibers.

It is a well-known fact that by virtue of their causticity pure alkalies—such as sodium, for instance—are excellent corrosives or solvents of animal matter. It is also recognized, as best exemplified by the original mercerizing process pure and simple, that alkalies, and especially caustic soda or pure sodium, exert an influence on cellulose materials, and especially cotton ones, which results in the contraction of the more or less collapsed hollow bodies or cells of which their filaments are composed. It is principally these two qualities of alkalies upon which my process for treating cotton or other cellulose materials is based, and it is in the process hereinafter particularly described and finally embodied in the clauses of the claim whereby these two qualities are brought into action that this my present invention consists.

In treating cellulose material, such as cotton, in accordance with the principles of my invention a quantity of silk is dissolved in a strong alkaline solution, preferably of caustic soda, and in the bath thus produced the cotton yarn (supposing that to be the particular material to be treated) is placed. Essentially and in order to effect the combination of the silk with the cotton which is to give to the latter its luster and feel the above are the only ingredients and steps necessary in the treatment, the solution not only providing a convenient medium for effecting the uniformly-diffused combination, but by virtue of its causticity acting upon the fibers of the cotton, so that they mechanically hold

the substantive part of the solution, which comprises principally silk. However, in order to render the effects of the treatment more thorough and permanent a somewhat more elaborate process hereinafter particularly set forth and involving additional ingredients of an auxiliary nature is by preference resorted to.

By my process the cotton is not only given the luster and feel similar to silk, but its weight is increased, the relative tenacity of its fibers, and consequently its own strength, made greater, and it is rendered considerably more receptive and susceptible to the action of all dyes, these latter being the qualities of cotton treated according to the process of the inventor Mercer.

The preferred treatment above mentioned may be thus described: A bath (5° Baumé) consisting of caustic soda, (ninety-eight per cent. sodium,) twenty-five pounds; silk, fifty pounds; gelatine, three per cent., and sumac, two per cent. is prepared, and in this bath the cotton is immersed, being kept therein for about half an hour and meantime worked. The additional ingredients herein referred to—i. e., the gelatine and sumac—act auxilially, the former as an additional medium for maintaining the combination mechanically effected between the cotton and the silk in solution and as a softener of the fibers of the cotton and the latter as a preservative of the silk, the property of sumac for arresting the proneness of animal matter toward decomposition being well known.

Although I have above described, in the paragraph immediately preceding, that process whereby I prefer to carry out the principles of my invention, it is to be understood that I consider my invention no less comprehensive than a process which consists merely in subjecting cotton or other cellulose material to the action of a bath constituting a solution of which silk and an alkali strong enough to appreciably act upon the cotton fibers in accordance with the common mercerizing process and so that they will hold the silk are the ingredients.

I do not desire it to be understood that I broadly claim the combination or bringing together, with the assistance of an alkali or



similar substance, of the cellulose material and the silk, so as to impart to the former some of the qualities of the latter; nor will a careful perusal of the language hereof, in fact, sustain such an interpretation; but I do desire it to be understood that I consider it well within the scope of my invention to employ an alkali as a convenient medium for first introducing or conveying the silk (which it holds in a more or less dissolved or disintegrated state and which must of course exist in appreciable quantities and well disseminated in the solution) into the cells or hollow bodies composing the cellulose materials and for thereupon effecting the collapse or contraction of said cells so that the partial or complete closure of each cell results in the mechanical holding and retaining of the silk permanently.

The yarn may of course be dyed either before or after subjecting it to my process; but, as has been proven by actual experience and practice, it is best that in order to render the effects of the dye permanent and substantial the colors be applied previously, while black is to be applied subsequently.

One important advantage other than those already named which my process involves is that of economy, in that waste silk may be resorted to for dissolving the alkali and so used up instead of being discarded, as is now often done.

Though in Mercer's process pure and simple an objection is encountered in that the contraction of the cotton fibers produces an undesirable shrinkage of the yarn, it will be apparent that in so far as my invention involves Mercer's process this objection may be overcome in any of the various ways that have been since invented and patented with this end in view.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described process of treating cotton or other cellulose material which consists in subjecting said material to a bath composed of silk and an alkali of appreciable causticity, substantially as described.

2. The herein-described process of treating cotton or other cellulose material which consists in first dissolving silk in an alkaline solution to form a bath and in subsequently subjecting said material to the action of said bath, substantially as described.

3. The method of effecting a combination of silk with cotton or other cellulose material which consists in first subjecting the silk to the action of an alkaline solution so as to dissolve said silk in the alkaline solution and in then subjecting the cotton, or other cellulose material to the action of the silk-laden alkaline solution, so as to first impregnate the cells thereof with the particles of silk and then contract them, substantially as described.

4. The herein-described process of treating cotton or other cellulose material which consists in preparing a solution comprising an alkali, silk, and sumac and in immersing said material in said solution, substantially as described.

5. The herein-described process of treating cotton or other cellulose material which consists in preparing a solution comprising caustic soda, silk, sumac and gelatine, and in immersing said material in said solution, substantially as described.

DWIGHT ASHLEY.

Witnesses:

JOHN W. STEWARD,  
JOSIAH J. BAILEY.