

UNITED STATES PATENT OFFICE.

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TREATMENT OF TUSSAH-SILK COCOONS.

SPECIFICATION forming part of Letters Patent No. 354,222, dated December 14, 1886.

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To all whom it may concern:

Be it known that I, HENRY R. RANDALL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Processes of the Treatment of the Wild Tussah Cocoons and other Silk and Vegetable Fibers, of which the following is a specification.

My invention relates to the treatment of silk cocoons and their fibers, or silk waste or other raw silk, as well as vegetable fibers, but it has especial reference to the treatment of what are known as the "wild tussah cocoons," the purpose being to remove the natural color of the fiber and to cleanse the same by separating the gummy matter, leaving the fiber without color and in a lustrous and perfectly clean condition, ready for the carder and spinner.

The invention consists in the process or method of treatment hereinafter fully set forth, and definitely pointed out in the claims annexed to this specification.

While my invention is, as already stated, applicable to the treatment of other fibers, it is especially intended for use with the wild tussah cocoons, which in their natural state contain a coloring-matter of a brownish or yellowish cast, which has hitherto prevented the use of this quality of fiber to any considerable extent, as it will not admit of being dyed in light shades, nor does it readily take the darker dyes, by reason of the presence of the natural color referred to. In consequence the wild tussah cocoon has long been, comparatively speaking, a cheap or even worthless product.

It is one of the purposes of my invention to so treat this class of silk fiber as to render it available for all the purposes of the more valuable grades, enabling it to be dyed of any one of the light and delicate tints, thoroughly disintegrating the fiber, and imparting to it a high luster without injuring its strength or impairing its quality.

In practicing my invention I first take the wild tussah cocoons and thoroughly wash them in warm water, after which they are dried, and preferably sprinkled with some saponifiable oil, such as lard-oil, although any other may be used. I then boil the cocoons in a solution of any one of the following salts,

viz: a stannate, aluminate, plumbate, silicate, or borate of either sodium or potassium, or an alkaline solution of zinc oxide. I may also use ammonio-plumbic oxide, ammonio-zinc oxide, or ammonio-stannic oxide. The solution may consist of any one of the above-named salts in the proportions, substantially, of one to two ounces to a gallon of water, though these proportions may be considerably varied. I usually make a saturated solution of the salt and then add it to the water in the amount desired. The boiling in this solution may be continued for a time, which must be determined by the results produced, the state of the fiber at any stage being a sufficient guide to the operator. After boiling until decolorization and disintegration are both effected, the solution is drawn off and the fiber is thoroughly washed with hot water, removing thereby all coloring-matter which has been rendered soluble by the treatment pursued, or which, though insoluble, has been removed from the fiber by the solution and remains mingled with other foreign matter in the form of small dark particles among the fiber and salts which remain still in the fiber, which is afterward dried. It is then ready for carding and spinning.

The preliminary washing of the cocoons may or may not be practiced without essentially modifying the final result. Also, in treatment with the solution, as above described, it is not necessary to raise the temperature to the boiling-point, since the same result may be accomplished by steeping the cocoons at a lower temperature, but for a proportionately longer time. The essential steps of my process, therefore, are the treatment with a solution of one of the metallic salts mentioned above and subsequently washing the fiber.

In treating the cocoons with saponifiable oil, as described, the glycerine thereof is liberated directly in the fiber. When soap is used in place thereof, this result is not produced, as the glycerine is formed without and will not enter the fiber.

The chemical salts named above have the property of yielding the alkali of the base slowly, and consequently the action of the same upon the fiber is much less violent and less corrosive, while at the same time it is more com-

plete and free from all danger of injury to the silk.

By this invention I produce from the wild tussah cocoon a raw-silk fiber which is white or whitish in color, is possessed of great strength, has a high luster, and which may be dyed of any light and delicate tint equally well as with silk of the most costly grade.

Having thus described my invention, what I claim is—

1. The process hereinbefore set forth for the treatment of the wild tussah cocoons or other silk fiber or silk waste, said process consisting in first washing the cocoons, then subjecting them to the action of a heated solution of stannate of sodium, or in lieu thereof one of the other chemical salts specified, then washing in hot water, and finally drying the same, substantially as described.

2. The process hereinbefore set forth for the treatment of the wild tussah cocoons or other silk fiber or silk waste, said process consisting in first washing the cocoons or fibers, then

treating them with a saponifiable oil, then treating them in a hot solution of stannate of sodium, or in lieu thereof one of the other chemical salts specified, then washing and finally drying the same, substantially as described.

3. The process hereinbefore set forth for the treatment of the wild tussah cocoon or other silk or vegetable fiber, said process consisting in first washing the cocoons or fibers, then sprinkling them with a saponifiable oil, then subjecting them to the action of a heated solution of stannate of sodium, or in lieu thereof one of the other chemical salts specified, in the proportions substantially as specified, then washing with hot water, and finally drying, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY R. RANDALL.

Witnesses:

JAMES L. NORRIS,

JOS. L. COOMBS.