

# UNITED STATES PATENT OFFICE.

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## PROCESS OF TREATING SILK.

SPECIFICATION forming part of Letters Patent No. 792,218, dated June 13, 1905.

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*To all whom it may concern:*

Be it known that I, FREDERICK JOCHEN, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Methods of Treating Silk, of which the following is a specification.

My invention relates to and has for its object improvements in the method of treating silk. The greater part of all silks are now weighted with tin or other metallic or mineral salts. When mineral and metallic weighting materials are precipitated upon the silk fiber as microscopically-fine grains or crystals, they have a cutting or chafing action on the fiber and damage or weaken it more or less by the friction to which the silk is exposed in the spooling, winding, and weaving processes and by the subsequent use.

The object of my invention is to overcome the deteriorating effect of the weighting, and I accomplish this object by first treating the silk by metallic or mineral salts in the usual manner, then washing it, then treating it by an alkaline bath containing both casein and phosphate of soda, and then washing it, whereby the weight of the silk is increased and greater durability imparted to it.

In carrying out my process the silk which is to be weighted is first put through a bath of bichlorid of tin or other metal salt and then wrung and washed in the usual way. The washed silk is treated by a slightly alkaline bath of phosphate of soda of about 5° Baumé, to which sufficient casein is added to bring it up to 7° or 8° Baumé. The bath is to be kept at the full strength by adding phosphate of soda and casein in the proper proportion as needed, and its temperature is, by preference, kept between 130° and 150° Fahrenheit. After the treatment with the alkaline solution the silk is again washed and wrung out. The treatment of the silk with metallic salt and subsequently by the alkaline solution of casein and sodium phosphate may be repeated in the same order until the desired effect is produced.

In place of the casein equivalent albuminous

substances may be used—such as alkaline solution of egg albumen, blood albumen, plant albumen, &c. The bath is tested with the hydrometer after each passage, and as many passes may be given as are now generally given under the old processes.

By my process a considerable percentage of the casein becomes fixed on the previously-weighted fiber, the thread is swelled, and its weight, pliability, and durability are increased. The silk retains its feel absolutely, has a higher luster than hitherto obtained, and is in excellent condition for working, spooling, winding, weaving, &c. Silk when thus weighted will take dyes almost the same as pure silk, and it does away with the difficulty which the dyers now experience in obtaining even and uniform colors, especially of dark and full shades in silks weighted with metallic salts only.

If it should be desired to dye black, I use the salts of iron instead of bichlorid of tin, but otherwise proceed exactly as above described and achieve the same results.

I am aware that casein has been used in the process of preparing silk, also that sodium phosphate has been used; but these materials have not, before my invention, been applied together and in the manner specified—that is, not by first weighting the silk by a metallic salt or metallic salts, such as bichlorid of tin, and then after wringing and washing treating the silk by an alkaline bath containing both casein and sodium phosphate, by which latter process superior results are obtained. No precipitation is formed in an alkaline bath containing casein and sodium phosphate; but in carrying out my invention a precipitation is formed by this alkaline bath upon silk previously treated by bichlorid of tin or other metal salt or salts and this previous deposit changed in its nature.

Having thus described my invention, I claim—

1. The process of treating silk which consists in first subjecting the same to the action of a metal-salt bath in the usual manner, then washing the silk, then treating it in a bath

consisting of an alkaline solution of an albuminous substance and sodium phosphate, and then again washing it.

- 5 2. The process of treating silk which consists in first subjecting the silk to a metal-salt bath in the usual manner, then washing the silk, then treating it in a bath consisting of an alkaline solution of casein and sodium phosphate, and then again washing it.
- 10 3. The process of treating silk, which consists in first treating the silk in a bath of tin

bichlorid in the usual manner, then washing the silk, then treating it in a bath consisting of an alkaline solution of casein and sodium phosphate, and then again washing it.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 7th day of October, 1904.

FREDERICK JOCHEN.

Witnesses:

CHAS. LYON RUSSELL,  
JOHN O. SEIFERT.