Patented Aug. 18, 1931 1,819,241

UNITED STATES PATENT OFFICE

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PROCESS FOR THE TREATMENT OF RAYON AND THE PRODUCT PRODUCED THEREBY

No Drawing. Application filed January 24, 1928. Serial No. 249,211.

My invention relates to processes for removing the natural lustre of rayon and refers particularly to processes whereby the degree of de-lustring is capable of control and the products obtained thereby.

The natural appearance of many rayons is of an extremely high glossy, or glassy, character, which is commercially objectionable and, hence, many attempts have been made to so de-lustre the fiber, or fabrics made therefrom, as to give it the appearance of the less lustrous natural silk.

There are, however, certain properties and uses of rayon which made a proper de-lustring of the fiber extremely difficult, among which may be mentioned the following:—The fiber is very sensitive to temperatures, which have the effect of weakening its tensile strength, thus depreciating its value; as rayon is employed in a dyed condition, a successful process must be one which will not affect the shade, clarity or brilliancy of the dyeing and must not interfere with the softness and silk-like finish; as different fabrics require different degrees of brilliancy, the process should be of such a character that its de-lustring effect can be easily and positively controlled.

The following processes are among those which have been suggested for this purpose.

It has been suggested that the rayon fiber be boiled in water but this process weakens the fiber, interferes considerably with the color and has little de-lustring effect.

It has been further suggested that the rayon be boiled in a solution of soap, Turkey red oil and soda ash, but this process is impractical as it also weakens the fiber and interferes considerably with the color with little de-lustring effect.

Another suggested method is to treat the rayon with sulphuric acid and follow by a treatment of barium chloride, thus precipitating barium sulphate upon the fiber. This process has a decided effect upon the dyed shades, making them much duller and the results are uneven because of the impossibility of uniform covering of all parts of the fiber, or fabric, with the barium sulphate in fine powder form, resulting in a product having varying degrees of lustre and, hence, producing an undesirable product. Further this process offers no means for controlling the degree of de-lustring.

My process overcomes all of the above-mentioned, and other, objectionable features of the described processes and presents a means whereby a rayon may be evenly de-lustred without injuring the face, and strength of the fiber and without practical change to the dyed shades and their clarity, while allowing perfect control of the degree of de-lustring.

The gloss of rayon is largely produced by the reflection of light by the ridges of a very great number of longitudinal grooves which are incident to rayon fiber.

It is evident that any process which interferes with these longitudinal ridges will change the physical character of the fiber and decreases its tensile strength.

It is further evident that the deposition of any opaque salt within the grooves will decrease the clarity and change the shades of the dyed results.

I have found that partially opaque waxes can be employed as de-lustring agents, without affecting the strength and feel of the fiber, and without practical effect upon the dyed shades or their clarity and that it can be employed in such a manner as to make the degree of de-lustring effect within control.

I have found that these desirable results can be obtained by treating the rayon with a volatile solution of certain partially opaque waxes, among which I mention carnauba wax, Montan wax, candelilla wax and yellow beeswax.

For purposes of utility, I prefer to dissolve the wax in a non-inflammable volatile solvent, adding, if necessary, for softening purposes, an oil, or fatty substance soluble in the solvent employed.

The following is one example of a method employed for the carrying out of my invention.

One-half part of carnauba wax and one-half part of white mineral oil are dissolved in 99 parts of carbontetrachloride. The rayon fabric is immersed, deprived of ex-

cess liquor and dried. The lustre of the rayon is thus greatly reduced to approximately the lustre of natural silk, the clarity of the dyed shades is not affected and the softness of the fiber is retained.

If the amount of wax given above be reduced to one-half the stated quantity, the de-lustring effect is approximately midway between the original rayon and that produced by the given example.

It will, therefore, be seen that the degree of lustre can be accurately controlled and that entirely new and attractive fabrics can thus be produced, which could not be obtained otherwise. Further, that by immersion of rayon skeins in de-lustring solutions of different strength and by weaving these skeins, rayon fabrics can be produced with new and valuable designs, which could not be obtained before.

I have further found that the de-lustring effect of partly opaque waxes is obtainable by combining such waxes with suitable printing pastes and printing de-lustred designs on glossy rayon fabrics.

By the word "rayon" in my specification and claims I mean those textile fibers produced artificially from cellulose and its compounds.

I do not limit myself to the particular times, temperatures, quantities, materials or steps of procedure herein mentioned and described as these are given simply as a means for clearly explaining my invention.

What I claim is:—

1. In a process for de-lustring rayon, the steps which comprise applying a solution of a partially opaque non-saponified wax in a volatile solvent to the fiber and drying.

2. In a process for de-lustring rayon, the steps which comprise applying a solution of a partially opaque non-saponified wax and a colorless softening agent in a volatile solvent to the fiber and drying.

3. In a process for de-lustring rayon, the steps which comprise applying a solution of carnauba wax in a volatile solvent to the fiber and drying.

4. In a process for de-lustring rayon, the steps which comprise applying a solution of carnauba wax and a colorless softening agent in a volatile solvent to the fiber and drying.

5. As a new product, a de-lustred fabric containing rayon having carnauba wax incorporated therewith.

6. As a new product, a de-lustred fabric containing rayon having a partially opaque non-saponified wax incorporated therewith.

Signed at New York city in the county of New York and State of New York this 23rd day of January, 1928.

JOSEF HIRSCHBERGER.