

UNITED STATES PATENT OFFICE.

HENRY DREYFUS, OF LONDON, JOHN FREDERICK BRIGGS, OF SPONDON, NEAR DERBY, AND HAROLD REGINALD SEPTIMUS CLOTWORTHY, OF DERBY, ENGLAND, ASSIGNORS, BY MESNE ASSIGNMENTS, TO AMERICAN CELLULOSE AND CHEMICAL MANUFACTURING COMPANY LIMITED INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

MANUFACTURE AND APPLICATION OF FIBERS AND FABRICS.

No Drawing.

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To all whom it may concern:

Be it known that we, HENRY DREYFUS, a citizen of the Swiss Republic, of London, England, JOHN FREDERICK BRIGGS, of Spondon, near Derby, England, and HAROLD REGINALD SEPTIMUS CLOTWORTHY, of 39 Wilfred Street, Derby, aforesaid, both subjects of the King of Great Britain and Ireland, have invented certain new and useful Improvements in or Relating to the Manufacture and Application of Fibers and Fabrics, of which the following is a specification.

It is known that cellulose acetate can be made into artificial silk by spinning or extrusion processes, the silk usually consisting of a number of individual filaments associated together as a thread, with or without twisting, or consisting, in the case of so-called artificial chappe or "spun" silk, of more or less short lengths of filaments or threads spun together similarly to spun or floss silk.

We have now found that artificial silks, filaments, threads or fibers made with cellulose acetate can be transformed into products resembling wool, hair, fur or other animal fibers by submitting them to treatment whereby they become more or less crinkled in appearance and have their lustre removed to a greater or less extent according to the degree to which the treatment is carried.

The treatment may consist in subjecting the artificial silk, filaments or fibers to hot or boiling water or steam, the crinkling effect being more or less pronounced and the lustre of the artificial silk or filaments being more or less reduced or removed, according to the intensity and duration of the treatment. By suitably regulating or graduating the treatment, filaments, threads, fibers or products can be produced giving the most various effects, for example a wool-like or hair-like products having still nearly the full lustre of the artificial silk, or only part of the lustre, or only a little lustre or no lustre.

All of such various filaments, threads, fibers or products have their applications in different trades.

A further advantage of the invention is that artificial silk threads subjected to the

treatment have their covering power increased thereby.

Instead of hot or boiling water or steam one can also use other substances or agents having a similar effect for the treatment, for instance sulphocyanide solutions or acetic acid of any suitable strength, for example aqueous solutions of ammonium, potassium, or calcium sulphocyanide of 15, 20, 25 or 30% strength, or acetic acid of 20, 25, 30 or 35% strength, though we in no way limit ourselves to these concentrations. According to the concentration, temperature and duration of the treatment different effects can be produced. In using chemical substances such as just referred to, however, it is usually preferable to work at or about ordinary temperature.

Instead of the above-named substances, others may be used having the same effect, and in short any other treatment giving similar effects of crinkling and decrease of lustre to a greater or less extent, may be employed.

The products obtainable by the present invention are capable of very various applications in industry, including all kinds of yarns and fabrics, artificial furs, plushes and so forth. Also owing to the great air-imprisoning capacity of the threads, fibers or fibrous masses obtainable by the invention the products are valuable for clothing and for heat insulation purposes in general.

The treatment may be applied to the filaments, fibers or threads of cellulose acetate or to fabrics of or containing the same.

Also in making piled, plush-like or fur-like fabrics the treatment may be applied to them after production of the fabric, or may be applied to the filaments, threads or fibers for use in such fabrics.

Instead of cellulose acetate silk threads, filaments or fibers one can also use silk threads, filaments or fibers of any other cellulose esters, or fabrics of or containing the same.

The artificial silk may be subjected to the treatment in hank or any other suitable form but not wound on bobbins or otherwise in a state of tension, as it has been found that when the silk or filaments so treated are dried under tension the original lustre

and straightness thereof tend to be restored.

For the purpose of the invention, the threads of associated filaments from the spinnerets or spinning machines may be wound direct into hank or like form on hanking frames or other devices, thus avoiding the complication and expense of winding on to numerous bobbins and of afterwards winding into hank or other form, for the treatment. Such a method is especially interesting when it is desired to make an artificial chappe or spun silk for subjection to the treatment, as the hanks can be simply cut up into suitable lengths for spinning or twisting together to chappe or spun silk form and be afterwards subjected to the treatment.

Example 1.

Cellulose acetate silk threads of associated filaments, twisted or not, are exposed for about 5 to 10 minutes to boiling water, and are then squeezed out or pressed and dried. The resulting threads will have lost some of their lustre, and become crinkled, softer to the touch and woolly in appearance. These effects vary with the duration of treatment. If the treatment is carried on longer, for instance for an hour, these effects are still more pronounced. In carrying the treatment sufficiently long one reaches the state where the lustre has completely disappeared.

Example 2.

Cellulose acetate threads are immersed in water at about 80° C. for about an hour and are then squeezed out or pressed and dried. The effects are similar to those referred to in Example 1 and are more pronounced as the treatment is prolonged.

Example 3.

Cellulose acetate silk threads are exposed to a 25% solution of ammonium sulphocyanide in the cold for 2 to 3 hours, squeezed out and dried. The silk crinkles and loses its lustre progressively with the time of treatment. If, instead of using a 25% solution, a 30% solution is employed, the point where the fibers completely lose their lustre may be reached very quickly.

It is to be understood that the foregoing examples are only explanatory and in no sense limitative.

It is further to be understood that the invention comprises the application of filaments, threads or fibers of cellulose acetate or other cellulose esters, and of fabrics of or containing the same for the production of threads, fibers or fabrics showing the effects of wool, hair or other animal fibers as referred to.

Artificial chappe or threads made from

threads or filaments of cellulose acetate or other cellulose esters, by taking such threads in hank or any other form, cutting them up into more or less short lengths and spinning or twisting the same into chappe or spun thread form, may be subjected to the crinkling and delustering treatment after the cutting up and spinning or the treatment may be applied before the cutting up and spinning.

What we claim and desire to secure by Letters Patent is:

1. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose ester or fabrics of or containing the same, to the action of a crinkling and delustering agent.

2. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose ester, or fabrics of or containing the same, to the action of a fluid agent whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried.

3. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose ester, or fabrics of or containing the same, to the action of a fluid agent whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried, and subsequently drying them without tension.

4. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose ester, or fabrics of or containing the same, to the action of water at high temperature whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried, and subsequently drying them without tension.

5. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose ester, or fabrics of or containing the same, to the action of boiling water whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried, and subsequently drying them without tension.

6. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising winding lustrous threads or filaments of cellulose ester direct into hank-like form, cutting up into short lengths, spinning into chappe

form and subjecting to the action of a crinkling and delustering agent, substantially as described.

7. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose acetate or fabrics of or containing the same, to the action of a crinkling and delustering agent.

8. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose acetate, or fabrics of or containing the same, to the action of a fluid agent whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried.

9. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose acetate, or fabrics of or containing the same, to the action of a fluid agent whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried, and subsequently drying them without tension.

10. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose acetate, or fabrics of or containing the same, to the action of water at high temperature whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried,

and subsequently drying them without tension.

11. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising subjecting lustrous filaments, threads or fibers of cellulose acetate, or fabrics of or containing the same, to the action of boiling water whereby they are crinkled and delustered to a greater or less extent according to the degree to which the treatment is carried, and subsequently drying them without tension.

12. A process for the manufacture of products showing the effects of wool, hair or other animal fibers, comprising winding lustrous threads or filaments of cellulose acetate direct into hank-like form, cutting up into short lengths, spinning into chappe form and subjecting to the action of a crinkling and delustering agent, substantially as described.

13. As new products, filaments, threads, fibers, piled, plush-like, fur-like and other fabrics consisting of or containing filaments, threads or fibers of crinkled and delustered cellulose ester showing the effects of wool, hair or other animal fibers.

14. As new products, filaments, threads, fibers, piled, plush-like, fur-like and other fabrics consisting of or containing filaments, threads or fibers of crinkled and delustered cellulose acetate showing the effects of wool, hair or other animal fibers.

In testimony whereof we have hereunto subscribed our names.

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