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PROCESS OF OPENING AND PREPARING ARTIFICIAL-STAPLE FIBERS

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This invention relates to processes for preparing artificial staple fibers for spinning, and is concerned more particularly with a procedure for opening up masses of fibers of artificial silk or the like,—cut up in the form of so-called "artificial staple fibers",—and subjecting the fibers to such chemical and physical treatments as to leave them in the form of a soft fiber material with a structure similar to cotton, and especially to preserve and heighten the luster, soften the fiber, crinkle it, leave the proper amount of moisture in it and give it the proper feel.

Artificial silk fibers,—cut in the form of so-called artificial staple fibers,—as produced cannot be spun or otherwise worked up into textile materials, because the fibers form resistant masses of a harsh character, the individual fibers adhering to each other. The fibers being perfectly straight, it would be difficult to spin them even if they could be separated from each other.

An object of the present invention is to provide a process for preparing such fibers for spinning, so as to be able to produce, from the spun product, a fabric of a very soft and pliable character which is not easily distinguished from silk, and has good wearing qualities.

It is another object of the invention to provide a unitary bath treatment for masses of artificial staple fiber which will at once accomplish all of the above mentioned results and will leave the fiber, when brought out and dried, in proper condition as explained.

In general, the process according to the present invention comprises the essential operation of treating the before-mentioned masses of these staple fibers as they are shipped from artificial silk producing plants in a bath which will convert these harsh masses of fibers into fibers not adhering to each other but having characteristics making them adapted for use in spinning which characteristics are comparable with those of cotton or other textile raw material.

For this purpose I make use of an aqueous bath containing a softening ingredient such as glycerine, a crinkling agent such as caustic soda, an agent for imparting hygroscopicity to the fiber such as pinol, and an agent for improving the "feel" of the fiber such as oil soap flakes.

A preferred mixture for one hundred gallons of water contains 3 gallons of glycerine, 1 gallon of caustic soda solution of 1% strength, ½ gallon of soft soap, ½ gallon of pinol and from ½ to 5 gallons, preferably about 1 gallon of oil soap flakes. The artificial staple fibers are soaked in it for a considerable period at a moderate warm temperature.

When fully treated they are taken out and dried. After drying, the fibers will be found separated and in a fine soft condition with a silk luster and crinkly in form so that they can be spun.

By the term "soft soap" I understand a kind of soap known also under the name "green soap" which is made from linseed oil and potassium hydroxide being a yellowish-green, slippery, soft mass soluble in hot water and hot alcohol. An "oil soap" is a soap made of olive oil and sodium carbonate known as castile or Marseilles soaps.

The two kinds of soap are not used for cleaning purposes as the staple fibers are received in a clean condition and are still very clean when this process is applied to them. The soft soap is emulsified with the glycerine and thickens the liquor so that it will hold the fibers together. The oil soap contains a trace of sulfuric acid and gives life and a silky feel to the fiber. The glycerine is used for softening the fiber. The caustic soda or soda ash is used to produce a crinkling of each fiber when finally dried. The pinol gives luster and humidification, that is, it holds some water in the fiber even when dried by the ordinary processes. The acid improves the feel of the fiber and the fabric produced therefrom.

In place of the above substances I can use for softening: "Monopol" oil, "Monopol Brilliant" oil, sulfonated castor oil, sulfonated tallow, sulfonated olive oil, oleic acid, "tetrapole", "Verapole" or trichlorethane. To effect the luster I may use: "Enodrine", "Perkentol", "Isomerpine" glucose, or glycerine. To improve the hygro-

scopicity of the fibers there may be used: magnesium chloride, calcium chloride, zinc chloride, glucose, mono-acetic acid ester or glycerine. Acetic acid or formic acid may be used to improve the "feel" of the goods.

It will be seen, therefore, that by the use of the substances which are specified as preferable, I secure the several results indicated above. It will also be seen that the several equivalents mentioned indicate the classes of compounds which can be used in the place of the preferred ones mentioned. It is to be understood also that in some cases the exact number of ingredients is not required. Although I have described various equivalents of the compounds to be used, I am aware of the fact that further modifications can be made in the process without departing from the scope of the invention as expressed in the claims.

Therefore, I do not wish to be limited to the exact ingredients specified, except as expressed in the claims, but what I do claim is:—

1. The process of preparing artificial silk fiber for spinning which consists in treating the fiber at a moderately warm temperature in a bath of water containing an oil soap having a trace of sulfuric acid therein, glycerine, caustic soda and pinol.

2. The process of preparing artificial silk fiber for spinning which consists in treating the fiber at a moderately warm temperature in a bath of water containing for about 100 gallons of water about 3 gallons of glycerine, about 1 gallon of caustic soda solution of 1% strength, ½ to 1 gallon of pinol and ½ to 5 gallons of oil soap flakes containing a trace of sulfuric acid therein.

In testimony whereof I have hereunto affixed my signature.

MEINRAD F. THOMA.