UNITED STATES PATENT OFFICE.

GEORGE J. GREGERSON, OF MILLBURN, NEW JERSEY.

METHOD OF TREATING ANIMAL HAIR FOR TEXTILE PURPOSES.

SPECIFICATION forming part of Letters Patent No. 265,597, dated October 10, 1882.

Application filed March 4, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE JENS GREGERSON, a citizen of the United States, residing at Millburn, in the county of Essex, State of New Jersey, have invented a new and Improved Method of Treating Animal Hair for Textile Purposes, of which the following is a specification.

The hair of domestic animals in its natural tubular condition is formed in layers containing numerous fine fibers which are connected together by foreign substances, in which condition it is difficult to be united either alone or with fibers from the finer animals at present used for textile purposes.

The object of my invention consists broadly in treating the hair of domestic animals—such as oxen, bulls, cows, calves, goats, horses, &c.—to deprive it of the foreign, binding, horny substances naturally combined in the same, at the same time changing the tubular form by splitting them into straight, fine, soft, split fibers of different lengths to obtain a product which has the utility of being used as a substitute for fibers from the finer animals, now in use for textile purposes, to be mixed and united with the same for use in spinning, weaving, and felting. The method by which this is accomplished consists in submitting the hair to the action of boiling in a mixture of chemical ingredients, whereby their combined action upon the horny substances that bind the different fibers of which the hair is composed together changes the different several salts of which it consists into chlorides, which are dissolved by said chemicals—such as alum, muriatic acid, and a compound mixture of nitric acid, water, and mercury, or their chemical equivalents which form chlorides and nitrates with muriatic and nitric acid—as, for instance, soda, lithium, copper, zinc, and tin, &c.—to be used according to the different nature of the hair, and to serve the purpose of obtaining a product which is a split, straight, fine, soft fiber of different lengths.

To carry my invention into effect I proceed in the following manner: I fill a suitable open vessel of an oval form three-fourths full of water. In said vessel is adjusted a Hollander machine operating on the same principle as in use for making papier-maché, the only difference being in the steel bars in the roller and the bars in the bed-plate, which have straight edges for paper-making, whereas for my purpose the edges are set up in short points about one and one-half inch apart. The vessel is also provided with means for boiling by steam-pipes previously arranged. When the water is at the boiling-point I mix for each one hundred pounds of hair to be treated a composition of eight pounds of commercial alum, twelve pounds of muriatic acid, and a mixture of four ounces of mercury, eight ounces of nitric acid, and two ounces of water which has been left standing for twelve hours.

The above-named composition of chemicals is stirred with the boiling water in the vessel, and the hair thrown into the vessel, and the whole left boiling. In a short time the hair commences to swell, and the outer layer opens in split fibers. I then set the machine to work, which, by its quick motion, turns the contents in the vessel, and the matter all has to pass in succession between the roller and the bed-plate, between which is just so much space as not to have the surfaces bear upon each other and prevent shortening the fibers, but adjusted so as to strip them off through their full length. The chemicals have meanwhile had a chance to act on the second layer, which opens like the first, and so is one layer worked off after another, and the hair has changed its tubular form by being split into straight, soft, fine, split fibers of different lengths, the whole separation being accomplished in from four to eight hours, according to the quality of the hair. The liquid is now drawn off, and a new liquid composed of four pounds of ammonia for each one hundred pounds of fibers and so much water as to fill the vessel is poured over the fibers, and heated to about 180° Fahrenheit, and the roller set at work for one-half an hour until all the acids left in the fibers from the first separation are neutralized. Then the liquid is drawn off and the fibers transferred to a centrifugal machine for discharging the liquid absorbed by the fibers, after which they are dried either by means of steam or fire. After the fibers are dry they are partly felted together more or less. In this state they are not available for the market. I therefore use such machinery as will best enable me to separate the felted parts—as, for instance, a "devil" or a "breaker" will

do the work; and then I separate the finer and coarser grades by blowing-machines such as generally used in hat-forming mills. The product is then ready for the market, the finest grades for mixing with fur for hats, and the coarser grades for mixing with wool for spinning, weaving, and felting.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The process of treating the hair of domestic animals, such as hereinbefore specified, with a compound of commercial alum, muriatic acid, and a mixture of mercury, nitric acid, and water, by boiling the hair in the said compound, stripping off the fibers by a Hollander machine, drawing off the liquid and neutralizing with ammonia and water, as hereinbefore substantially described, and for the purpose described and set forth.

2. The changing of the tubular form by splitting the hair of domestic animals, such as hereinbefore described and specified, treated and changed into straight, fine, soft, split fibers of different lengths, as herein described, and for the purpose described.

3. The new product, a split, straight, soft, fine fiber, obtained by the process as substantially described, and for the purpose described.

GEORGE JENS GREGERSON.

Witnesses:

CHARLES H. SMITH,

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