UNITED STATES PATENT OFFICE.

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PROCESS OF SOFTENING WOOL.

SPECIFICATION forming part of Letters Patent No. 671,760, dated April 9, 1901.

Application filed May 2, 1899. Serial No. 715,363. (No specimens.)

To all whom it may concern:

Be it known that we, JULES AUGUSTE JOSEPH FLORIN and HENRI LOUIS LAGACHE, citizens of the Republic of France, residing in Roubaix, Nord, France, have invented certain new and useful Improvements in Processes for Softening Chlorinated or Halogenated Wool, of which the following is a specification.

It is well known that wool treated with chlorin or other halogens, such as bromin or iodin, commonly known as "chlorinated" wool, becomes dry, hard, and harsh to the touch; and it is the object of the present invention to render such wool, by the treatment to be hereinafter described, soft and supple and also to restore to it that elasticity and quality which it possessed previous to chlorinating. By reason of the ability to restore to the wool its primitive characteristics after chlorinating this last-named treatment may be carried to such an extent as to render the restored wool practically unshrinkable.

It will not be necessary to describe the ordinary or known process of chlorinating or halogenating further than to say that ordinarily the wool, previously moistened in a bath of water acidulated with sulfuric acid, is put in a bath containing chlorid of lime, (bleaching-chlorid.) When the wool is removed from this bath, it is treated according to our method, which will now be described. After rinsing the wool or wool fabric is put in a vessel containing an aqueous solution of sodium carbonate of sufficient strength to neutralize any free acid yet remaining in the wool, where it remains until there is no acid reaction. Then it is removed and wrung out or the liquid drained therefrom. The wool after being taken out of the neutralizing-bath is put into the softening-bath. This bath may be made by dissolving in water a salt of a tetravalent metal in which the metallic hydrate is feebly held. The tetravalent metals, as is known, are aluminium, iron, chromium, and tin. The salts of these metals, which readily give up their hydrates, may be divided into three classes. The first class includes the basic mineral salts—as basic alum, for example. The second class includes the organic salts, such as the acetates, oxalates, tartrates, sulfocyanates, &c. The third class includes the combinations of the hydrates of these metals with potash or caustic soda—as sodium aluminate, for example.

The bath may be made with any one of the above salts—as aluminium acetate, for example—and fifty liters of the aluminium acetate at 12° Baumé may be mixed with one thousand liters of water to form the bath. If another salt of those specified be employed, a corresponding amount in weight will be used. The wool, either in fiber or fabric, is allowed to steep in this bath for about one hour. It is then removed, rinsed, and dried in the open air.

The softening-bath is not exhausted by use, and it may be used continuously by merely adding a little of the salt to maintain it at the proper strength. By heating the bath the action will be accelerated.

The wool or woolen fabric from the softening-bath will still be harsh to the touch at first; but it loses this harshness in time, and after drying it will be found soft and supple.

The neutralizing of the acid in the halogenated wool can be effected either before or after the softening treatment. The order of these steps is not very important.

Having thus described our invention, we claim—

1. The herein-described process of softening halogenated wool or wool fabric, which consists in immersing same in a bath in which is dissolved a salt of a tetravalent metal in which the hydrate is feebly held or retained.

2. The herein-described process of treating halogenated wool or wool fabric, which consists in neutralizing the acid in the said material, and immersing same in an aqueous bath of a salt of a tetravalent metal in which the hydrate is feebly held or retained, the order of said treatment being immaterial.

3. The herein-described process for softening wool or wool fabric rendered harsh

by strongly chlorinating or halogenating it, which consists in exactly neutralizing the free acid remaining in the material, immersing the material in an aqueous bath of a salt of a tetravalent metal, and finally exposing the material for several hours to the air.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

JULES AUGUSTE JOSEPH FLORIN.
HENRI LOUIS LAGACHE.

Witnesses:
GUSTAVE ALFRED G. DEREANY,
CHARLES LOUIS CYRUSS.