UNITED STATES PATENT OFFICE.

JEAN BAPTISTE FRÉZON THE ELDER, OF PARIS, FRANCE.

IMPROVEMENT IN TREATING MIXED FABRICS PREVIOUS TO DYEING.

Specification forming part of Letters Patent No. **147,887**, dated February 24, 1874; application filed January 23, 1874.

To all whom it may concern:

Be it known that I, JEAN BAPTISTE FRÉZON the elder, of the city of Paris, France, have invented certain Improvements in the Treatment and Preparation of Fabrics Made from Wool, Silk, and other Animal Products or Material, of which the following is a specification:

The primary object of this invention is the killing of vegetable matter in woolen, silk, and other fabrics made of animal products or material, and it essentially differs from the processes heretofore adopted for cleaning coarse wools or destroying vegetable matter therein, and is designed to be applied to the fabric, and not to the raw material. My invention consists in treating woolen and silk fabrics containing vegetable matter or impurities by exposing the fabric to a heated acid bath containing a mordant, for simultaneously destroying vegetable matter in the fabric, and thus preparing said fabric for the dyeing or bleaching operation.

It may here be observed that the subjecting of the fabric, after exposure in the acid bath, to heat of a high temperature is essential to a thorough destruction of vegetable impurities in the fabric, and, by using a mordant in the acid bath, time and labor are economized, and the fabric is less "fatigued" than when subjected to a number of separate operations.

Jig-mills likewise may be dispensed with, and much waste is avoided, also hand work known as burling and mending.

The chemical agents which are used to destroy the vegetable matter or impurities in the fabric may either be vegetable or mineral acids, including all the chlorides—such as chlorides of iron and magnesium, lime, zinc, or aluminum. It is preferred, however, to use sulphuric acid in quantities or of a strength varying with the material to be treated or work to be done. For woolen fabrics a concentration of from 2° to 10° Baumé will generally answer; furthermore, the exposure in the bath may either be cold or hot—that is, when the fabric is not required to be mordanted at the same time; but, generally, it is preferred to use warm water for the solution of a temperature not exceeding 30° to 40° centigrade. The duration of the fabric's exposure in the bath will also be varied.

The drying or heating of the fabric, after exposure in the acid bath, is preferably effected by means of a current or currents of hot air after the fabric has been well squeezed in a machine for the purpose. The temperature of such heated air should be increased with the strength of the bath; but it is not desirable that it should exceed 110° centigrade, to prevent injury to the fabric. Following such treatment the fabric is washed in cold or hot water, and afterward passed through a warm alkaline bath composed of fuller's earth and carbonate of soda, and the temperature of which should be 45° centigrade. After this the fabric is washed in clear water.

To prevent the animal base or matter of the fabric from being injured or destroyed by the chemical agents employed to kill the vegetable matters or impurities, said fabric is first soaked in clear water, then plunged into a bath of about 60° centigrade, composed, say, of alum or of sulphate of alumina, or of zinc, or of chloride of tin, acetate of lead, acetate of alumina, or, still better, of Frézon's tin mordant. The amounts used of these ingredients will depend much upon the nature of the fabric and other circumstances. Means are employed to agitate the fabric in this preserving bath for a period of twenty-five minutes, more or less, after which it is plunged into another bath heated to a temperature of about 90° centigrade, and containing saponaceous matters. The oily or greasy matters form the conservative part of the bath, and, in treating woolen fabrics, such may, in many cases, be omitted, for the reason that, in the usual preparation of such goods, the oil or greasy matter added to them during the process of "oiling" affords greasy matter enough to protect the fabric from the substances employed to destroy the impurities in the fabric. For silk goods the treatment is similar, and there should be a uniform exposure of the fabric in the acid bath, the temperature varying in an inverse ratio with the concentration of the acid, and the heating or drying part of the process should be done rapidly.

To simultaneously destroy the vegetable impurities in the fabric, and to mordant the latter preparatory to dyeing, there will be certain necessary changes, according to the shades it is required to dye the fabric. Thus,

for deep shades, in a sulphuric-acid bath of 1° Baumé, there should be added of chromate of potash about three per cent. of the weight of the fabric, and of alum as conserver of the animal matter, and of the mordant about two per cent. of the weight of the fabric. This bath being heated to about 110° centigrade, the fabric is plunged in it, and agitated there for one and a half hour, more or less. The solution is then slowly bailed from the bath, and the fabric afterward well squeezed, and afterward heated by driers to a temperature not exceeding 110° centigrade, to perfect the destruction of the vegetable impurities. After this the fabric is washed in several waters, and passed into a bath containing fuller's earth and a suitable alkali, such as urine or carbonate of soda, and is afterward rinsed thoroughly, when it is ready for dyeing of the required deep shade. Salts of iron and copper should be excluded from the mordant, inasmuch as they would be neutralized by the sulphuric acid.

For dyeing madder colors a like general treatment is observed; but there should be added to the bath about fifteen per cent. of the weight of the fabric of pure alum, and about one to two per cent. of oxalic acid, and about eleven per cent. of tartrate of potash.

For dyeing yellow colors, it is preferred to use in the bath Frézon's tin mordant to the extent of about ten per cent. of the weight of the fabric, of alum about ten per cent., and of curcuma from six to seven per cent.

For dyeing a plain white, the strength of the sulphuric acid in the bath should be about 5° Baumé, and its temperature not exceed 30° centigrade. About half of a kilogram of oxalic acid to each thousand liters of water should be added, and the fabric agitated in said bath for half an hour, more or less, and afterward be squeezed and dried, as before.

I claim—

The within-described process of treating woolen and silk fabric containing vegetable matter or impurities, by exposing the fabric to a heated acid bath containing a mordant, for simultaneously destroying the vegetable matter and preparing the fabric for dyeing or bleaching.

Witnesses: FRÉZON, PÈRE.

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