Patented Sept. 18, 1945

2,384,871

UNITED STATES PATENT OFFICE

2,384,871

TREATMENT OF TEXTILE FABRICS

Cyril Pearson Atkinson, Baildon, England, assignor to Courtaulds Limited, London, England, a British company

No Drawing. Application September 20, 1944, Serial No. 555,034. In Great Britain October 28, 1943

6 Claims. (Cl. 28—73)

It has long been known to subject textile fabrics to a raising process, which essentially consists in carding or brushing the surface by means of teasels or wire cards, with the object of producing a nap on the fabric. When this process is applied to fabrics which have been woven from staple fibre threads, either natural threads such as cotton and wool, or artificial staple fibre such as that produced from viscose or other solutions of cellulose or cellulose derivatives, the process or raising pulls out some of the loose ends of the short pieces of fibre, leaving them projecting from the surface in the form of a nap. It is possible, however, for some of the short fibres also to be broken into still shorter lengths. When the fabric which is subjected to the raising process is made from threads of continuous artificial filaments, some of these filaments are broken, and the ends then project from the surface of the fabric, forming a nap.

My invention relates to obtaining improved results in the raising of textile fabrics containing fibres selected from the group consisting of cotton, wool, regenerated cellulose and casein. I have now found that such textile fabrics with improved handle and appearance can be obtained if the fibres be treated with an intermediate resin, or the ingredients thereof, before the raising operation is performed, and then, after the raising, the intermediate resin be converted into the insoluble form. When carrying out this invention any suitable resin can be employed. I have found the resin obtainable from cyanamide and formaldehyde as described in the specification of Letters Patent No. 2,234,905 to be particularly useful, but other resins may also be used, such as the resin from urea and formaldehyde, and the resin obtainable from glycerine and phthalic anhydride. The intermediate resin can be applied to the fibres at any stage before the actual raising process; for instance it can be applied to the fabric after the same has been woven or knitted, and either before or after dyeing, or it can be applied to the thread before its conversion into fabric, or it can even be applied to the staple fibre, before this latter is converted into thread.

The following examples will serve to illustrate this invention, which however, is not limited to these examples. The parts are by weight:

Example 1

Two solutions are prepared as follows:

Solution A.—5,000 parts of neutral 40 per cent formaldehyde solution and 2,160 parts of urea are mixed together, caustic soda is added until the mixture has a pH of 9 to 9.5 and the whole heated for four minutes at the boil, or 10 minutes at 80° centigrade, cooled rapidly and the Solution A obtained by dissolving 40 parts of this precondensate mixture in 40 parts of water.

Solution B.—0.16 part of boric acid and 0.52 part of 50 per cent lactic acid are dissolved in 20 parts of water.

The impregnating solution is prepared by stirring Solution B into Solution A and is used immediately. A 100 per cent viscose rayon fabric, woven in 2 x 2 twill from rayon staple sold under the registered trade-mark "Fibro," which has been scoured, dyed and dried is treated on a pad mangle with the impregnating solution prepared above and the fabric is then dried in a stove at 60° to 90° centigrade. The fabric is then stentered to width and after conditioning raised on a card wire machine. The raised fabric is heated for 5 to 10 minutes at 135° to 140° centigrade and is stentered to width while live steam is blown through the fabric, preferably from the unraised to the raised side of the fabric in order to remove residual formaldehyde. The raised fabric obtained is of improved handle and appearance compared with a raised fabric which has not been given the resin treatment.

Example 2

A 100 per cent viscose rayon fabric made from 4.5 denier 2 inch matt rayon staple sold under the registered trade-mark "Fibro" is scoured, dyed and dried and then treated on a pad mangle with a padding liquor consisting of 4 per cent of cyanamide, 3 per cent of formalin (40 per cent formaldehyde) and 2 per cent of ammonium thiocyanate at a pH of 6.0. The padding should be carried out as soon as possible after mixing the solution. The fabric is dried at 60° to 90° centigrade and stentered to width. It is evenly damped with water and raised on a raising teasel gig. The fabric is then dried and heated for 5 minutes at 140° to 150° centigrade and stentered to width. Live steam may be blown through the fabric on the stenter to remove any residual formaldehyde.

If desired, a softening agent may be added to the impregnating solutions of Examples 1 and 2.

What I claim is:

1. A process of obtaining raised fabrics of improved handle and appearance which includes the steps of treating fibres with an intermediate resin, subjecting the fabric containing said fibres to a raising operation and thereafter converting the intermediate resin into the insoluble form.

2. A process of obtaining raised fabrics of improved handle and appearance, which includes the steps of treating fibres with an intermediate resin from cyanamide and formaldehyde, subjecting the fabric containing said fibres to a raising operation and thereafter converting the intermediate resin into the water-insoluble cyanamide-formaldehyde resin.

3. A process of obtaining raised fabrics of improved handle and appearance which includes the steps of treating fibres with an intermediate resin from urea and formaldehyde, subjecting the fabric containing said fibres to a raising operation and thereafter converting the intermediate resin into the water-insoluble urea-formaldehyde resin.

4. A process of obtaining raised fabrics of improved handle and appearance which includes the steps of treating regenerated cellulose fibres with an intermediate resin, subjecting the fabric containing said fibres to a raising operation and thereafter converting the intermediate resin into the insoluble form.

5. A process of obtaining raised fabrics of improved handle and appearance, which includes the steps of treating regenerated cellulose fibres with an intermediate resin from cyanamide and formaldehyde, subjecting the fabric containing said fibres to a raising operation and thereafter converting the intermediate resin into the water-insoluble cyanamide-formaldehyde resin.

6. A process of obtaining raised fabrics of improved handle and appearance which includes the steps of treating regenerated cellulose fibres with an intermediate resin from urea and formaldehyde, subjecting the fabric containing said fibres to a raising operation and thereafter converting the intermediate resin into the water-insoluble urea-formaldehyde resin.

CYRIL PEARSON ATKINSON.