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W. McC. CAMERON ET AL

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METHOD OF DELUSTERING KNIT FABRIC AND PRODUCT THEREOF

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Fig. 1.

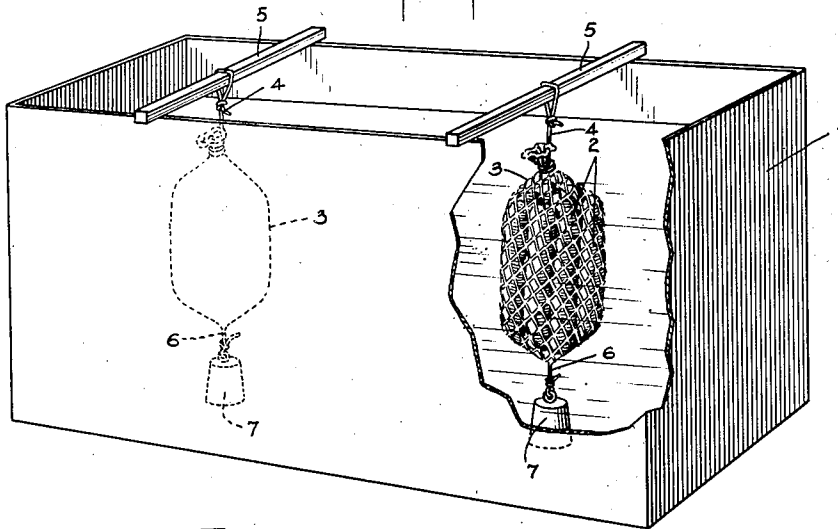


Fig. 2.

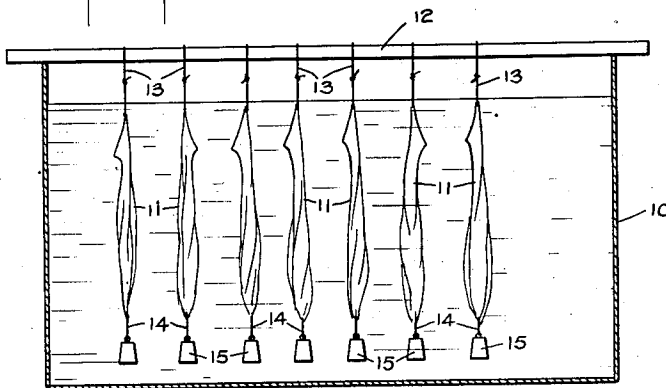
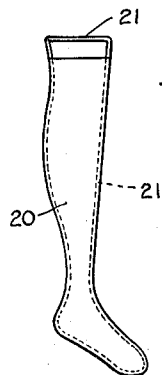


Fig. 3.



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METHOD OF DELUSTERING KNIT FABRIC
AND PRODUCT THEREOF

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9 Claims. (Cl. 8—20)

This invention relates to the subduing of the lustre of knit fabrics containing yarns of organic derivatives of cellulose, and relates more particularly to the treatment of knit hose containing

5 such yarns to subdue the lustre thereof.

An object of our invention is to subject knit fabric to a treatment which causes reduction of the lustre thereof, wherein the fabric is not caused to become distorted.

10 A further object of our invention is to treat hosiery containing yarns of organic derivatives of cellulose with a delustering agent, under such conditions that the hosiery does not become distorted or wrinkled. Other objects of our inven-
15 tion will appear from the following detailed description.

Often it is desirable to subdue the normally high lustre of knit fabrics containing yarns of organic derivatives of cellulose. The reduction
20 of the lustre of hosiery knit from such yarn is particularly advantageous, since hosiery of high lustre is not in great demand. However, when such knit fabric or hosiery is subjected to a delustering treatment under ordinary conditions,
25 the same become distorted and wrinkled, so that the resultant fabric or hosiery is of but little commercial value. We have found that if knit fabric or hose is subjected to the action of a delustering agent while the fabric or hose is either stretched
30 so that it cannot become distorted or wrinkled, or is in a substantially vertical position in respect to the wales or courses, a satisfactory product of subdued lustre may be produced.

In accordance with our invention, we prepare
35 knit fabric, hose or other wearing apparel of subdued luster and containing yarns of organic derivatives of cellulose and substantially free of wrinkles or distortions, by treating the same with any suitable delustering agent while the same is
40 in such a position that distortion or wrinkling is avoided or prevented.

Any suitable knit material may be treated in accordance with our invention. It may be in the form of circular or warp knitted fabric in the
45 piece, or it may be in the form of finished or semi-finished garments or wearing apparel, such as men's or women's hose, men's or women's underwear of all kinds, such as vests, bloomers, union suits, etc. The hose to be treated may be
50 either circular knit, or may be full fashioned, or may be made of warp knitted fabric. This is also true of the other wearing apparel that may be treated by our invention.

The yarns employed in the fabric or wearing
55 apparel may be made of any suitable organic de-

rivative of cellulose such as organic esters of cellulose and cellulose ethers. Examples of organic esters of cellulose are cellulose acetate, cellulose formate, cellulose propionate and cellulose butyrate while examples of cellulose ethers
80 are ethyl cellulose, methyl cellulose and benzyl cellulose. The fabric or hose need not consist wholly of yarns of these organic derivatives of cellulose but may also contain yarns of other fibres such as silk, cotton, reconstituted cellulose,
85 wool, etc.

Any suitable delustering agent may be employed in our process. Examples of such delustering agents are wet steam, water at or near the boiling point, say from 80° to 100° C. or hot
70 aqueous solutions containing soaps or other salts that promote the delustering action. The material may be delustered by the precipitation therein of a white insoluble salt such as barium sulphate or zinc sulphide. This may be done by treating
75 the same with a solution of an alkali earth salt, such as barium chloride, or a zinc salt such as zinc chloride, which solution acts as a swelling agent for the yarn and then precipitating the metal as an insoluble salt. Thus the barium salt may be
80 precipitated in the form of the sulphate by the addition of sulfuric acid while the zinc may be precipitated in the form of the sulphide by the addition of sodium sulphide. The solution of the salt itself may be a swelling agent, such as barium
85 sulphocyanide or a foreign swelling agent such as acetic acid may be added thereto.

During the delustering treatment the fabric or garment should be in such a position that distortion or wrinkling is prevented. The fabric or
90 garment may be stretched in a frame or on a tenter. As an example of this method, it may be stated that hosiery may be mounted on wire frames while being subjected to the delustering agent. In another form, the fabric or garment
95 may be suspended into the delustering bath and kept in the correct position by weights. As a variation of this process, the hose may be suspended in a frame by attaching the toe portion and the top portion by threads to opposite sides
100 of the frame. As still another form of carrying out the invention the fabric, garments or hose are placed in a net preferably in upright position so that the wales or courses are vertical, and the net containing the same is suspended in the de-
105 lustering bath, the bottom of the net being weighted to keep the same in suspension, in a substantially vertical position. As another variation of our process, a thread may be run through the toes of a number of hose, say a dozen pair and
110

then through the tops of the same, and these are suspended in a delustering bath, while anchoring the same by weights.

The delustering bath may also contain a dye for the fabric, in which case the knit fabric or wearing apparel is delustered and dyed simultaneously. If desired, the fabric or garment may be dyed either before or after the delustering treatment, but we prefer to do the same after such treatment, in which case no special precautions are necessary in the dyeing to avoid distortion or wrinkles.

By our process, knitted fabrics, hose or other wearing apparel containing the organic derivatives of cellulose having subdued lustre, but free of distortions or wrinkles, may be produced.

For the further understanding of our invention, reference is had to the accompanying drawing wherein

Figure 1 is a perspective view of a tank partly broken away containing women's hose to be delustered in accordance with one form of our invention,

Figure 2 is a perspective view of a tank containing hose suspended in a delustering bath in accordance with another form of our invention, and

Figure 3 shows hose mounted on a frame in accordance with still another form of our invention.

Referring to Figure 1, a tank 1 containing a delustering bath is provided and in this tank the women's hose 2 are suspended in bags 3 made of open mesh fabric. These bags 3 are suspended by the strings 4 from the rods 5 and are maintained in a vertical position by means of the weights 7 attached to the string 6.

The following mode of operating the form of our invention shown in Figure 1 is given by way of illustration. The women's hose 2, which may be either circular knit or full fashioned, and made entirely of yarns of an acetone soluble cellulose acetate, are grouped in bunches of one dozen pairs by running a sewing thread through the toe of each stocking. Five or more of these bunches of hose are placed in the net bag 3, which may be of any open mesh constructions that allows the liquor in the bath 1 to penetrate through the hose easily and the bag 3 is weighted down by the weight 7. The bath in the tank 1 is an aqueous solution containing 10 grams of soap per liter of bath, and is at a temperature of 95° C. After remaining motionless in this bath for 30 minutes, the hose are lifted and may then be dyed or finished in any suitable manner. The hose so treated has its lustre subdued in an even manner to a desirable extent, and is free of distortions and wrinkles.

Referring to Figure 2, there is shown another mode of carrying out our invention. In this form the hose 11 either singly or in multiples, are suspended by the toes or tops thereof from the rod 12 by the strings 13 in the chest 10. To maintain the hose in position, strings 14 having weights 15 are suspended from the lower portion of the hose.

As an example of a mode of carrying out our invention with the device shown in Figure 2, the following is given. The circular knit or full fashioned hose 11 of yarns of cellulose acetate are suspended in the chest 10, and steam at 80 lbs. per square inch live pressure is introduced therein for 20 minutes. However, since the chest 10 is not air-tight, the steam therein is at substantially atmospheric pressure and is wet. The hose 11 becomes delustered by the action of this

wet steam, and may afterwards be scoured and dyed in a dyeing drum at 75° C. with any suitable dye, after which it is rinsed and dried on hot forms. Evenly delustered hose free of distortions and wrinkles are produced in this manner.

Referring to Figure 3, the hose 20 is shown fitted over a wire frame 21 which keeps the same stretched. The hose containing cellulose acetate yarn, after being placed on the frame 21, may be run in an open tank containing a bath for 1 hour at 65° C., then ½ hour at 75° C., then ½ hour at 85° C., and finally ½ hour at 92-93° C. This bath may be in the form of an aqueous bath containing ½ gram of soap per liter of bath and 3 cc. of Turkey red oil per liter of bath. The hose are then removed from the wire frame 21, and may be dyed in a drying drum machine in any suitable manner. They are then rinsed and dried on a hot form, whereupon hose of even lustre and free of distortions or wrinkles are produced.

It is to be understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of our invention.

Having described our invention, what we claim and desire to secure by Letters Patent is:

1. The method of delustering knit fabric containing yarns of organic derivatives of cellulose comprising subjecting the fabric to the action of a delustering agent, while the same is under tension.

2. The method of delustering knit fabric containing yarns of cellulose acetate comprising subjecting the fabric to the action of a delustering agent, while the same is under tension.

3. The method of delustering knit hose containing yarns of organic derivatives of cellulose comprising subjecting the hose to the action of a delustering agent while the same is under tension.

4. The method of delustering knit hose containing cellulose acetate comprising subjecting the hose to the action of a delustering agent while the same is under tension.

5. The method of delustering knit fabric containing yarns of organic derivatives of cellulose comprising subjecting the fabric to the action of a delustering agent while the same is maintained in a substantially vertical position by tension.

6. The method of delustering knit fabric containing yarns of cellulose acetate comprising subjecting the fabric to the action of a delustering agent while the same is maintained substantially vertically by tension.

7. The method of delustering knit hose containing yarns of organic derivatives of cellulose comprising subjecting the hose to the action of a delustering agent while the same is maintained substantially vertically by tension.

8. The method of delustering knit hose containing yarns of cellulose acetate comprising subjecting the hose to the action of a delustering agent while the same is suspended substantially vertically.

9. The method of delustering hose containing yarns of cellulose acetate comprising placing bundles of said hose in a bag of open mesh construction, suspending said bag substantially vertically in a bath containing a delustering agent and maintaining said hose under tension.

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CERTIFICATE OF CORRECTION.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 141, claim 8, for "suspended" read maintained; and line 142, after "vertically" insert the words by tension; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 9th day of January, A. D. 1934.

F. M. Hopkins

(Seal)

Acting Commissioner of Patents.