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METHOD OF PRODUCING A WOOL FINISH ON COTTON GOODS

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This invention relates to the treatment of cotton fibre, yarn or cloth, hereinafter referred to as cotton goods, to produce a wool finish thereon.

The present commercial processes of producing wool finishes on cotton goods all, so far as we are able to learn, involve the treatment of the goods with a strong mineral acid. The actual practice of these processes, therefore, is very expensive both in equipment and in chemicals. The present invention aims to devise a process which will produce an entirely satisfactory wool finish and which can be practiced economically.

We have discovered that this object can be realized by treating cotton goods with a caustic alkali of approximately the strength used in mercerizing, the treatment being continued long enough to allow the cotton fibre of the goods to become thoroughly plumped or swelled, next removing a considerable part of the caustic from the goods, then drying the goods with heat while a part of the caustic still remains in them, and finally removing the remaining caustic.

Assuming, for example, that the goods to be treated consist of a woven fabric, a fabric is selected which has a loose weave since the goods shrink considerably during the treatment. This cloth is soaked in a solution of a chemical adapted to swell or plump the cotton fibre of the goods thoroughly, caustic soda preferably being used. The temperature at which the treatment is carried on can be varied widely from ordinary room temperatures down to considerably below zero C. The cloth remains in the caustic until the cotton fibres are thoroughly plumped or swelled, the cloth being allowed to shrink freely during the treatment. It is then removed from the bath, is given a quick wash in hot water, say for example, at 70° F., to partly remove the treating chemicals, some of the caustic, however, being left in the cloth. The fabric is then dried rapidly with heat, this drying operation preferably being performed by ironing or mangling the cloth. In commercial practice this operation may conveniently be performed by running the cloth through a can dryer of the type much used in textile mills. The drying of the cloth in this manner while it still contains part of the caustic, results in hardening the caustic in the goods and causing the fibres to curl and become stiffened and somewhat interlaced with each other or felted together. Subsequently the caustic remaining in the cloth is removed by washing.

This process produces an excellent wool finish and the finish is permanently retained. That is, the treated goods wash, bleach and dye without loss of their wool-like character. It absorbs direct dye stuffs much more readily than the untreated goods. A fabric treated in this manner has a much closer texture than the original fabric, is more elastic and has a higher tensile strength. Its fibres have the feel and elasticity which are characteristic of a piece of fine woolen fabric, and the goods resemble woolen cloth in appearance.

The finish may be further improved somewhat by washing the cloth after the ironing or drying operation above described in a bath containing alcohol, or certain salts, as for example, sodium chloride, ammonium acetate, calcium chloride and others, or a small quantity, say, 2% to 10% of an acid such as sulphuric, hydrochloric or nitric. After treatment in such a bath the goods are washed until they become neutral. The use of alcohol, salts, or weak acids in the bath in which the goods are washed, as just described, gives a somewhat softer finish.

While we have herein described a typical treatment for producing a wool finish, it will be understood that the exact procedure adopted may be varied considerably without departing from the spirit or scope of the invention. We regard it as very important, however, to the production of a satisfactory finish to permit the goods to shrink during the treatment in the caustic alkali and to iron or dry the goods while they still contain a part of the caustic.

Having thus described our invention, what we desire to claim as new is:

1. That improvement in the process of producing a wool finish on cotton goods which consists in subjecting the goods to the action of a caustic alkali of mercerizing strength un-

til the cotton fibre of the goods has become well plumped or swelled, allowing the goods to shrink freely during the action of the caustic thereon, washing a considerable proportion of the caustic out of the goods, drying the goods with heat while a part of the caustic still remains in them, and subsequently removing the remaining caustic from the goods.

2. That improvement in the process of producing a wool finish on cotton goods which consists in subjecting the goods to the action of a caustic alkali of mercerizing strength until the cotton fibre of the goods has become well plumped or swelled, allowing the goods to shrink freely during the action of the caustic thereon, washing part of the caustic out of the goods, ironing the goods while part of the caustic still remains in them, and subsequently removing the remaining caustic from the goods.

3. That improvement in the process of producing a wool finish on cotton fabrics, which consists in providing a loosely woven cotton fabric, subjecting said fabric to the action of a caustic alkali of mercerizing strength until the cotton fibre of the goods has become well plumped or swelled, allowing the goods to shrink freely during the action of the caustic thereon, washing the fabric so treated to partly remove the caustic therefrom, drying the fabric with heat while a part of the caustic still remains in the fabric, and subsequently removing the remaining caustic from the goods.

4. That improvement in the process of producing a wool finish on cotton goods which consists in subjecting the goods to the action of a caustic alkali for a sufficient length of time to permanently swell the cotton fibre of the goods, allowing the goods to shrink freely during said treatment, drying the goods with heat while a considerable proportion of the caustic remains in them, and subsequently removing such remaining caustic.

5. That improvement in the process of producing a wool finish on cotton goods which consists in subjecting the goods to the action of a caustic alkali for a sufficient length of time to permanently swell the cotton fibre of the goods, allowing the goods to shrink freely during said treatment, drying the goods with heat while a considerable proportion of the caustic remains in them, giving the goods an additional chemical bath to improve the finish, and subsequently washing the goods until they become substantially neutral.

In testimony whereof we have signed our names to this specification.

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