

UNITED STATES PATENT OFFICE.

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KNITTED FABRIC AND PROCESS OF MAKING SAME.

No Drawing.

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To all whom it may concern:

Be it known that I, HORACE T. FLEISHER, a citizen of the United States, residing at Elkins Park, county of Montgomery, and State of Pennsylvania, have invented a new and useful Improvement in Knitted Fabrics and Processes of Making Same, of which the following is a full, clear, and exact description.

One of the objects of my invention is to produce knitted fabrics, more especially hosiery, composed, in part, of artificial silk of a character which it has heretofore been impossible to knit because of its lack of tensile strength.

Another object of my invention is to produce knitted fabrics, more especially hosiery, which, upon being dyed with dyes in ordinary use in the textile industry, will produce peculiarly novel, distinctive and attractive effects.

Both these objects are attained in hosiery made in accordance with the process hereinafter described.

Artificial silk has heretofore been made of a stable, non-explosive compound or derivative of cellulose, a known process for its manufacture being to dissolve a cellulose ester, for example, cellulose acetate, in a high volatile solvent, as chloroform, and a low volatile solvent, as cresol, to which is afterward added a small quantity of a non-volatile material, as oleic acid, the solution being projected through fine orifices into a coagulating compound, as petroleum naphtha.

Artificial silk threads of this character, while possessing a beautiful lustre and having many excellent qualities cannot, in any practicable commercial way, be knit into hosiery on an ordinary knitting machine, because of the fragile character of the material. I have, however, succeeded, not only practically, but on a commercial scale, in making composite stockings and half hose, composed in part of artificial silk and in part of cotton, by proceeding in the following manner.

Artificial silk thread, of the composition and character above specified, is wetted or moistened with water and twisted with a cotton thread in an ordinary twisting machine. The moistening of the artificial silk seems to be of importance, as this imparts

such temporary strength to the artificial silk as permits it to intertwist with the cotton thread without rupture. The compound thread is then wetted or moistened and knit into the fabric on an ordinary knitting machine. The particular machine that I have employed is an ordinary full circular hosiery machine, whereon the thread is subjected to about as great a strain as in any other knitting machine of any kind. Here, too, I have found the moistening of the compound thread to be of importance, it being unsafe to rely upon the inherent strength of the cotton yarn. While the moistening of the compound yarn does not increase the strength of the cotton, or does not increase it to any degree which is material, it does materially increase the strength of the artificial silk, as in the twisting operation.

The undyed artificial silk is of a white color. While the artificial silk may be dyed, either by admixture of the dye with the ingredients of the artificial silk during its manufacture, or by application of the dye either to the finished threads or to the completed fabric, it is a fact that it will not take some of the dyes ordinarily used in the textile art, while most dyes so ordinarily used impart to the artificial silk colors entirely different from those which a cotton thread or fabric presents when treated with the same dyes. However, if a knitted fabric containing a compound cotton and artificial silk thread is dyed with the dyes most ordinarily used in the textile industry, it imparts to the fabric a peculiar and distinctive appearance, which is not only extremely attractive, but which is quite different from any effect that can be produced by known dyes or mixtures of dyes applied to either cotton or artificial silk. I have produced other novel and beautiful effects by knitting only part of the stocking or half hose, say the ankle and the heel, with the compound thread and knitting the remainder of plain cotton, and dyeing the whole stocking with the same dye, thus causing one part of the stocking to be of one color while the other part of the stocking, although dyed with the same dye, will have an entirely different color, thereby producing an effect which, even in general character, has not heretofore been approximated

except by means of using differently colored threads, previously dyed, in the knitting operation.

While I have described the twisting of the artificial silk thread with cotton, it is also quite feasible to twist silk thread with silk, wool or other natural textile material, the process being otherwise the same and the novel color effects produced being similar.

Where, in the claim, I refer to the different coloring actions of the dye upon the two different kinds of yarn, I mean to include such exceptional cases as that wherein the artificial silk is entirely resistant to the action of the dye.

While I prefer to dye the stocking after it is completed, it is possible to produce similar effects by dyeing the artificial silk in its process of manufacture with the same dye as that with which the cotton yarn is dyed

or with a different dye, the cotton yarn being supplied to the knitting machine in either a dyed or undyed condition.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

The method of producing hosiery of variegated colors by a single dyeing operation, comprising forming a knitting yarn by moistening an artificial silk thread and twisting it with a relatively strong fibrous thread, knitting at least a portion of the hosiery from such thread, moistening the thread during the knitting, and then treating the hosiery with a dye having a different coloring action on the different threads.

In testimony of which invention, I have hereunto set my hand, at Philadelphia, Pennsylvania, on this 23rd day of May, 1919.

HORACE T. FLEISHER.