

UNITED STATES PATENT OFFICE

2,039,569

YARN AND FABRIC

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No Drawing. Application October 30, 1935, Serial
No. 47,509. In Great Britain December 8,
1934

2 Claims. (Cl. 117—2)

This invention relates to improvements in the manufacture of yarns and in fabrics therefrom.

It has been proposed in Moguet's English specification No. 10,308 of 1906 to employ an untwisted yarn in the manufacture of textile fabrics by uniting a plurality of fibres or filaments in parallel layers without twisting and subsequently sizing or gluing them together, and then drying, compressing, rounding and softening them.

It has also been proposed in the specification of Meyer's Patent No. 1,295,821 dated 25th February 1919 to spin the sliver or roving in the usual manner, gum it by passing it over gummed rollers or through a suitable bath containing adhesive, dry it in order that the gum may bind the fibres together and finally detwist it to remove substantially all the twist therefrom.

It has been found that the process described in the aforesaid specification No. 1,295,821 has the disadvantage that in applying the twist any thin places in the yarn receive a greater number of turns than the average and consequently in the subsequent detwisting operation the twist is not removed uniformly as those portions which received the greater number of turns in the original spinning operation still retained some twist after the detwisting operation.

To overcome this objection Meyer has suggested in the specification of his later Patent No. 1,743,723 dated 14th January 1930 that the yarn be subjected to a certain degree of tension whilst the adhesive is in a moist or tacky condition. Even if the application of tension to the yarn whilst the adhesive is in a moist or tacky condition results in the production of a more uniform yarn in either of the processes the subsequent detwisting operation adds considerably to the cost of production of the yarn.

It has further been suggested in the specification of Lejeune's Patent No. 1,959,723 to spin threads from a short staple fibre with a relatively small amount of twist by impregnating the fibre whilst passing from the roving bobbin to the spinning head with solutions, suspensions or dispersions of coagulable, polymerizable or condensable elastic or plastic materials, the twist being imparted to the thread after such impregnation.

The present invention differs from the various processes described in the above mentioned specifications in that the adhesive is not applied to the threads either before imparting the twist or during a subsequent unwinding process from the packages on which the yarn is spun nor is there any subsequent detwisting operation as in the

Meyer process thereby decreasing the cost of production and avoiding any possibility of uneven twist in the yarn.

According to the present invention the yarn is spun with the number of turns per inch less than would be necessary to withstand the tension of unwinding it from the package on which it has been spun, then impregnated with a suitable size or adhesive solution and finally dried.

The dried impregnated yarn in the yarn package is employed either direct or after being re-wound onto tubes, pirns or bobbins as weft in the weaving of woven fabrics or as thread or yarn in the knitting of knitted fabrics, the woven or knitted fabric being finally treated to remove the size or adhesive.

In carrying out the invention a sliver or roving is spun to produce a very soft yarn having less number of turns per inch than would be necessary to withstand the tension of unwinding it from the package on which it has been spun. The number of turns per inch imparted to the yarn depends on the length of staple of the fibre, the number of turns per inch being approximately in the reverse ratio to the length of staple and varies from between 15% and 25% of the normal twist. In the case of a good class cotton fibre having say $1\frac{1}{2}$ " staple the number of turns per inch required is approximately the square root of the count. Thus for a cotton yarn of 36 count six turns per inch is found to be a suitable number to impart to the yarn during the spinning of the yarn package.

For yarns of other textile fibres such as wool, staple fibres of artificial silk, waste silk and the like the number of turns per inch may be varied to suit the fibre length. Such variation being as hereinbefore stated between 75% and 25% of the normal twist.

The yarn after being spun is impregnated with a suitable size or adhesive solution whilst in the form of the original spinning package, such as a mule cop or ring bobbin, to cause the fibres in the yarn to adhere together and is then slowly dried.

The dried impregnated yarn so produced may be employed directly as weft in the weaving of a cloth or fabric or it may be wound onto pirns or tubes for weft in weaving or wound onto bobbins or cones for use in producing knitted fabrics.

The woven or knitted fabric is finally treated to remove the size or adhesive solution.

A yarn produced by the hereinbefore described process is found to be more uniform, fuller and more lustrous than that produced by hitherto

known process and accordingly the cloth or fabric produced therefrom has also a better and more pleasing appearance than cloths or fabrics manufactured from other yarns.

5 What I claim as my invention and desire to protect by Letters Patent is:—

1. Method of manufacturing yarn consisting in spinning the yarn with a less number of turns per inch than is necessary to withstand the tension of unwinding it from the spinning package, 10 impregnating the yarn on the spinning package

with a suitable adhesive solution and finally drying the impregnated spinning package.

2. Method of manufacturing yarns consisting in spinning a cotton sliver the fibre of which has a staple length of about $1\frac{1}{2}$ " or over with a number of turns per inch approximately equal to the square root of the count, impregnating the yarn on the spinning package with a suitable adhesive solution and finally drying the impregnated spinning package. 5 10

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