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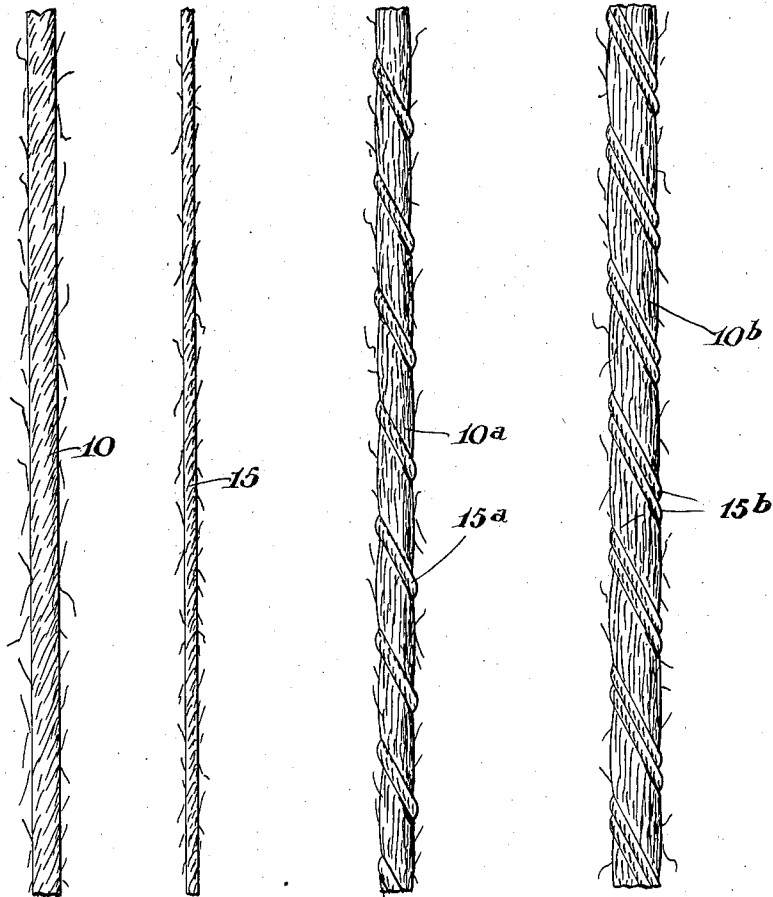
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YARN

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Fig.1. Fig.2. Fig.3. Fig.4.



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YARN

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4 Claims. (Cl. 117-21)

This invention relates to yarns and more particularly to a yarn which is especially suitable for use as a weft or filling in carpets, and which overcomes certain undesired characteristics heretofore present, particularly in those carpets known in the trade as "American Orientals", and in broad loom carpets in general.

In the weaving of carpet fabrics, numerous types of yarns have heretofore been used for the filling which forms part of the interlacing threads of the fabric but all the filling yarns heretofore available have had objectionable limitations, whether considered from the viewpoint of the manipulation of the yarn, the weaving operation, the finishing of the fabric by washing and the like, or the wearing qualities of the finished carpet fabric.

The finishing of carpet fabrics and particularly those made on power looms to resemble the hand woven carpets from the Orient, usually includes a chemical washing to produce the proper sheen and color variation on the surface.

In the first efforts to make these carpet fabrics on power looms, cotton filling yarns were used but these had their attendant disadvantages. The cotton yarns were particularly objectionable because of their inherent and inescapable tendencies to shrink. Even if the cotton yarn is shrunk before weaving, it is stretched by the tension thereon during the weaving operation in the loom. Subsequent washing as a part of the finishing operation results in a second shrinking. The cotton yarns, however, whether shrunk before weaving or as a result of the washing operation, produce a fabric with a softer ground cloth but it is not possible by any practical method to forecast, regulate or control the size of the finished and completed carpet.

Jute filling yarns were also used which were similar to those previously used in other corresponding types of carpets. The ground fabric of which these yarns formed a constituent part was stiff, inflexible, and board-like with the result that the carpet would not drape in the manner of Oriental rugs. At the same time, the selvage formation was not entirely satisfactory.

For the foregoing reasons, the carpets known in the trade as "American Orientals" have not been entirely satisfactory either from the viewpoint of the manufacturer or of the user.

The principal object of the present invention is, therefore, to provide a filling yarn which will have none of the undesirable features which have heretofore been found troublesome, and the use of which enables the manufacturer to produce on

a power loom, a carpet which will be equal to or better than the hand woven Oriental carpets, both as to appearance and wearing qualities, as well also in desired sizes without substantial variation due to shrinkage.

It is also an object of the present invention to provide a filling yarn which when incorporated in the fabric, will be relatively free from any tendency to stretch or shrink and which at the same time will not be brittle or unresilient.

It is a further object of the present invention to provide a filling yarn which will incorporate the desirable qualities just referred to and which will be relatively inexpensive.

It is an object of the present invention to provide a yarn having the desirable characteristics referred to and which will react properly to chemical washing and cop soaking as now practiced.

It is a further object of the present invention to provide a filling yarn for carpets which permits of more than the usual weight being added to the fabric without destroying the hand; and in such fabrics as velvet carpets, woven on broad looms, to improve the hand thereof; which permits of such weight and still preserves the draping qualities of the carpet; and which permits of making satisfactory selvage edges.

It is a further object of the invention to provide a filling yarn for carpets which permits of more than ordinary weight being added to the fabric without destroying the hand, permits of such weight and still preserves the draping qualities of the carpet, and permits of making satisfactory selvage edges.

Other objects of the invention will appear from the specification and annexed claims.

The nature and characteristic features of the present invention will be more readily understood from the following description taken in connection with the accompanying drawing forming part hereof, in which:

Fig. 1 is an elevational view illustrative of a constituent portion of the filling yarn of the present invention;

Fig. 2 is an elevational view illustrative of another constituent portion of the filling yarn of the present invention;

Fig. 3 is an elevational view illustrative of one form of the completed filling yarn; and

Fig. 4 is an elevational view illustrative of another form of the completed filling yarn.

It will, of course, be understood that the description and drawing herein contained are illustrative merely, that they do not necessarily

show the precise size relationship and twist, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

Referring more particularly to the drawing in which preferred embodiments of the invention are illustrated, one of the constituent strands is shown, in Fig. 1, by way of example and comprises a strand 10 of a bast fibre, for which jute has been found preferable. This strand is of rather coarse count and is made by spinning the staple fibres of jute and thereby building up the strand with the fibres interlocked and twisted upon each other and with the individual fibres so laid in staggered formation that a continuous strand is provided, in accordance with the well known operation of spinning. The jute strand 10, upon the completion of the spinning, has a definite direction of twist and preferably the usual or normal number of turns of twist in accordance with the count of the strand. The number of turns per inch is such as to give a normal or "regular" twist, so that the strand is neither "soft" nor "hard", as these terms are understood in the trade.

The other constituent strand is shown in Fig. 2 by way of example, at 15, and preferably consists of cotton, which may comprise cotton waste, derived either from reworked yarn, strips, or noils, and suitably blended to produce the desired color, or it may be new cotton fibre, or combinations of new and reworked fibre. The strand 15 is much finer in count than the strand 10, and is prepared by spinning the individual fibres in accordance with the well known operation of spinning so that the strand has a definite direction of twist which may be the same as or opposite to that of the jute strand 10 and a number of turns of twist in accordance with the count of the strand. The number of turns per inch is also preferably such as to give a normal or "regular" twist, so that the strand is neither "hard" nor "soft" in the completed yarn.

The finished yarn is prepared by twisting or doubling together into a single yarn a strand of jute 10 and one or more cotton strands 15, the jute strand, as hereinbefore pointed out, being much larger than the cotton strand, and consequently having a considerably fewer number of turns per inch of twist.

In the wrapping, twisting or doubling of the strands to form the completed yarn, the direction of twisting is, of course, dependent upon the direction and amount of the initial twist of each of the constituent strands, being opposite in direction to that of the initial twist of the jute yarn, irrespective of the direction of initial twist of the cotton strand or strands. Also if the initial twist of the separate strands is opposite in direction, the amount of twist in the cotton strand will be substantially different from the amount of twist thereof if the initial twist of the separate strands is in the same direction.

In other words, if the initial twist of the cotton strand is the same in direction as that of the jute strand, the amount thereof will be in excess of the amount of twist desired in the cotton strand of the completed yarn, while on the other hand, if the direction of the initial twist of the cotton strand is opposite in direction to that of the jute strand, the amount thereof will be less than the amount of twist desired in the cotton strand of the completed yarn.

In the twisting or doubling operation, the important factor is that the apparatus is set up

and operated so that the initial twist of the jute strand is substantially or entirely taken out and that the amount of the initial twist, whatever the direction thereof may be, of the cotton strand is such that the twisting or doubling operation will result in the cotton strand in the completed yarn being substantially regular or normal for the count of the cotton strand.

The fibres of the jute are thus laid substantially parallel to each other and the cotton strand or strands wrapped or twisted thereabout to bind and hold the constituent fibres of the jute together and at the same time afford the requisite flexibility.

A filling yarn in its completed form made in accordance with the present invention is illustrated in Fig. 3 and is composed of a single strand of jute 10^a, which has either a very slight twist or no twist at all, and a twisted cotton strand 15^a which is wrapped or twisted around the jute strand 10^a and partially embedded therein.

Another filling yarn in accordance with the present invention is illustrated in Fig. 4 and is composed of a single strand of jute 10^b, similar to Fig. 3, with two cotton strands 15^b therearound and partially embedded therein. The cotton strands, when a plurality are used, are preferably smaller in size than if a single strand is used, although the total weight thereof may be equal to that of a heavier single cotton strand. It has been found that when two cotton strands are used the strands do not lie separated with respect to each other but pair up and lie together without riding over each other, thus giving an added covering effect with respect to the jute strand.

The completed filling yarn thus produced does not resemble the constituent strands in physical appearance or in physical characteristics. The yarn resembles in some particulars a coarse wool yarn, with some wild fibres and with softness of hand and flexibility such that it bends upon itself freely and easily. Insofar as weaving is concerned, the filling yarn in accordance with the present invention produces a very satisfactory selvage and the fabric is resistant to stretch in the weaving and to shrinkage attendant upon the chemical washing operations.

The filling yarn of the present invention may be made in desired sizes and is quite satisfactory in sizes from three hundred yards per pound to three thousand yards per pound, and it will, of course, be understood that the same may be found useful in weaving other types of fabrics as well as those specifically referred to.

I claim:

1. The method of making a yarn which includes twisting together two spun strands, one of which is a strand of bast fibre and the other of which is a cotton strand and each of which has an initial direction and amount of twist, disposing the strand of bast fibre as a central strand and disposing the cotton strand therearound in spaced convolutions, and removing substantially all of the twist of the central strand during the twisting.

2. The method of making a yarn which includes twisting together two spun strands, one of which is a strand of bast fibre and the other is a cotton strand and each of which has an initial direction and amount of twist, disposing the strand of bast fibre as a central strand and disposing the cotton strand therearound in spaced convolutions, and during the twisting removing substantially all of the twist of the

strand of bast fibre while changing the twist of the cotton strand.

5 3. The method of making a yarn which includes twisting together two spun strands, one of which is a jute strand and the other of which is a cotton strand and each of which has an initial direction and amount of twist, disposing the jute strand as a central strand and disposing the cotton strand in spaced convolutions, and removing substantially all of the twist of the jute strand during the twisting.

10 4. The method of making a yarn which in-

cludes twisting together at least two spun strands one of which is a jute strand and the other of which is a cotton strand smaller in size than the jute strand and each of which has an initial direction and amount of twist, disposing the jute strand as a central strand and disposing the cotton strand therearound in spaced convolutions, and during the twisting removing substantially all of the twist of the jute strand while changing the twist of the cotton strand.

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