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UNITED STATES PATENT OFFICE.

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PROCESS FOR THE TREATMENT OF YARNS.

No Drawing. Application filed November 10, 1922. Serial No. 600,168.

To all whom it may concern:

Be it known that I, HENRY JAMES WHEELER BLISS, a British subject, residing at Leeds, in the county of York, England, have invented a Process for the Treatment of Yarns, of which the following is a specification.

This invention relates to a process, as hereinafter described, for the treatment of yarns composed chiefly or wholly of wool and/or hair, the said process being such as to modify the yarn so that it has an enhanced power of shrinking when wetted as compared with ordinary yarn. The term yarn as hereinafter used in this specification and the claims will be understood to refer to yarns made chiefly or wholly of wool or hair or wool and hair or other materials having the characteristics of wool or hair.

The process according to my invention consists in wetting or at least moistening the yarn and then stretching it a definite amount substantially greater than that employed for straightening yarn in hank form as in dyeing, say not less than eight per cent in any case. By thus stretching the formed yarn the individual hairs or fibres are each individually stretched, there being no substantial slipping of the hairs or fibres in the yarn by reason of the twist of the yarn. The yarn is then allowed to dry in the stretched condition, the drying being hastened, if desired, by the application of heat and/or circulation of air or gases so applied as to allow of the free escape of the moisture. On release, the yarn will be found to shrink somewhat but not to its original length. On again wetting or moistening the stretched yarn however, it will be found to shrink greatly even in some cases to its original length or less.

For the purpose of this invention it is clear that the yarn selected must be of sufficient strength and elasticity to bear the treatment described without an undue proportion of breakages.

This process does not refer to the customary reducing or drafting processes by which slivers of wool are successively diminished in diameter till the yarn is reached, such processes depending principally on a slipping of the fibres one upon another and the consequent reduction of the number of fibres present in a cross-section.

I am aware that in ordinary winding, yarn may be stretched to varying extents and that unequal take up and other faults often result. I however regularize the stretch and take up and produce a yarn with much greater take up than heretofore and one which is particularly useful in the construction of fabrics e. g. hosiery, where, by inserting a portion of my improved yarn alternately with a portion of ordinary yarn, fancy or shaped effects are obtained.

If desired, the yarn may be heated while in the moist and stretched condition but while preventing its drying, e. g. by exposing it to the action of saturated steam. Under these circumstances it becomes fixed more or less in its stretched condition, thus producing a yarn of greater permanent length or higher "count"; the amount of increase of length depending upon the amount the yarn is stretched, the length of time it is heated, the temperature, and the amount of moisture present.

What I claim as my invention, and desire to secure by Letters Patent is:—

1. The process for modifying yarn having the characteristics of wool or hair, according to which the yarn is moistened and then stretched to a definite amount substantially greater than that employed for straightening yarn in hank form as in dyeing, say not less than eight per cent in any case, and then drying the yarn while in the stretched condition, the result being the production of a yarn with much greater take up than heretofore.

2. The process for modifying yarn having the characteristics of wool or hair, according to which the yarn is moistened and then stretched to a definite amount substantially greater than that employed for straightening yarn in hank form as in dyeing, say not less than eight per cent in any case, and then subjecting said yarn to moist heat before release so as to increase its permanent length or count.

3. The process for modifying yarn having the characteristics of wool yarn according to which the yarn is moistened and then stretched to a definite amount substantially greater than that employed for straighten-

ing yarn in hank form as in dyeing, say not less than eight per cent in any case, drying the yarn under this tension, releasing the tension, and then subsequently re-moistening as and for the purposes specified.

4. The process in which yarn is modified as specified in claim 1 and then associated with other yarn not so modified in a predetermined relation in a fabric and the fabric then moistened, whereby through the unequal shrinkages of the two yarns a shaped fabric is produced.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HENRY JAMES WHEELER BLISS.

Witnesses:

JOHN JOWETT,

CYRIL BELLAMY.