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YARN

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This invention relates to yarns made of a mixture or blend of fibres and is concerned more particularly with a novel yarn which may be employed in the production of knitted and woven fabrics which are of unusual and attractive appearance and extraordinary softness in hand and drape, and in some forms, have the quality of providing warmth without the weight normally necessary for that purpose. The new yarn offers the further advantage that it can be produced at a relatively low cost for preparing and spinning operations and may be handled in weaving or knitting without changes in the usual machines or methods.

The yarn of the invention is made of a mixture in varying proportions of staple length synthetic fibres, wool, and animal fur, and by the term "fur" I mean to include both the fur and hair of animals, or a mixture thereof. In the yarn, these constituents serve specific purposes and impart desirable characteristics.

The synthetic fibres that may be employed in making the new yarn are any of the usual synthetic textile fibres, such as rayon, including cellulose derivatives, such as cellulose acetate, and various others. The fibres may vary in denier depending on the type and purpose of the yarn to be made, and may be employed in the usual commercial deniers of .75 to 10 and in the staple lengths commonly employed in the production of yarns from such staple fibres by the cotton system of preparing and spinning. The proportion of the synthetic fibres in the new yarn may range from about 15% to about 85%, and they act as a carrier and provide body and give the yarn softness and smoothness.

The wool fibres employed in the new yarn are those of the usual commercial varieties derived from sheep and they are preliminarily treated to remove grease, dirt, and burs by the ordinary methods. The wool fibres have such staple length and are present in the yarn in such proportions as to permit the fibrous mixture to be handled on the cotton system. Ordinarily the wool fibres will have a staple length not to exceed 2½", although the length may be substantially shorter. In the new yarn, the wool performs the function of binding in the other fibres and it strengthens the yarn. Also, it gives fullness, spring, and resilience to fabric made of the yarn and prevents

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the fabric from becoming soggy when wet. The wool may be employed in proportions varying from about 5% to about 60%, with the content preferably kept within such limits as to permit the yarn to be produced by the use of the cotton system.

The animal fur used may be of various kinds and that of the mink, beaver, ermine, fox, nutria, opossum, sable, seal, muskrat, raccoon, or squirrel is most suitable. Camel hair, and cashmere, llama, alpaca, and angora fibres may also be employed but, if the staple lengths of such fibres are too long to permit them being handled on the cotton system, the staple lengths must be appropriately adjusted. The fur imparts softness and richness and other qualities to fabrics made of the new yarn and also gives such fabrics an unusual and handsome appearance.

The furs of different animals differ considerably in their physical characteristics and, because of that, they produce different effects in the fabric. Accordingly, I may use combinations of furs of two or more different kinds to obtain effects not obtainable by using a single fur. Thus, mink fur is soft and lustrous while muskrat fur has those qualities to a less degree but imparts more spring and crease-resistance to the fabric. For some fabrics, mink or muskrat fur alone is employed, while in others, a mixture of the two furs is used, the choice depending on the qualities that the final fabric is desired to have. Silver fox fur is long and soft and its use enhances the richness of the fabric. Beaver is a shorter fur which contributes less than the fox fur to the appearance of the fabric but gives more body and crease-resistance and makes the fabric warmer. Ermine is another soft fur which makes the fabric soft and rich, while raccoon fur is longer and stiffer and is ordinarily used in a fabric for outdoor wear as, for example, for sports wear. The selections of the furs to be used will be readily understood by those familiar with the characteristics of furs.

The proportions of the constituent fibres of the new yarn will vary, depending upon the characteristics, such as drape, hand, feel, richness, softness, crease-resistance, warmth, durability, etc., that the fabrics made therefrom are desired to have. Variations in the proportions may also be made in order to bring the cost of the fabric

within a desired price range. Some variations may also be desirable, depending on the ultimate use of the yarn, that is, depending on whether it is to be used in weaving or knitting operations.

The ranges in which the different fibres may be present in the new yarn are as follows:

	Per cent
Synthetic fibres	15–85
Wool	5–60
Fur	10–60

For yarns to be used in weaving, the analysis will ordinarily be as follows:

	Per cent
Synthetic fibres	20–85
Wool	5–50
Fur	10–60

For yarns to be used in knitting, the analysis will ordinarily be the following:

	Per cent
Synthetic fibres	15–55
Wool	20–60
Fur	10–60

A yarn for weaving which will produce a fabric of high quality is of the following approximate analysis:

	Per cent
Synthetic fibres	20
Wool	20
Fur	60

A fabric made of such yarn has characteristics dominated by the major proportion of fur present and is notable for its rich, luxurious appearance, softness, etc.

Another yarn for weaving purposes which can be employed in the production of a fabric of excellent quality and desirable characteristics has the following approximate analysis:

	Per cent
Synthetic fibres	70
Wool	10
Fur	20

A yarn for use in weaving a low cost fabric which has desirable characteristics but in a less degree than fabrics made by yarns of the preceding analyses for weaving yarns comprises the following:

	Per cent
Synthetic fibres	85
Wool	5
Fur	10

A typical woven fabric made of the new yarn which exhibits to excellent advantage the characteristics derived from the use of that yarn is of the following specification: The yarn comprises 70% of spun rayon, 10% of wool, and 20% of a mixture of mink and muskrat fur. The rayon is a dull viscose of 1½ denier and 1 9/16" staple length, and the wool is the grade known as No. 70 Cape and has a staple length of about 2". The fur mixture contains mink and muskrat in varying proportions, and the furs have their natural staple lengths. The warp is a single yarn of about 16's count, according to the cotton counts, and the filling is a single yarn of 9's count. The warp twist multiplier is 4.25 and the filling twist multiplier is 3.5. The fabric is a 2x2 twill containing 45 warp ends and 38 picks per inch, and it has a greige width of 44" and a finished width of 40". Such a fabric is suitable for dress manufacture.

Yarns for knitting purposes and to be used in the production of goods of successively higher quality are given in the following three approximate analyses:

	Per cent
Synthetic fibres	55
Wool	35
Fur	10

Synthetic fibres	40
Wool	30
Fur	30

Synthetic fibres	20
Wool	20
Fur	60

It is to be understood that, in all the foregoing analyses, the synthetic fibres present may be all of the same kind or they may be a blend or mixture of different kinds. The synthetic fibres may vary in respect to lustre or brightness and in some yarns, bright material may be used, for example, while, in others, dull fibres may be preferred. Similarly, the fur fibres present within the ranges specified may be all of one kind or a mixture may be employed for the purposes previously mentioned.

As I have pointed out in the foregoing, the new yarn may be spun on the cotton system provided the amount of wool is within certain limits and the staple lengths of the synthetic fibres and of the fur are suitable. Production of the yarn on the cotton system is preferred because of low cost and ease in manufacture by that method, but it is to be understood that the new yarn can also be produced on the woolen system. In that event, the restrictions on the staple lengths of the constituents will be considerably broadened but the cost of the yarn is likely to be increased.

The new yarns may be of the singles type or they may be made of a number of strands plied together. The weights of the yarns will vary according to the type of fabric to be made therefrom and the twist multiplier used will vary in a similar way. As is well known, a fabric made of hard twisted yarn wears better for some purposes and hase greater crease-resistance than one made of yarn of softer twist. However, a fabric of hard twisted yarn is harsh and less pliable and does not drape so well as a fabric made of yarn of softer twist. The new yarn produces fabrics that are softer, more pliable, and of better draping qualities than similar fabrics made of prior yarns of the same twist. The new yarn thus makes it possible to produce fabrics that have excellent durability and crease-resistance and are, at the same time, softer and richer than prior similar fabrics of the same wearing qualities.

I claim:

1. A yarn for weaving and knitting purposes which comprises a spun blended mixture composed of from 15% to 85% of synthetic fibres, from 5% to about 60% of wool, and from 10% to about 60% of a mixture of furs of different physical characteristics.

2. A yarn which comprises about 70% of synthetic fibres, about 10% of wool, and about 20% of a mixture of furs of different physical characteristics.

3. A yarn which consists of about 70% of synthetic fibres of staple length, about 10% of wool, and about 20% of a mixture of mink and muskrat fur, both kinds of fur being present in substantial amounts.

4. A yarn which consists of about 70% of synthetic fibres of staple length, about 10% of wool, and about 20% of a mixture of different kinds of fur present, in each instance, in a substantial amount, the fibres of one kind of fur being soft and lustrous and those of another having greater springiness.

5. A yarn which comprises about 70% of synthetic fibers, about 10% of wool, and about 20% of a mixture of furs of different physical characteristics, said mixture containing a substantial proportion of mink fur.

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