Jan. 9, 1940. J. SULTAN 2,186,396

YARN

Original Filed April 3, 1936

FIG. 1.

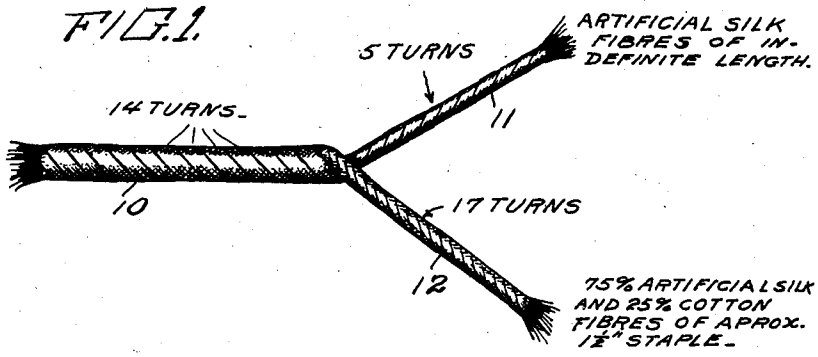
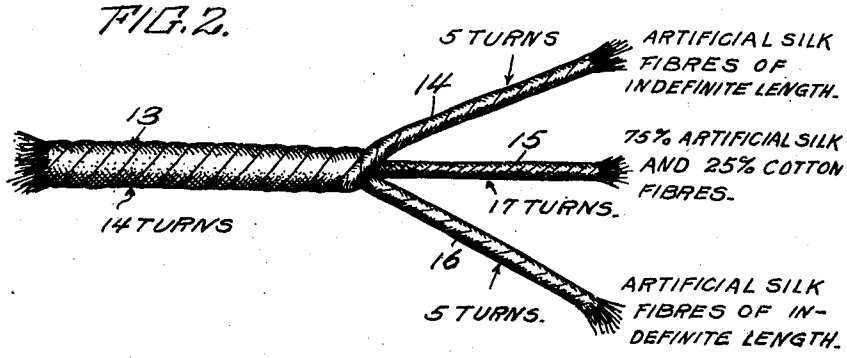


FIG. 2.



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YARN

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4 Claims. (Cl. 57—140)

My present invention relates to yarns and fabrics and, more particularly with yarns produced largely of artificial silk and artificial silk and natural fibres, such as cotton, which when woven or otherwise incorporated into fabrics produces a fabric having novel characteristics such as appearance, feel and strength.

The yarns I propose to use may be made of any of the well known types of artificial silks but I prefer to use a mixture of rayon of both the continuous and cut staple types because by my novel arrangement of the yarns, as I hereinafter point out, I am enabled to produce yarns of the desired strength and uniformity without experiencing the usual disadvantages associated with the use of continuous filament artificial silk alone, or where the cut staple filament alone is used. Then again, by the addition of the natural fibres in certain of the yarns I propose to use, I also obtain novel characteristics in the resultant fabrics not present where artificial silk alone is used.

As will be apparent to those skilled in the art, my yarns may be made in various forms and woven, or knitted, into fabrics having a wide range of uses, but for purposes of illustration I shall hereinafter describe a yarn and fabric especially suited to the manufacture of broadcloths.

Yarns of artificial silk as produced today, generally speaking, may be divided into two classes i. e., those in which the required number of continuous filaments, to give the desired denier, are used and, secondly, so-called spun yarns wherein the continuous filaments are cut into predetermined lengths or staples, and then spun in the same manner as heretofore practiced in the manufacture of yarns from natural fibres of cotton, wool and the like. In each case various types of artificial silk have been used, as for example, the organic derivatives of cellulose, such as the acetate, formate, propionate and butyrate, or the esters of cellulose such as ethyl cellulose, methyl cellulose, or benzyl cellulose. Various artificial silk yarns have also been made from the organic derivatives of nitrocellulose depending upon the resultant fibre desired.

It is with all of the various types of artificial silks above described my invention is concerned, although I prefer to use a mixture of certain types rather than feature one type to the exclusion of all others. With this in mind I will now describe, in detail, a novel yarn and thread which I have, with great success, used as a warp thread in the manufacture of broadcloths, and also a novel yarn and thread which I have used as a filler thread in the same fabrics with equal success.

In the drawing:

Figure 1 is a plan view of a two ply yarn illustrating a form of my preferred construction of two ply yarn; and

Figure 2 is a similar view showing a form of my three ply yarn.

In the drawing, I designate the two ply yarn as 10, the strand or ply of artificial silk of indefinite length staple as 11, and the strand of combined artificial silk and natural cotton as 12. In the three ply yarn 13 designates the yarn, 14 the two strands of artificial silk fibres of indefinite length and, 15 the single strand of combined artificial silk and natural cotton.

The warp thread I propose using is of two ply construction. In one ply of the thread I use a percentage of artificial silk of the cut staple type and having a staple of approximately 1½ inch, which is mixed and spun with a percentage of cotton fibres of approximately 1¼ inch staple. While the percentage of artificial silk to the cotton may be varied from approximately sixty to eighty-five percent I prefer to use approximately seventy-five percent of artificial silk with approximately twenty-five percent of cotton fibres. The correct amount of said mixed fibres, to give the required denier, are spun and then twisted to approximately seventeen turns to the inch, although the twist may be varied from five to twenty-four turns to the inch as the occasion demands. In the second ply of the thread I use artificial silk filaments of indefinite lengths in sufficient amounts to give the required denier, and to these filaments I impart a twist of approximately five turns to the inch. These two plys of yarn I next twist or cable together thereby producing a two ply thread having a cable twist of approximately fourteen turns to the inch. While I have specified a twist in the second ply of five turns to the inch and a cable twist of fourteen turns, I may vary the number of turns as much as from three to ten turns in the ply or as much as from seven to twenty-four turns in the cable depending upon the finish of the fabric to be produced.

In the fabric I above referred to, I propose to use a filler thread made up as follows. As distinguished from the warp thread just described, I propose to use a three ply thread and to this end I prepare one ply of the thread exactly as I prepared the first ply or strand of the warp thread by using a mixture of approximately seventy-five percent of artificial spun silk and approximately twenty-five percent of cotton twisted approximately seventeen turns to the

inch. I next take two strands, or ends, of artificial silk made up as previously described in connection with the second end or strand of my warp thread and twist them together with the first strand of silk and cotton, and impart thereto a cable twist of approximately fourteen turns to the inch. Here again, I may vary the number of turns in both the strand twist and the cable twist as the occasion arises for a variation in the finished fabric.

From the foregoing it will be seen that I have prepared a two ply warp thread and a three ply filler thread of novel construction which may be woven, knitted or otherwise incorporated into fabrics of various types and designs. In the manufacture of broadcloths I prefer to weave the fabric from the thus prepared yarns and threads in the usual manner.

Variations in the percentage of cotton used in certain of the strands as well as variations in the twist in the yarns both in the doubling as well as the cabling operations, will effect not only the strength, the stretch, the lustre and feel of the fabrics produced, but the general characteristics as well, and I have found that by the use of the yarns above described I am able to produce a fabric of great strength, durability, appearance and feel. For example, it is well known that cotton goods, while stronger than artificial silk, will crease excessively as will also the continuous filament types of artificial silk, but by the use of the combination of silk and cotton in the approximate proportions given I am able to produce a fabric of the non-crushable and non-wrinkleable type and having greater strength than the artificial silk when used alone.

While I have described a definite type of yarn, threads and fabric, I do not wish to be restricted to such specification because I consider my invention to be broader than the single example given and, therefore, such restrictions should be imposed unless so imposed by the following claims.

I claim:

1. A yarn comprising two strands doubled together, one of said strands being composed of approximately 75% of spun artificial silk fibres of a staple length of approximately 1½ inches and approximately 25% of natural cotton fibres of a staple length of approximately 1¼ inches both of said fibres being mixed and spun together and then twisted to approximately 17 turns to the inch, the said other strand being composed of filaments of artificial silk of indefinite lengths twisted together with a twist of approximately 5 turns to the inch, the two strands being cabled together with a twist of approximately 14 turns to the inch.

2. A yarn comprising three strands cabled together, one of said strands being composed of approximately 75% of spun artificial silk fibres having a staple length of approximately 1½ inches and approximately 25% of natural cotton fibres of a staple length of approximately 1¼ inches, both the artificial silk and cotton fibres being spun together and then twisted to approximately 17 turns to the inch, the second and third strands being individually composed of filaments of artificial silk of indefinite lengths twisted together with a twist of approximately 5 turns to the inch, the said three strands being finally cabled together with a twist of approximately 14 turns to the inch.

3. A yarn of artificial silk comprising three strands doubled together, one of said strands being composed of spun artificial silk and cotton fibres of approximately the same staple length and in which the percentage of silk fibres exceeds the percentage of cotton fibres, the other two strands being composed of filaments of artificial silk of indefinite lengths twisted together, the said three strands being finally cabled together with a twist of from 5 to 24 turns to the inch.

4. A yarn of artificial silk comprising two strands doubled together, one of said strands being composed of spun artificial silk and cotton fibres of approximately the same staple length and in which the percentage of silk fibres exceeds the percentage of cotton fibres, the other strand being composed of filaments of artificial silk of indefinite lengths twisted togethed, the said two strands being finally cabled together with a twist of from 5 to 24 turns to the inch.

JOSEPH SULTAN.