

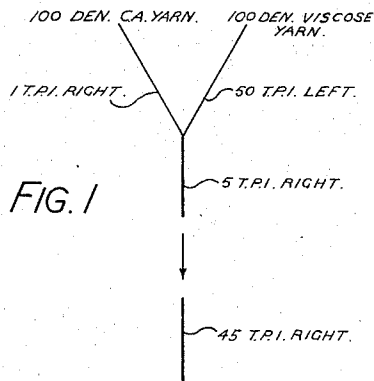
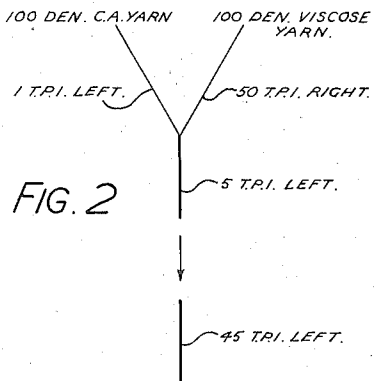
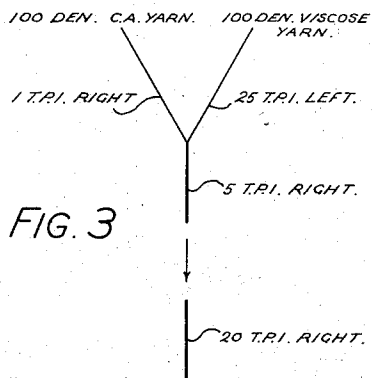
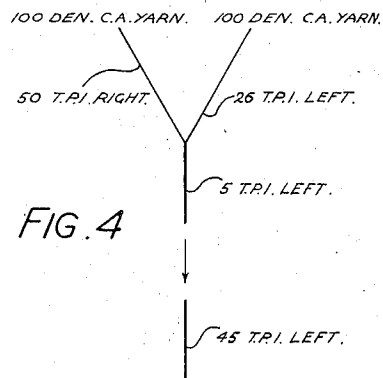
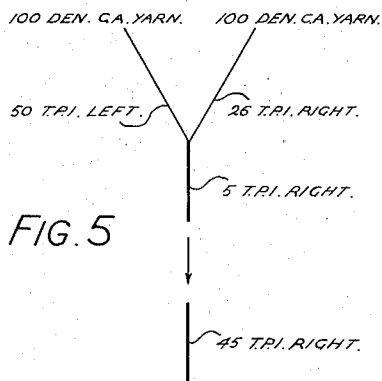
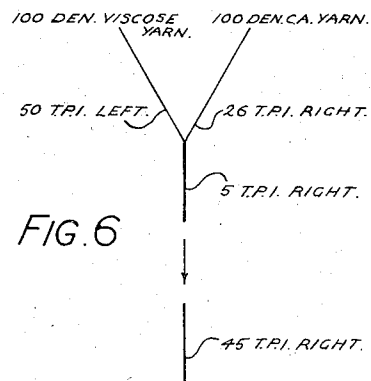
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PROCESS OF PRODUCING CREPE AND OTHER HIGHLY TWISTED YARNS

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PROCESS OF PRODUCING CREPE AND
OTHER HIGHLY TWISTED YARNS

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8 Claims. (Cl. 57—157)

This invention relates to improvements in composite yarns and in particular to crepe and other highly twisted yarns, and fabrics containing such yarns. According to the invention a composite yarn is made of at least two components, one of high twist and the other of lower twist, the components being doubled together with a degree of twist substantially the same as that contained in the highly twisted component but applied in the reverse direction so that the initially lower twisted component is given a high degree of twist and the initially highly twisted component is substantially freed from twist and is doubled to a high degree with the initially lower twisted component.

While the initially highly twisted component is doubled to a high degree with the initially lower twisted component the substantial untwisting of the former component causes it to lie somewhat loosely outside the composite yarn. The initially lower twisted component may be twisted in the same direction as, or in the opposite direction to, the highly twisted component, the reverse twisting of the yarns in the latter case producing a very highly twisted yarn doubled to a high degree with a substantially twistless yarn.

The invention is of particular value when the highly twisted component has a crepe twist, in which case the doubling twist inserted to free the component of its twist gives the resultant thread desirable creping properties. Thus with a crepe twist component there may be doubled an oppositely twisted voile twist component, the doubling twist being substantially the same as the crepe twist but in the reverse direction (viz. in the direction of the voile twist) so that the voile twisted component is twisted to a degree representing the sum of the initial voile twist and the doubling twist, and the crepe twisted component is substantially freed from twist and doubled with the initially voile twisted component with a degree of twist corresponding to the initial crepe twist.

There may, however, be doubled with the high twist component a component having little or no twist, this latter component receiving by the doubling operation a degree of twist substantially equal to that lost by the high twist component.

Composite yarns having the structure defined above are capable of giving fancy crepe effects yielding a good figure in fabrics in which they are incorporated, and causing the fabrics to undergo a considerable degree of shrinkage when subjected to the scouring operation to which crepe fabrics are usually submitted. By reason of the

good figure and high degree of shrinkage, very attractive fabrics may be produced, using the yarns either in the weft or warp or both, or in selected arrangement with other yarns in the weft and/or warp.

The components of the yarn may comprise the same materials or they may be of different materials, which enables other effects, such as cross-dyed effects, to be obtained. Thus, for example, either, both or any of the components may be of regenerated cellulose which may or may not have been stretched during the process of production of the yarn, or may be of cellulose acetate or other organic derivative of cellulose which again may or may not have undergone a stretching operation during its manufacture, or may be of natural silk. Regenerated cellulose yarns may be produced by the saponification of yarns of cellulose acetate or other saponifiable ester of cellulose. The invention includes also the use of components in which the cellulose acetate or other saponifiable ester of cellulose is only partially saponified.

Thus, for example, a cellulose acetate component may be used with a viscose or natural silk component, or natural silk may be used with a viscose component. The invention is not, however, limited to yarns having two components only. Thus the composite yarns according to the invention may comprise two components of high twist (e. g. crepe twist), doubled with a component having a lower twist (e. g. voile twist), or the yarn may comprise two low twist components doubled with a component having a high twist, one high twist component in each case being twisted in the direction opposite to the other components. In such composite yarns the two components of similar twist may be made of the same or different materials.

Whether or not components of different materials are used, the components may be of different appearance, e. g. by one or more of them being coloured or by the components being of different colours or of different lustre. Again the components may have a continuous filament structure or may be fibrous yarns, or fibrous components may be used with continuous filament components.

The invention is not limited to the use of yarns having a basis of continuous filaments or fibres formed from continuous filaments; but includes the use of yarns made from or containing natural fibres such as cotton or wool, which may be used if desired to give contrasting effects with the other components of the composite yarns.

In the manufacture of the yarns it is advantageous to effect a preliminary doubling of the components with a low degree of twist. The twisting of the doubled components to the final degree of twist desired may then be effected in the same direction as the preliminary doubling.

Where a yarn to be twisted to a high degree includes a component of cellulose acetate or other organic derivative of cellulose, it is advantageous to insert the twist in the component while the yarn is under the influence of steam or hot water, as described in U. S. Patents Nos. 2,089,191, 2,088,628 and 2,088,587. Similarly, where the doubling twist is such as to insert in such a component a high degree of twist, such doubling twist is preferably inserted while the yarn is under the influence of steam or hot water.

When the composite yarn is to be used as weft, it is generally advantageous to employ two threads, one of which has been doubled in the opposite direction to the other, whether or not the individual components of the two threads are similar to or different from each other. The oppositely doubled threads may then be inserted in a two-box loom in the manner usual in the weaving of two-box crepe fabrics.

Examples of composite yarns according to the invention will now be described with reference to Figs. 1 to 6 of the accompanying diagrammatic drawing.

Referring to Fig. 1 a 100 denier cellulose acetate yarn containing 1 turn per inch right twist is doubled with a 100 denier viscose crepe yarn containing 50 turns per inch left twist, the doubling consisting of 5 turns per inch right twist. The preliminarily doubled yarns are then crepe twisted in the presence of steam with 45 turns per inch right twist so that the cellulose acetate yarn is given a high degree of twist (viz. 51 turns per inch right twist) and the viscose yarn is substantially freed from twist and doubled to a high degree (viz. 50 turns per inch) with the cellulose acetate yarn.

Fig. 2 shows a similar composite yarn for use with the yarn of Fig. 1 in a two-box loom, the two components being oppositely twisted and in the reverse sense to the components of Fig. 1.

Referring to Fig. 3 a yarn is shown comprising a 100 denier cellulose acetate yarn containing 1 turn per inch right twist doubled with a 100 denier viscose voile yarn containing 25 turns per inch left twist, the doubling consisting of 5 turns per inch right twist. The preliminarily doubled yarns are then twisted in the presence of steam to 20 turns per inch right twist so that the cellulose acetate yarn is given 26 turns per inch right twist and the viscose yarn is substantially freed from twist and doubled with 25 turns per inch with the cellulose acetate yarn.

Fig. 4 illustrates a further composite yarn according to the invention, the yarn comprising a 100 denier cellulose acetate crepe yarn twisted in steam with 50 turns per inch right twist and then doubled with a doubling twist of 5 turns per inch left twist with a 100 denier cellulose acetate voile yarn twisted to 26 turns per inch left twist. The doubled yarn is then twisted in steam with 45 turns per inch left twist, bringing the total doubling twist to 50 turns per inch. In this manner the voile yarn is twisted to a degree representing the sum of the initial voile twist and the doubling twist (viz. 76 turns per inch left twist), while the crepe yarn is substantially freed from twist and doubled with the initially voile twisted yarn with a degree of twist correspond-

ing to the initial crepe twist (viz. 50 turns per inch).

Fig. 5 shows a similar composite yarn for use with the yarn of Fig. 4 in a two-box loom, the two components being oppositely twisted and in the reverse sense to the components of Fig. 4.

Referring to Fig. 6 a yarn is shown comprising a 100 denier cellulose acetate voile yarn containing 26 turns per inch right twist doubled with a 100 denier viscose crepe yarn containing 50 turns per inch left twist, the doubling consisting of 5 turns per inch right twist. The preliminarily doubled yarns are then twisted in the presence of steam to 45 turns per inch right twist, the voile yarn thus being twisted 76 turns per inch right twist and the crepe yarn being substantially freed from twist and doubled with the initially voile twisted yarn with a degree of twist corresponding to the initial crepe twist (viz. 50 turns per inch).

A complementary yarn for use in a two-box loom may be prepared in a manner similar to that explained with reference to Fig. 6, the two components being oppositely twisted and in the reverse sense to the components of Fig. 6.

Having described our invention what we desire to secure by Letters Patent is:

1. Process for the production of composite crepe and other highly twisted yarns, which comprises associating at least two components, one of high twist and the other of lower twist, and doubling said components with a twist substantially the same as that contained in the highly twisted component but in the reverse direction so that the initially lower twisted component is given a high degree of twist and the initially highly twisted component is substantially freed from twist and doubled to a high degree with the initially lower twisted component so that said initially highly twisted component lies somewhat loosely outside the composite yarn.

2. Process for the production of composite crepe and other highly twisted yarns, which comprises associating at least two components, one having a crepe twist and the other having a voile twist in the reverse direction to the crepe twist, and doubling said components with a twist substantially the same as that contained in the crepe twisted component but in the reverse direction so that the voile twisted component is twisted to a degree representing the sum of the initial voile twist and the doubling twist, and the crepe twisted component is substantially freed from twist and doubled with the initially voile-twisted component with a degree of twist corresponding to the initial crepe twist so that said initially highly twisted component lies somewhat loosely outside the composite yarn.

3. Process for the production of composite crepe and other highly twisted yarns, which comprises associating at least two continuous filament components, one of high twist and the other of lower twist, and doubling said components with a twist substantially the same as that contained in the highly twisted component but in the reverse direction so that the initially lower twisted component is given a high degree of twist and the initially highly twisted component is substantially freed from twist and doubled to a high degree with the initially lower twisted component so that said initially highly twisted component lies somewhat loosely outside the composite yarn.

4. Process for the production of composite crepe and other highly twisted yarns, which comprises associating at least two components containing staple fibres, one of said components hav-

ing high twist and the other having lower twist, and doubling said components with a twist substantially the same as that contained in the highly twisted component but in the reverse direction
 5 so that the initially lower twisted component is given a high degree of twist and the initially highly twisted component is substantially freed from twist and doubled to a high degree with the initially lower twisted component so that said initially highly twisted component lies somewhat
 10 loosely outside the composite yarn.

5. Process for the production of composite crepe and other highly twisted yarns, which comprises associating a continuous filament component with a component containing staple fibres,
 15 one of said components having high twist and the other having lower twist, and doubling said components with a twist substantially the same as that contained in the highly twisted component but in the reverse direction so that the initially lower twisted component is given a high
 20 degree of twist and the initially highly twisted component is substantially freed from twist and doubled to a high degree with the initially lower twisted component so that said initially highly
 25 twisted component lies somewhat loosely outside the composite yarn.

6. Process for the production of composite crepe and other highly twisted yarns, which comprises associating at least two components, one
 30 of said components having high twist and the other containing filaments of cellulose acetate or other organic derivative of cellulose and having lower twist, and doubling said components with a
 35 twist substantially the same as that contained in the highly twisted component but in the reverse direction so that the initially lower twisted component is given a high degree of twist and the initially highly twisted component is substantial-

ly freed from twist and doubled to a high degree with the initially lower twisted component so that said initially highly twisted component lies somewhat loosely outside the composite yarn.

7. Process for the production of composite crepe and other highly twisted yarns, which comprises associating at least two components, one of said components containing filaments of cellulose acetate or other organic derivative of cellulose
 5 and having high twist and the other having lower twist, and doubling said components with a twist substantially the same as that contained in the highly twisted component but in the reverse direction so that the initially lower twisted component is given a high degree of twist and the initially highly twisted component is substantially
 10 freed from twist and doubled to a high degree with the initially lower twisted component so that said initially highly twisted component lies somewhat loosely outside the composite yarn.
 20

8. Process for the production of composite crepe and other highly twisted yarns, which comprises associating at least two components, one of said components containing filaments of regenerated cellulose and having high twist and the
 25 other containing filaments of cellulose acetate or other organic derivative of cellulose and having lower twist, and doubling said components with a twist substantially the same as that contained in the highly twisted component but in the reverse
 30 direction so that the initially lower twisted component is given a high degree of twist and the initially highly twisted component is substantially freed from twist and doubled to a high degree with the initially lower twisted component so that said initially highly twisted component lies
 35 somewhat loosely outside the composite yarn.

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