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PROCESS OF TREATING SYNTHETIC YARNS

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It is known that the production of crepe yarns, either single or in combination with other yarns, which has been known for many years in the field of natural textiles such as wool, and subsequently applied to artificial textiles (e. g. artificial silk or rayon) and still more recently applied to synthetic textiles, such as products of the superpolyamid class, makes it possible to obtain a wide range of goods which have improved physical properties, for instance high elasticity, better draping, softer feel or handle, and which display better heat-insulating characteristics.

The object of this invention is to provide a novel process of treating synthetic yarns or fibers and, more particularly, superpolyamidic yarns, in view of producing yarns having not only to a great extent the aforesaid characteristics, and notably a high ability to swell, but also the important advantage of keeping these characteristics permanently so that the swelling and elastic properties obtained will remain unchanged in spite of the repeated washings and similar treatments which the goods manufactured from these yarns might undergo.

The novel process according to this invention has been devised for the treatment of synthetic yarns, notably of the superpolyamid class, and it is characterized in that two yarns of the same or different sizes or numbers are submitted to a series of operations comprising essentially in succession supertwistings (i. e. left-hand twist for the first yarn and right-hand twist for the other), each supertwisting step being followed by a thermal treatment to facilitate rewinding on non-deformable cores, then untwistings, in order to bring each yarn to a fully untwisted condition whereby these yarns will remain rectilinear and have, owing to the twistings, untwistings and subsequent operations carried out thereon, both elasticity and swelling properties, and in that both yarns are then assembled by twisting them under a relatively high tension for obtaining the so-called snarl and crepe effect.

The process according to this invention will be better understood from the following description of a practical embodiment thereof given solely by way of example.

Superpolyamid yarns of the type sold under the trade name of nylon (metric numbering=120,000 meters per kilogram) right-hand twisted 200 turns per meter, non-shrunk, are reeled off from spinning cakes on throwster's bobbins.

The right-hand twisted yarn is then subjected to a first right hand supertwisting step of 1,300 turns and then wound on non-deformable tubes.

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This first supertwisting is followed by a thermal treatment consisting in this case in steaming at 110° C. the yarn during approximately 2 hours in vacuum chambers. The only object of this

5 thermal treatment (which does not affect the yarn shape) is to facilitate the subsequent re-winding of the yarn. In fact, after this steaming step the yarn is rewound on throwster's bobbins with the object of performing a second supertwisting step). This second supertwisting step is carried out by twisting the yarn another 1,500 twists to the right on non-deformable tubes under the same conditions as in the first supertwisting operation. Another steaming is applied in the same way as performed after the first supertwisting step and the yarn is then wound on throwster's bobbins with the object of performing the untwisting step. A first untwisting is made by twisting the yarn 1,500 twists to the left, then

20 the yarn is rewound on throwster's bobbins and subjected to a second untwisting operation carried out by twisting it 1,500 twists to the left. Regarding the other or left-hand twisted yarn, it is processed through the same consecutive steps. Thus a first supertwisting is effected to the extent of 1,700 turns to the left for the purpose of obtaining a 1,500 twists left-hand twisting, taking into account the usual initial 200-turns right-hand twist existing in spinning cakes. Then a steaming step is carried out as disclosed hereinabove. This is followed by a rewinding step on throwster's bobbins, a second left-hand 1,500 twists supertwisting, a further steaming operation, another rewinding on throwster's bobbins, then a first untwisting effected to the extents of 35 1,500 twists to the right, another rewinding on throwster's bobbins and finally a second and last right-hand 1,500 twists untwisting step.

The yarns thus treated have no twist, neither right nor left, they are unchanged in shape, i. e. neither snarled nor creped, they are non-sinuous and yet they already have in a latent state the elasticity and swelling properties which have been imparted to the yarns by the twisting and untwisting steps. Both yarns are then twisted together 95 twists to the left and under a high tension.

This torsional assembly of a pair of elementary yarns produces a twisted yarn having in a latent condition the properties required for producing the desired snarl and crepe effect. This yarn is wound on non-deformable tubes and subsequently reeled off in hanks. These hanks are first immersed in a water bath at about 70° C. during

55 about three minutes, then immersed promptly in

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cold water, then centrifugally dried during about 20 minutes and finally dried during 9-10 hours at about 55° C.

It will be readily understood by those skilled in the art that the invention is not restricted to a specific manner of carrying out the process thereof as many modifications may be brought both to details and means employed therefor without departing from the spirit of the invention as defined in the copending claims.

I claim:

1. A process of treating synthetic yarns consisting in separately supertwisting two elementary yarns in opposite directions, subjecting the twisted yarns to heat and separately winding them on to a holder, further supertwisting the yarns in their respective original directions, again subjecting them to heat and rewinding them on to a holder, completely untwisting the two yarns, and twisting the two yarns together under substantial tension, thereby producing a multiple strand yarn with latent crimp effecting physical properties.

2. The process of claim 1 wherein said yarns are superpolyamid yarns.

3. The process of claim 1 followed by subjecting the yarn to an aqueous treatment and then drying it.

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4. The process of claim 1 in which the untwisting of the individual yarns is performed in a plurality of stages with each yarn wound on to a holder following the previous stage of untwisting.

5. The process of claim 1 in which the heat treatment is a steaming under vacuum at substantially 110° C. during approximately two hours.

6. The process of claim 1 in which the aqueous treatment consists in immersing in a water bath at substantially 70° C. for approximately three minutes promptly followed by immersion in cold water.

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