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YARN AND METHOD OF MAKING SAME

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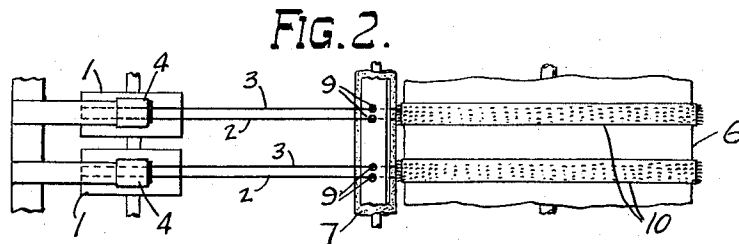
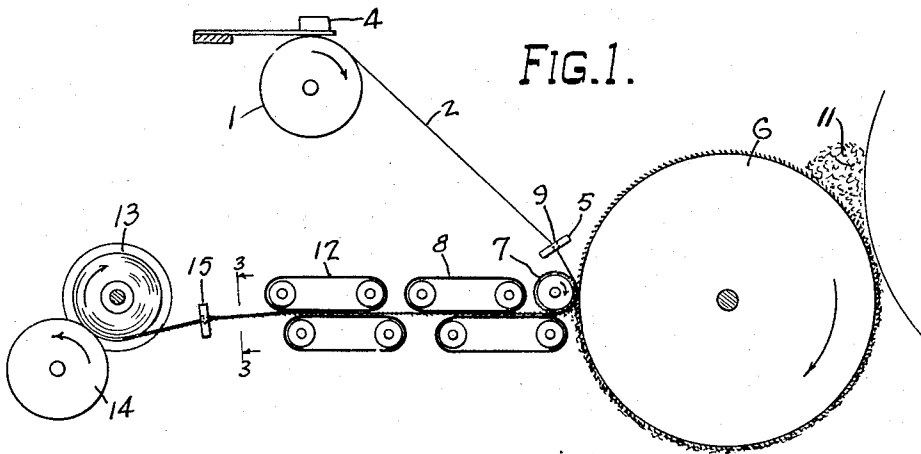
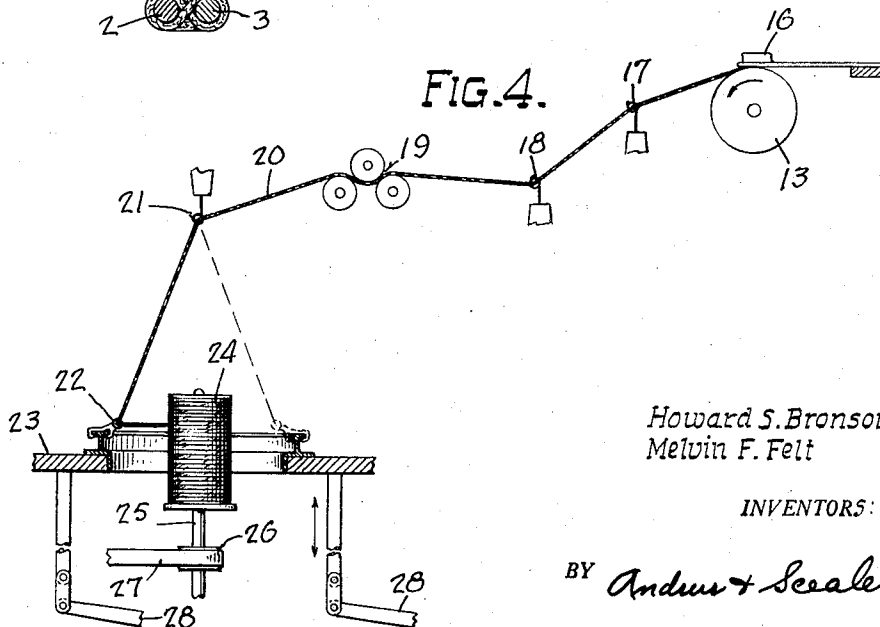


FIG. 3.



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YARN AND METHOD OF MAKING SAME

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2 Claims. (Cl. 57—163)

This invention relates to yarn and a method of making the same and has particular reference to the employing of a plurality of strands of Helanca or elasticized nylon yarn as a core and intimately interlocked with virgin wool, wool wastes or blends of wool, rayon and cotton or combinations thereof.

One object of the invention is to provide an elasticized yarn which has a strong body core and the appearance of ordinary wool, cotton or rayon.

Another object is to provide an elasticized yarn which can be washed or dry cleaned.

A further object is to provide a core yarn where the wool or other fibrous material which may be employed will not slip or slide over the nylon core in service.

Another object is to provide a yarn for use in a fabric which can stretch and contract in accordance with the size and shape of the objects to which it is applied.

In general, the invention comprises making a nylon core yarn by passing two strands of properly tensioned nylon yarn between the ring of a doffer roll and a wiper roll. The strands are maintained a predetermined distance apart. As the nylon strands move between the wiper roll and the doffer ring fibers of wool or other fibrous material carried by the doffer ring are deposited on the nylon strands. The strands and the wool then pass through a series of rubbing means wherein the wool is rubbed into intimate contact with the nylon strands. In the rubbing action the wool is entwined and interlocked with the nylon and passes between the nylon strands as well as around them. Thereafter the yarn with the nylon strands still untwisted with respect to each strand pass to a jack spool upon which they are wound by a positively driven drum. In the final step of the process the yarn is twisted to secure the nylon and wool securely together and the yarn is then wound on a positively driven bobbin.

These and other objects of the invention will appear hereinafter in connection with the following description of the drawing illustrating an embodiment of the invention.

In the drawing:

Figure 1 is a schematic view of an apparatus for applying wool or the like to a core provided by two strands of elasticized nylon yarn;

Fig. 2 is a view looking downwardly at the two strands of nylon yarn and illustrating the separation of the nylon yarn prior to passing between the wiper roll and the doffer ring;

Fig. 3 is a cross-sectional view of the nylon and fibers as it appears as it comes from the second rub apron condenser; and

Fig. 4 is a schematic view showing the twisting of the wool and nylon core yarn together and the winding of the yarn on a spool.

Referring to the drawing there is illustrated schematically a jack spool 1 from which passes downwardly strands 2 and 3 of Helanca or elasticized nylon. The jack spool is not powered, however, tension on strands 2 and 3 is

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maintained by the friction weight 4 which rests against the strands on the jack spool. A number of pairs of strands are drawn off from one jack spool but this is not shown in detail in the drawing.

The downward travel of the strands 2 and 3 takes a gradual angular path through a guide bar 5 which is located adjacent a doffer roll 6 and slightly above a wiper roll 7. The strands then pass over the wiper roll 7 and change to a direction of travel away from the doffer roll and into a first rub apron condenser 8.

In their downward travel through the guide bar 5 and around wiper roll 7 and into rub aprons 8 the strands 2 and 3 are maintained a predetermined distance apart by means of the spaced guide eyelets 9 on guide bar 5. It has been found that the best results are obtained when the strands are retained from about one-eighth of an inch to one-half of an inch apart.

The doffer roll 6 has a series of spaced circumferentially extending rings 10 of card clothing on which are carried fibers of wool or the like 11 previously prepared from raw stocks or blends thereof by processes which form no part of this invention. The doffer roll 6 has one circumferential ring 10 for each two strands of elasticized nylon drawn from the jack spool. The fibrous material extends circumferentially of roll 6 on each ring and thus there is a strip of fibrous material for each pair of strands 2 and 3. The wiper roll 7 is covered with corduroy or is constructed so that it can perform a wiping action with respect to the fibers on ring 10 of doffer roll 6.

The doffer roll 6 is positively rotated in the same direction as the wiper roll 7 which also is positively driven and the two rolls are synchronized in their respective speeds. As the strands 2 and 3 are introduced into the machine between ring 10 and roll 7, the wiper roll engages fibrous material 11 on doffer ring 10 to pick the fibrous material 11 from ring 10 and deposit the fibrous material 11 lengthwise on the strands 2 and 3.

The rub apron condenser 8 into which the strands 2 and 3 pass after coming off from wiper roll 7 is comprised of upper and lower aprons which reciprocate laterally but rotate in a direction longitudinally away from the doffer roll 6. The action of the rub aprons interlocks and entwines the carded fibers 11 with the strands 2 and 3 of elasticized nylon. The fibers 11 are further interlocked with strands 2 and 3 by a second rub apron 12 which is located on the machine in line with the first rub apron condenser 8 and on the side of rub apron 8 away from doffer roll 6. The interlocking of the fibers 11 with strands 2 and 3 is illustrated in Fig. 3. As shown in Fig. 3 the fibers pass over one strand and underneath the other and keep the strands separated. The fibers also pass around the strands as well as between them.

The interlocked strands and fibers next pass to the jack spool 13 upon which they are wound, the spool 13 being motivated by the winding frame drum 14 which is positively driven. The yarn is guided to spool 13 by the guides of the reciprocating guide bar 15. The speed of the rollers 6 and 7, the amount of rub by the rub aprons and the tension maintained on the nylon yarn are all factors which must be controlled to obtain a satisfactory finished yarn. Thus, for example, enough tension is maintained on the elasticized nylon to take the crimp out of the nylon.

Fig. 4 illustrates schematically the final forming of the nylon strands 2 and 3 and fibers 11 into yarn. Under this step the strands and fibers are twisted until they are properly compacted and then are wound on a bobbin. To accomplish this step the strands and fibers are drawn from jack spool 13 with the strands and fibers being maintained under tension by the friction weight 16.

The strands 2 and 3 and interlocked fibers 11 are then

guided by a series of pigtail guides 17 and 18 to the feed rolls 19 wherein the strands are twisted about each other and the fibers 11 are likewise twisted and additionally interlocked with strands 2 and 3 to form the yarn 20.

Yarn 20 then passes through guide 21 to the ring traveler 22 which is freely supported on a vertically reciprocating frame 23 of the winding machine around an opening in frame 23 through which bobbin 24 extends. Bobbin 24 is secured to twister spindle 25 to be rotated thereby and spindle 25 is driven by a pulley 26 and belt 27 from a power source, not shown. Frame 23 is vertically reciprocated by levers 28. As bobbin 24 is rotated, ring traveler 22 moves around the bobbin at a slower speed and the frame 23 reciprocates vertically to effect proper winding of the yarn on the bobbin. The speed of the bobbin is synchronized with the speed at which the yarn comes from the feed rolls 19 as the lowermost pair of rolls 19 are positively driven and draw the yarn from jack spool 13.

The invention provides a method of making yarn employing at least two strands of nylon as a core and interlocked fibers. The yarn that is produced by the process has fibers which are interlocked to an extent to prevent the slipping or sliding of the fibers on the nylon. This is an important factor in the wear and the cleaning of the material in which the yarn is used. The nylon is elasticized and as previously described the fibers may be of various materials or a combination of materials.

Various modes of carrying out the invention are contemplated as within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

We claim:

1. A method of making yarn, which comprises the steps of drawing a plurality of strands of elasticized nylon from means holding the same under tension, maintaining said strands spaced apart a distance of approximately one-eighth to one-half of an inch and while so maintaining the strands depositing fibrous material on the strands, then subjecting the fibrous material and strands while moving longitudinally to a laterally directed rubbing action and thereby binding the spaced strands into a unitary multi-strand structure with the fibrous material interlocked and entwined between and around the strands, and thereafter twisting the multi-strand structure into a thread-like yarn.
2. Elasticized yarn which is the product of the method set forth in claim 1.

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