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2,904,954

METHOD FOR PRODUCING DYED YARN OF SYNTHETIC FIBERS

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2 Sheets-Sheet 1

FIG. 1

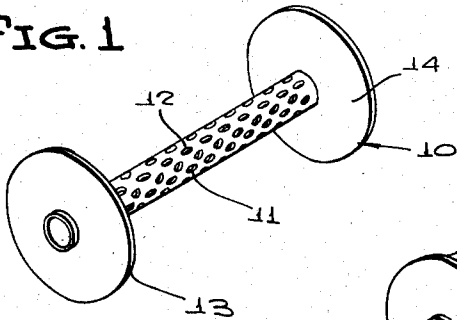


FIG. 2

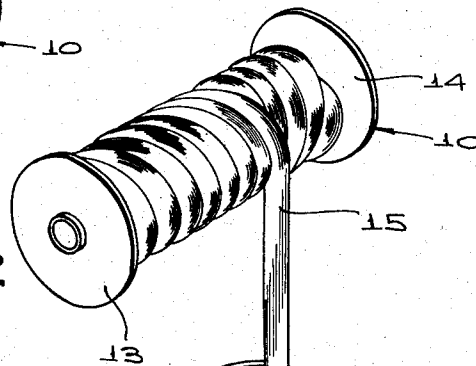


FIG. 3

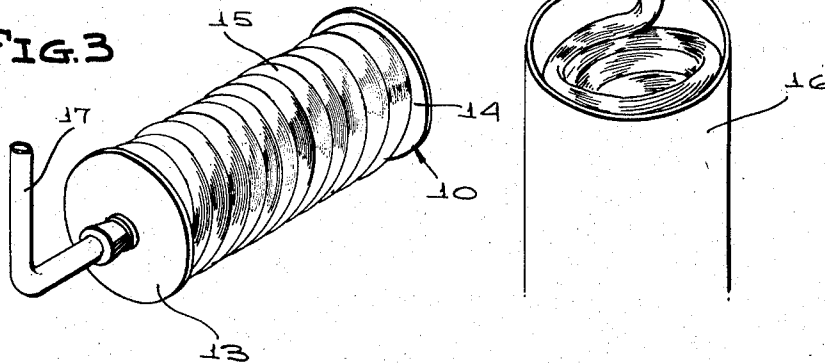
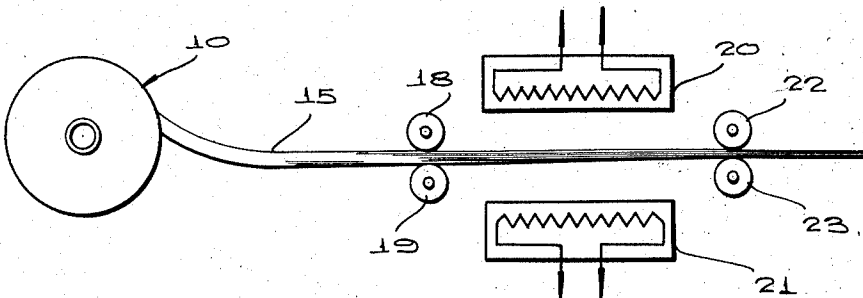


FIG. 4

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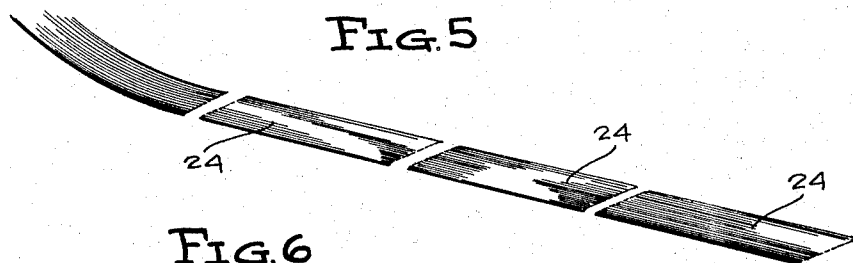
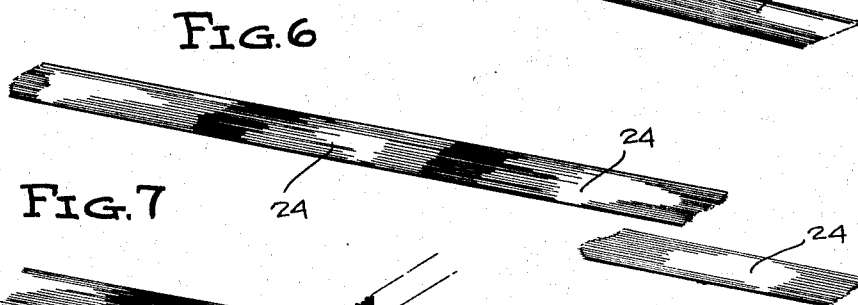
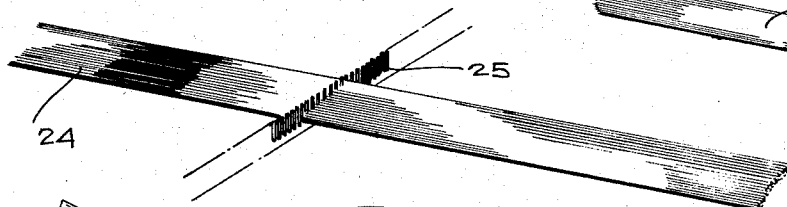
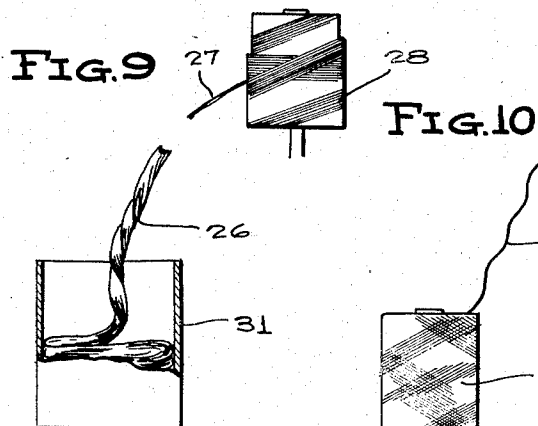
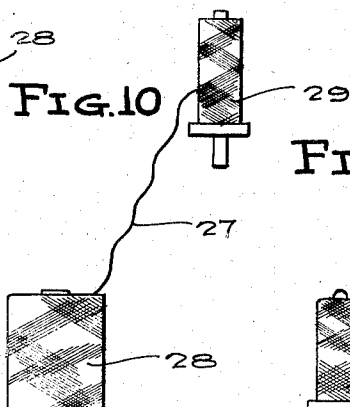
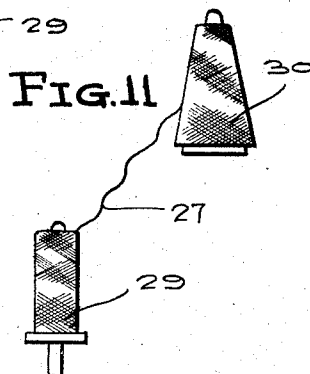
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METHOD FOR PRODUCING DYED YARN OF SYNTHETIC FIBERS

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METHOD FOR PRODUCING DYED YARN OF SYNTHETIC FIBERS

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5 Claims. (Cl. 57—157)

The present invention relates to a method for producing dyed yarn of synthetic fibers.

An object of the present invention is to provide a method for producing dyed yarn of synthetic fibers which enables the production of a dyed yarn without destroying its elasticity.

Another object of the present invention is to provide a method for producing dyed yarn of synthetic fibers which enables the production of a dyed yarn ready for processing into articles of clothing.

A further object of the present invention is to provide a method for producing dyed yarn of synthetic fibers which is simple in execution and one which is commercially practical.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in connection with the annexed drawings, in which:

Figure 1 is a perspective view of the bobbin employed in the dyeing step of the method of the present invention, and

Figures 2 to 11, inclusive, graphically illustrate the steps of the method of the present invention.

In carrying out the method of the present invention for producing yarn fabricated wholly of synthetic fibers and in a dyed state, the following steps are taken:

A reel or bobbin 10 (Figure 1) is provided in which the shaft 11 thereof is hollow and perforated with holes 12 throughout its length between the bobbin heads 13 and 14. The tow 15 consisting wholly of synthetic fibers is received from the place of manufacture in an upright container 16 having an open upper end, as shown in Figure 2. The synthetic fibers may be selected from the group consisting of rayon, Orlon, acrilan.

The length of tow 15 is first wound from the container 16 onto the bobbin 10. Dye is introduced into the hollow shaft 11 of the bobbin 10 by means of a conduit 17 as seen in Figure 3 to thoroughly saturate the tow 15. After drying, the next step consists in heat stretching the tow 15 by passing the tow 15 between a first set of rollers 18 and 19, as in Figure 4, and into an area of heat produced by opposed spaced heating elements 20 and 21. The tow 15 is next passed between a second set of rollers 22 and 23 which rotate faster than the rollers 18 and 19 and consequently stretch the heated tow 15.

The heat stretched tow 15 is next formed into a sliver, as at 24, by cutting at regular intervals as at Figure 5 and causing the ends of each cut section of the tow 15 to overlap, as in Figure 6. Next, the sliver 24 is passed through a comb 25 to comb the sliver 24 and to shift all of the individual fibers of the sliver 24 into longitudinal alignment. The combed sliver 24 may be temporarily stored in a container, as at 31, and is next formed into a roving 26 by twisting, as in Figure 8, and the roving 26 is then spun to form a yarn 27 and is wound on a spool 28, as in Figure 9.

The yarn 27, as thusly formed and wound on the spool 28, is next rewound onto a second spool 29 and is again rewound from the spool 29 onto a conically-shaped cardboard tube in which form, a package 30, it is supplied to the user. The yarn of the package 30 produced by the

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method of the present invention and consisting wholly of synthetic fibers will be found to be completely dyed, fluffy, of the desired bulk, and ready for use without further processing.

5 What is claimed is:

1. The method for producing yarn fabricated wholly of synthetic fibers and in a dyed state which comprises the steps of winding a length of tow consisting wholly of synthetic fibers selected from the group consisting of rayon, Orlon, acrilan, about a perforated hollow bobbin shaft to form a wound spool of said tow, effecting the dyeing of said spool by causing dye to flow from said perforated shaft outwardly through the windings of said spool, heat stretching the dyed tow, and converting the dyed tow into a yarn.

2. The method for producing yarn fabricated wholly of synthetic fibers and in a dyed state which comprises the steps of winding a length of tow consisting wholly of synthetic fibers selected from the group consisting of rayon, Orlon, acrilan, about a perforated hollow bobbin shaft to form a wound spool of said tow, effecting the dyeing of said spool by causing dye to flow from said perforated shaft outwardly through the windings of said spool, heat stretching the dyed tow, forming the heat stretched tow into a sliver, and converting the sliver into a yarn.

3. The method for producing yarn fabricated wholly of synthetic fibers and in a dyed state which comprises the steps of winding a length of tow consisting wholly of synthetic fibers selected from the group consisting of rayon, Orlon, acrilan, about a perforated hollow bobbin shaft to form a wound spool of said tow, effecting the dyeing of said spool by causing dye to flow from said perforated shaft outwardly through the windings of said spool, heat stretching the dyed tow, forming the heat stretched tow into a sliver, forming the sliver into a roving, and converting the roving into a yarn.

4. The method for producing yarn fabricated wholly of synthetic fibers and in a dyed state which comprises winding a length of tow consisting wholly of synthetic fibers selected from the group consisting of rayon, Orlon, acrilan, about a perforated hollow bobbin shaft to form a wound spool of said tow, effecting the dyeing of said spool by causing dye to flow from said perforated shaft outwardly through the windings of said spool, heat stretching the dyed tow, forming the heat stretched tow into a sliver, forming the sliver into a roving, and spinning the roving into a yarn.

5. The method for producing yarn fabricated wholly of synthetic fibers and in a dyed state which comprises winding a length of tow consisting wholly of synthetic fibers selected from the group consisting of rayon, Orlon, acrilan, about a perforated hollow bobbin shaft to form a wound spool of said tow, effecting the dyeing of said spool by causing dye to flow from said perforated shaft outwardly through the windings of said spool, heat stretching the dyed tow, forming the heat stretched tow into a sliver, combing the thus-formed sliver, forming the combed sliver into a roving, and spinning the roving into a yarn.

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