April 2, 1935. H. W. BELL 1,996,318

YARN AND METHOD OF MAKING THE SAME

Filed April 14, 1934

Fig. 1.

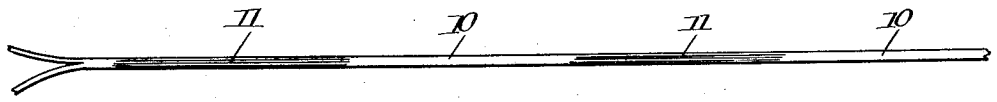


Fig. 2.

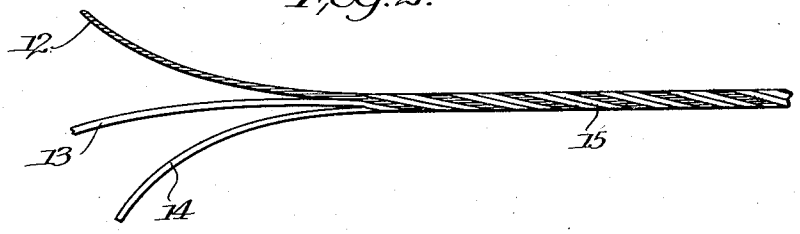
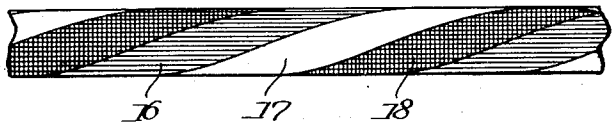


Fig. 3.



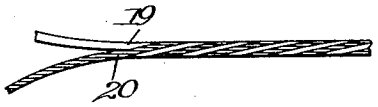


Fig. 4.

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YARN AND METHOD OF MAKING THE SAME

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10 Claims. (Cl. 66—202)

This invention relates to a novel yarn and a method of making the same, this yarn being intended primarily for use in making knitted fabrics but not being limited to such use. The invention will be described with relation to stockings made from so-called "mock twist" yarn and to the type of yarn used.

Mock twist yarn is a single thread yarn which has the appearance of a two ply yarn, one thread of which is dyed and the other white. Mock twist yarn is made by dyeing part of the fibres before the spinning of the fibres into a yarn. After part of the fibres are dyed they are spun together with white fibres into a single thread, the dyed fibres giving the single thread the appearance of being two separate yarns twisted together.

There are numerous disadvantages to making hosiery from mock twist yarn. One of the disadvantages is that in making hosiery of this type it is necessary to have numerous different colors of mock twist yarn in a mill to make up a complete line of hosiery of this type. Another disadvantage is that there is usually always a considerable delay in producing mock twist yarn, since the dyeing of fibres must be done prior to the spinning operation. It is impossible to judge accurately the quantity of yarn that a certain amount of dyed fibres will make, consequently there is usually either too much or too little mock twist yarn of a given color produced. This overage or shortage is a considerable handicap to manufacturers of this type hosiery.

I have discovered that by using immunized cotton (a cotton treated chemically by a patented chemical process to render cotton fibres immune to dyestuffs that ordinarily dye cotton fibres) instead of dyed cotton fibres, a white single yarn is produced that after knitting into a stocking and subjected to a dyeing operation has the same appearance as a stocking made from a mock twist yarn. This effect is obtained due to the fact that the immunized cotton is spun in the place of the dyed fibres along with natural untreated cotton fibres and then when the stocking is dyed, the untreated cotton dyes any color desired, but the immunized cotton does not take the dye. The result then is of course identical with that obtained by the use of mock twist yarn.

The advantages of the new yarn are that in the manufacture of hosiery as described above, it eliminates the necessity of having numerous different colored mock twist yarns in a mill; the manufacture of such hosiery can be materially accelerated; a large reduction of inventory of yarns on hand is effected and a substantial saving is realized due to the fact that there are no odd lots of various colored yarns left over.

The above described yarn is adaptable not only to hosiery but also for use in making other textile fabrics by knitting, weaving, etc.

Referring to the drawing, which is made a part of this application and in which similar reference characters indicate similar parts:

Fig. 1 illustrates one form of yarn that may be made by the use of my invention,

Fig. 2, a different type of yarn,

Fig. 3, the yarn of Fig. 2 on a greatly enlarged scale, and

Fig. 4, the yarn which is the preferred form of yarn that may be produced by my invention.

In the drawing, reference character 10 indicates white portions of a single strand yarn such as are produced by the immunized roving or other unspun material that is supplied to the spinning machine, the portions produced by the untreated natural cotton being indicated at 11. It will be understood that the showing in Fig. 1 is merely diagrammatic and the portions of different color may be of any desired and practical length such as can be produced in a spinning operation.

In Fig. 2 there are shown three rovings going to make up a yarn according to my invention. Of these rovings that indicated at 12 consists of fibres that have been dyed at some time prior to the spinning operation. Rovings 13 and 14 are indicated as being white or undyed and one of these rovings consists of fibres that have been immunized to the action of dyes, in the manner above described, whereas the other roving consists of natural untreated fibres. After this yarn has been spun to form the product indicated at 15 it may be treated with dye in any conventional or desired manner so as to leave that part of the yarn formed from the roving 12 of the same color as it was before, as indicated at 16 in Fig. 3. The immunized portion 17 remains undyed or white but the non-immunized portion which was white when spun is changed to the color of the dye as indicated at 18 in Fig. 3.

The portion shown at 12 in Fig. 2 and at 16 in Fig. 3 may be black or of some other dark color that will not be affected by a lighter dye used on portion 18, or the pre-dyed portion may be treated with a resist, or the portion 16 may be dyed to a shade that combines with the dye for portion 18 to alter its original color, etc.; all as known to be within the skill of the dyer.

The preferred form of my mock twist yarn is shown in Fig. 4, this being the form most used in

practical work. This yarn comprises undyed portions 19 made from immunized fibres and dyed portions 20 made of fibres which were white when spun, being then in the natural untreated condition, but which were subsequently dyed and preferably dyed only after being embodied in a knitted, woven or other textile fabric.

While I do not limit myself to any particular method for immunization of cotton fibres, various methods being known to the art, at the present time I prefer to use such chemically treated cotton as that produced by the Munitex Corporation of Paterson, New Jersey, under their patented process.

Various types of mock twist yarn may be produced by my invention, as will be obvious to those skilled in the art and other variations in the product and process will also be evident to those skilled in the art; therefore I do not limit myself to what is shown in the drawing and described in the specification but only as indicated in the appended claims. Neither do I limit myself necessarily to the use of natural and immunized cotton fibres since other textile fibres may also be employed according to my invention.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent is:

1. A method of making knitted fabric from mock twist yarn comprising combining continuously into a spun yarn natural untreated cotton fibers and immunized cotton fibers, knitting fabric from such yarn and thereafter subjecting the fabric to a dyeing operation, whereby the untreated portion of the yarn is dyed whereas the immunized fibers remain unaffected by the dye.

2. A method of making yarn comprising the step of spinning together simultaneously untreated cotton fibers and cotton fibers immunized to the action of dye.

3. A method of making textile fabrics comprising combining into a yarn untreated cotton fibers and cotton fibers immunized to the action of dye, incorporating the yarn into a fabric, and thereafter subjecting the fabric to the action of a dye, whereby the untreated fibers become colored while the immunized fibers remain unaffected by the dye.

4. A method of making a yarn comprising spinning together untreated cotton fibers and cotton fibers immunized to the action of dyes, so as to form a white yarn and thereafter treating the yarn with a dye, whereby the untreated fibers are colored but the immunized fibers are unaffected by the dye.

5. A single strand yarn including undyed cotton fibers and undyed cotton fibers immunized to the action of dye.

6. A single strand yarn including natural untreated cotton fibres and undyed cotton fibres immunized to the action of dye.

7. A single strand cotton yarn including fibres of natural color, some of which have been immunized to the action of a dyeing agent which is effective on other fibres of said yarn.

8. A single strand mock twist yarn comprising dyed fibres, undyed cotton fibres and fibres immunized to the action of a dye.

9. A mock twist yarn comprising dyed cotton fibres and cotton fibres immunized to the action of a dye.

10. A mock twist single strand yarn comprising natural untreated fibers and fibers of similar origin treated to immunize them against the action of dyes that affect said untreated fibers.

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