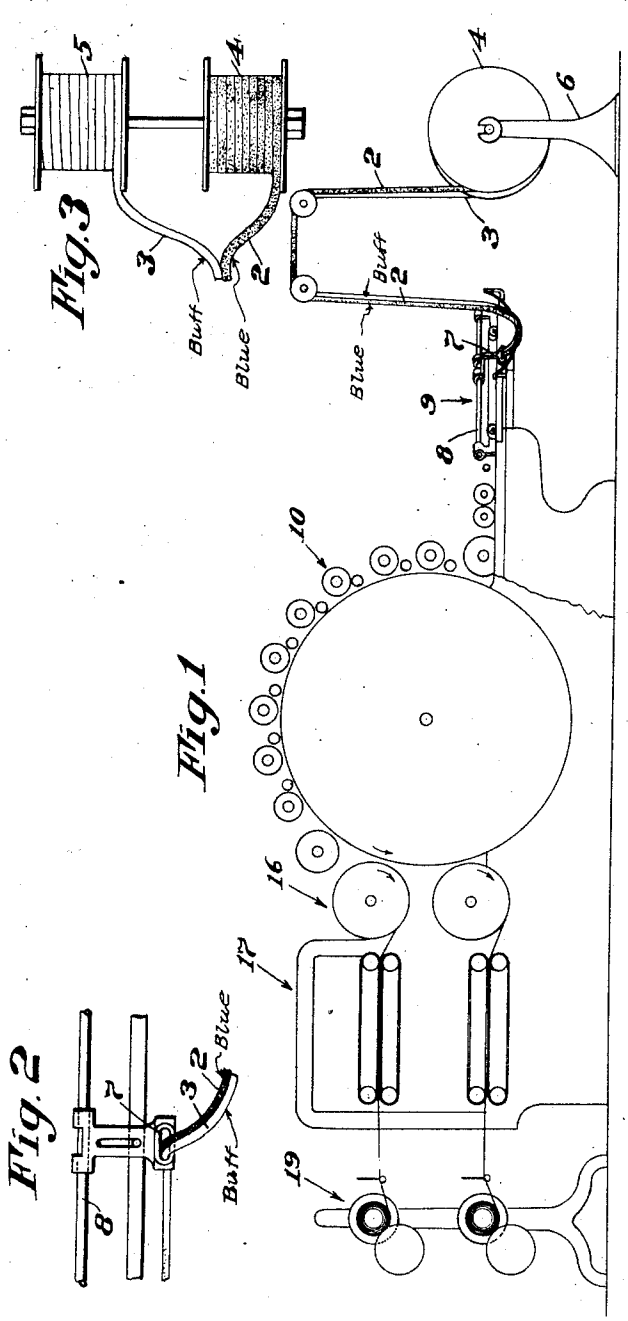
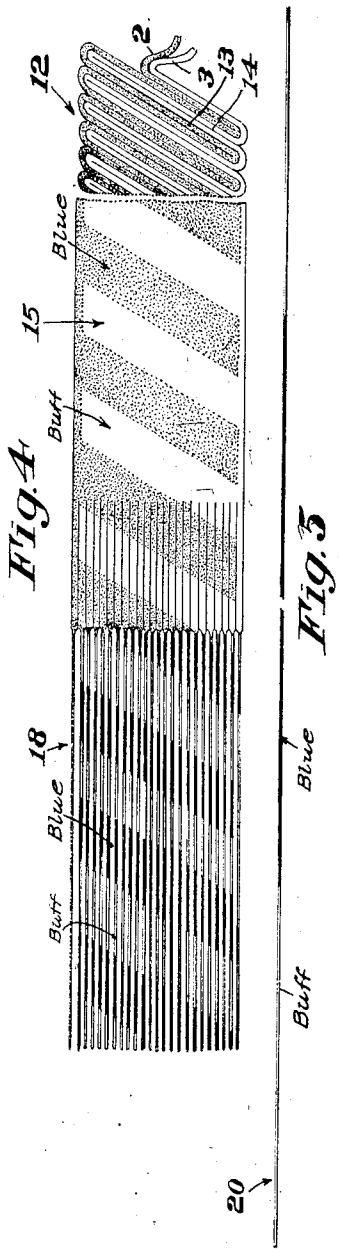
July 26, 1927. 1,637,139

H. B. CLOW ET AL

PROCESS OF MAKING YARN AND THE LIKE

Filed April 16, 1926





INVENTORS.

Henry B. Clow

Henry L. Clow

by Vienna G. Ogden

ATTORNEY.

Patented July 26, 1927. 1,637,139

UNITED STATES PATENT OFFICE.

HENRY B. CLOW AND HARRY L. CLOW, OF LAKEPORT, NEW HAMPSHIRE.

PROCESS OF MAKING YARN AND THE LIKE.

Application filed April 16, 1926. Serial No. 102,570.

This invention relates to a novel process of making yarn, it being distinctly understood that we use the notation "yarn" in a generic sense to include both yarn and thread.

The object of the present invention is to produce yarn having certain novel color characteristics which may comprise an alternation of two colors, shades or hues, throughout the entire length of the yarn, each color section being of substantial length, from ten to twelve feet in practice when used for knitting circularly striped stockings, and divided from each other by relatively short sections, only a few inches in practice, of a mixture of the two colors. Or the yarn may comprise a like alternation of distinctive variegated mixtures, or a repetition of a series of colors or mixtures in a prearranged order. These examples will suggest the nature of the novel yarn produced by practising our process but the scope of the invention, in its broader aspects, comprehends the process of making any yarn in which a color pattern having the characteristics described is produced along different sections thereof while the yarn is being manufactured. Hereinafter the notation "color" will be used as inclusive of a single hue or any stated combination.

In the preferred process of manufacture of our new yarn the fibre of wool, cotton or whatever may be the medium chosen, is all of a single color up to the production of the sliver from the breaker card. At that point in the process of manufacture the novel color characteristics of the yarn hereinafter described in detail, are provided for, so that all yarn that is spun from the fleece doffed from the finisher card will be comprised of different colors related to each other in accordance with the color pattern that was determined upon at the time the selection of differently colored slivers were fed to the finisher card.

The improved method will be explained with the assistance of the accompanying drawings, in which:

Figure 1 is a more or less diagrammatic view, in side elevation, of a conventional finisher card showing a mechanism for feeding slivers thereto with the usual mechanism for acting on the fleece doffed from the card;

Fig. 2 is a detail, in side elevation, of the moving guide of a sliver feed mechanism showing two slivers of two differing colors roved therethrough;

Fig. 3 is another detail, in plan, showing a pair of spools that may be used for supplying the two slivers of different colors to the feed mechanism;

Fig. 4 is a diagrammatic view, in plan, showing the manner in which the lap of slivers, to be fed to the finisher card, is produced to form transversely striped fleece which is slit to produce rovings for spinning into yarn; and

Fig. 5 illustrates a section of yarn having one of the characteristic color patterns produced by practising our novel process.

In practising our novel process the present approved practice may be followed up to and including the production of the sliver from the breaker card. At this point a change in the usual process is introduced. Heretofore in the process of making yarn a single sliver has been fed from a breaker card to the feed mechanism of the finisher card forming a lap of slivers that is of the same color throughout its length, and hence the yarn that is spun from rovings obtained from the finisher card must necessarily have a single color characteristic throughout its length. In order to produce yarn in which long, adjacent lengths of the same strand are of different colors, or in which different combinations of colors, divided as described, alternate along the length of the strand, it is necessary to provide an entirely new lap of slivers to be fed to the finisher card.

There will now follow, as an illustrative example of the improved process, a description of the manufacture of a yarn formed of alternate long lengths of two differing colors, say blue and buff. A blue sliver 2 and a buff sliver 3 from different breaker cards (not shown) are wound separately on spools 4 and 5 respectively which are then mounted on a creel or stand 6. These two differently colored slivers are fed together, as one sliver, to the guide 7 on the guide rods 8 of the feed mechanism 9 of the finisher card 10. Care is taken to present the composite sliver 2—3 to the feed mechanism so that the reciprocating feed guide invariably lays the two differently colored slivers side by side on the feed belts. The lap of slivers that is produced is best illustrated at the right hand end of Fig. 4. As there shown the movement of the feed guide 7 carries both slivers 2 and 3 side by side to one edge of the feed belts, winds them about the fold plate there provided, then carries them

across to the other side, folds there, and so forth, until a composite lap 12 of folded, but loosely laid slivers is built up on the feed belts composed of alternate transverse stripes 13 and 14 colored blue and buff respectively, each stripe being composed of two feed lengths or strands, of a sliver of the one color, laid side by side.

When this lap of slivers 12 passes to the finisher card 10 the fleece held by the clothing on the card cylinder will be striped transversely blue and buff. The web of fleece doffed from the card cylinder is illustrated diagrammatically at 15. It will be understood that the width of the diagonally transverse stripes, which eventually control the length of the section of yarn that is to be of one color, can be varied at will by a variation in the amount of material provided to form the stripes 13 and 14 of the lap of slivers 12. Furthermore the transverse stripes which characterize the finisher card fleece 15 may each be of variegated color, or one may be variegated and the other plain, according to the color characteristics of the slivers fed to the finisher card. In fact, by properly selecting the color characteristics of the sliver and by a variation in the number of slivers used to form the stripes of the lap of slivers 12, the color characteristics of the yarn finally produced may be widely varied.

The two-color or striped fleece doffed from the finisher card cylinder may be treated in any manner desired after it leaves the finisher card. In order to illustrate a completion of the process from this point, the fleece 15 is shown as passing through a fleece divider 16 (Fig. 1), then through a conventional rub-apron 17 shown in the form of a double apron condenser, and finally the rovings 18 (Fig. 4) thus produced are wound on spools on a winding frame 19. The roving spools are transferred to a spinning frame and the rovings thereon are then spun into yarn 20 (Fig. 5) by means of any approved spinning mechanism, this yarn being composed of long alternate lengths of blue and of buff when the process is practiced in accordance with the foregoing detailed description.

Assuming that stockings are to be fabricated on a circular knitting machine from a single spool of this blue and buff yarn the resultant pattern of the stocking will be alternate rings or bands of blue and of buff, one band merging into the other with an appearance that is very pleasing. In other words the very distinct line of demarkation between the color bands, that must be present when knitting from two spools of different colored yarn, is eliminated. Furthermore, this effect is produced by knitting from a single spool of yarn whereas it has been necessary heretofore to produce such effects through a yarn changing operation. This operation involves a considerable waste of yarn and produces a relatively high percentage of defective goods or "seconds" which are eliminated by using yarn made by our process. It is within the scope of the invention to use this yarn in producing woven fabrics having novel pattern effects.

We believe that we are the first to produce by carding and spinning operations, a yarn composed of successive substantial but definite lengths of different colors, or having a repeated color-pattern along its length, so that the color pattern is repeated or reproduced in a fabric by fabricating from a single spool of the yarn.

Having thus described the novel method and one mode of practising it when employing its underlying principle, yet recognizing that some modifications and changes may be made without departing from its spirit and scope, what is claimed as new, is:—

1. The process of making yarn, or the like, which comprises providing a plurality of slivers each of a different color, laying said plurality of slivers together in parallel relation to form a lap of slivers having a repeated longitudinal color pattern, carding said lap to form fleece that is definitely striped transversely in the color pattern of said lap, forming rovings from longitudinal slittings of said fleece, and spinning said rovings into yarn.

2. The process of making yarn, or the like, which comprises providing two slivers of different colors, laying said two slivers side by side and then folding the composite sliver thus formed upon and parallel to itself to produce a lap of slivers having definite transverse stripes which alternate as to color, carding said lap to form fleece while preserving said definite alternation of colors produced in the lap, slitting said fleece longitudinally and rubbing into rovings, and spinning said rovings into yarn.

3. The process of making yarn, or the like, having a repeated color pattern throughout its length which comprises making a lap having said longitudinal color pattern by an association of transversely and parallelly arranged strands of differently colored slivers, reducing said lap to fleece in which the transversely striped characteristic of said color pattern is preserved, and spinning yarn from rovings formed from longitudinal slittings of said striped fleece.

4. The process of making colored yarn, or the like, characterized by a plurality of colors that are selectively grouped throughout its length to form a repeated color pattern which comprises forming a lap of differently colored slivers which is characterized by a longitudinal succession of parallel transverse stripes in the order that forms the selected color pattern for the yarn, carding said lap

to produce transversely striped fleece, slitting the fleece through its succession of stripes and rubbing into rovings, and spinning the rovings into yarn.

5. The process of making yarn, or the like, characterized by an alternation of colors throughout its length, each color section being of substantial length and said sections being divided from each other by a relatively abrupt change of color which comprises forming a lap of parallelly associated slivers characterized longitudinally by the alternation of colors that is to be reproduced in the yarn, carding said lap, producing rovings from longitudinal slittings of the fleece, and spinning yarn from said rovings.

6. The process of making yarn, or the like, characterized by an alternation of colors throughout its length, each color section being of substantial length and said sections being divided from each other by a relatively abrupt change of color which comprises forming a lap of slivers characterized by transverse stripes produced by associating strands of slivers in parallel relation to form alternate stripes of the colors to be exhibited by the yarn, widening the stripes by carding the lap, slitting the fleece through its transversely arranged stripes and rubbing into rovings, and spinning the rovings into yarn.

7. The process of making yarn, or the like, characterized by an alternation of colors throughout its length, each color section being of substantial length and said sections being divided from each other by a relatively abrupt change of color which comprises forming a lap of parallelly associated slivers characterized by oblique stripes across the lap, the longitudinal color pattern being that which is to be reproduced in the yarn, carding the lap to produce fleece having definite transverse oblique stripes, slitting the fleece diagonally through its succession of stripes and rubbing into rovings, and spinning the rovings into yarn.

8. The process of making yarn, or the like, characterized by an alternation of colors throughout its length, each color section being of substantial length and said sections being divided from each other by a relatively abrupt change of color which comprises forming a lap of slivers by feeding two slivers of different colors to the feed guide of a finisher card and retaining them side by side in parallel relation while being laid across the feed belts whereby said lap exhibits transverse stripes alternating in color and each stripe consisting of two parallel slivers, carding said lap to produce fleece having definite transverse stripes, slitting the fleece doffed from the card through the succession of transverse stripes and rubbing into rovings, and spinning the rovings into yarn.

HENRY B. CLOW.
HARRY L. CLOW.