Oct. 12, 1948. I. H. C. GREEN 2,451,214

METHOD OF KNITTING

Filed Feb. 13, 1946

FIG. 3.

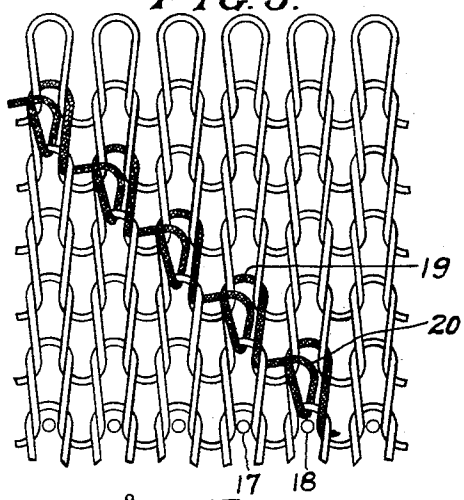


FIG. 4.

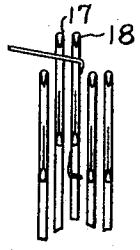


FIG. 5.

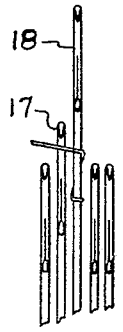


FIG. 1.

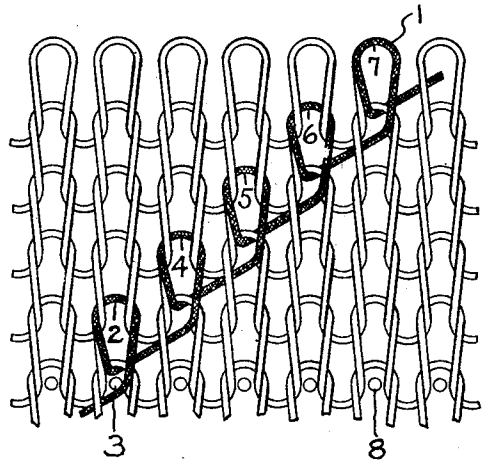
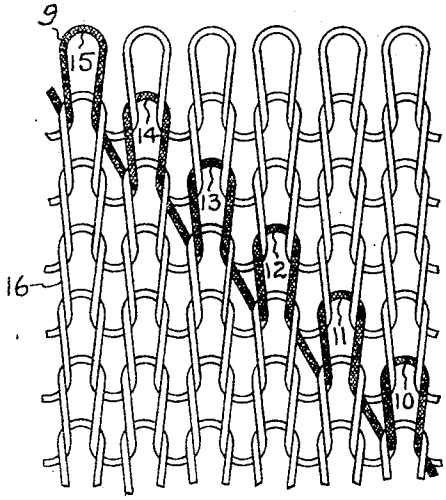


FIG. 2.



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METHOD OF KNITTING

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2 Claims. (Cl. 66—135)

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This invention relates to a new and useful improvement in methods of knitting and in particular to methods of producing certain wrap patterns upon knitted fabric by means of circular, independent needle, knitting machines.

Various single yarn wrap patterns are produced upon such a machine by means of a wrap spindle mounted eccentrically of the needle cylinder and so operated that the pattern progresses in a direction or directions diagonal to the wales and courses. To do this the rate of rotation of the wrap spindle, which normally is the same as that of the cylinder, is advanced or retarded so that the different needles concerned with this sort of wrapping may be brought within the operative scope of the particular yarn eyelet of the wrap spindle. This change in the relation between the cylinder and the wrap spindle results in a different kind of wrap loop in a pattern extended in one diagonal direction from the kind produced if it extends in the other diagonal direction. This difference is most conspicuous in single needle wraps of this character and will be described in connection with such a wrap pattern, although it is also present with respect to the first needle wrapped in multi-needle diagonal patterns.

In the drawing:

Fig. 1 represents diagrammatically a single needle wrap extending upwardly from left to right on plain knitted fabric assumed to have been knit upon a machine rotating in counter-clockwise direction;

Fig. 2 is a similar representation of a single needle wrap extending upwardly from right to left as produced by present methods with the cylinder rotating in counter-clockwise direction as before;

Fig. 3 is also a similar representation of a single needle wrap extended in the same direction as that of Fig. 2 but produced by the method of this invention; and

Figs. 4 and 5 are views of certain needles for the purpose of illustrating the method of this invention.

Assume that the cylinder of the independent needle knitting machine rotates in counter-clockwise direction and is equipped with an eccentrically mounted wrap spindle which rotates in the same direction at the same angular speed. Under these conditions, it is well known that a single wrap yarn can be wrapped around only certain needles in a given course and that no others can be wrapped in any course without altering these conditions. Therefore, if a single needle wrap is being made, the operative scope of

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the spindle is limited to the needles within this group. To bring other needles within the range of the eyelet of the wrap spindle which feeds this particular yarn, the angular relation between the cylinder and the spindle must be altered by advancing or retarding the rotation of the spindle.

More specifically, to produce the single needle diagonal wrap pattern 1 shown in Fig. 1, the rotation of the spindle must be increased periodically so that the particular needle to be wrapped in each course will be brought within the operating range of the eyelet. For example, if wrap loop 2 has been made upon needle 3 it may be possible to produce wrap loops 4—7 without advancing the spindle but if the pattern is continued far enough the needles to be wrapped will lie outside of the group which can be wrapped in this particular position. Ordinarily, the wrap spindle is advanced or shogged every few courses, say, every four courses, so that in the example illustrated by Fig. 1 the spindle might be advanced before wrap loop 7 is made on needle 8. This is largely a matter relating to the way in which the machine is set up rather than to the theoretical wrapping necessities. Advancing the spindle for this purpose has no effect upon the nature of the wrap produced which, as can be seen, from Fig. 1, consists of a series of true wrap loops of normal character.

To produce a wrap pattern in the other diagonal direction, shown in Fig. 2, the rate of rotation of the spindle is periodically retarded in the same manner as it was advanced to produce the wrap of Fig. 1. However, this change in angular relation between the wrap spindle and the cylinder results, not in true wrap loops completely wrapped around each needle, but, as shown by the wrap pattern 9 in Fig. 2, in open loops 10—15 similar to those of the underlying fabric 16 with the exception that they progress in a diagonal direction.

The wrap pattern produced, as described in connection with Fig. 1, remains upon the surface of the fabric and is clear and pleasing to the eye. There is a tendency for each succeeding wrap loop to tighten the preceding loop because of its roughly circular shape so that it is solidified and the effect of a solid color is increased. In the wrap represented by Fig. 2, the reverse is true, each succeeding wrap loop tending to pull apart the sides of the preceding loop so that the solid color effect is reduced and a considerable part of each loop is buried in the underlying fabric.

This defect is remedied by the present inven-

tion in the following way. Whenever diagonal single needle wrapping is done in the direction in which the wrap spindle must be retarded not only is the single needle 17 which is to be wrapped raised above the others in the usual manner but also the preceding needle 18 as shown in Fig. 4.

The wrap yarn is wrapped around both of these needles also as illustrated by Fig. 4. Before knitting occurs, needle 18 is raised still higher as shown in Fig. 5 so that the wrap yarn will pass onto its shank below its latch. Therefore, when the wrap yarn is knit along with the body yarn, the wrap loop will be cast off and will not be knit by needle 18 but will be knit only by needle 17. Also a small bight of yarn is left by needle 18 so that when the wrap loop is knit by needle 17 the tendency of this loop to pull the sides of the preceding wrap loop and bury it in the fabric will not be present. Instead, any robbing of yarn from one wrap loop to the other will simply reduce to a greater or less degree the bight of yarn resulting from the casting off of needle 18. In addition, the bight of yarn is present in each loop between the two sides so that any tendency of the sides of the loops to pull apart is compensated for by the presence of this additional bight of yarn in each loop. The result is a wrap pattern which to the eye cannot be distinguished readily from the other diagonal wrap pattern illustrated by Fig. 1.

A wrap pattern produced by the method of this invention otherwise corresponding to that of Fig. 2 is shown in Fig. 3. For example, as just described, when needle 17 was wrapped as a preliminary to producing loop 19, the preceding needle 18 was also wrapped but later caused to cast off the wrap yarn. The resulting bight of yarn is shown at 20.

Although this description has been limited to

single needle wrap patterns it will be realized that a multi-needle wrap pattern preceding in the same diagonal direction will have the same defect with respect to the first needle of the multi-needle group and that this invention can be utilized in the making of multi-needle wrap patterns of this character simply by including temporarily the preceding needle in the group to be wrapped in the manner above described.

I claim:

1. A method of knitting which includes the steps of feeding a body yarn to needles, raising at least two needles to a wrap yarn receiving height, feeding the same wrap yarn to the hooks of all of said raised needles, further raising the leading one of said raised needles to clear its latch and thereafter causing all of said needles to pass through the knitting wave whereby said wrap yarn is cast off by the leading needle and knit by the remainder of the needles that were raised to wrap yarn receiving height.

2. A method of knitting a fabric which includes the steps of feeding a body yarn to needles, feeding the same wrap yarn to a plurality of needles and thereafter forming a loose loop about the next to the leading one of said wrapped needles by casting off said wrap yarn from the leading one of said wrapped needles without knitting it.

ISAAC H. C. GREEN.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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