

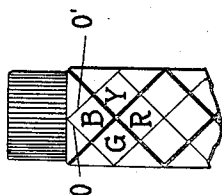
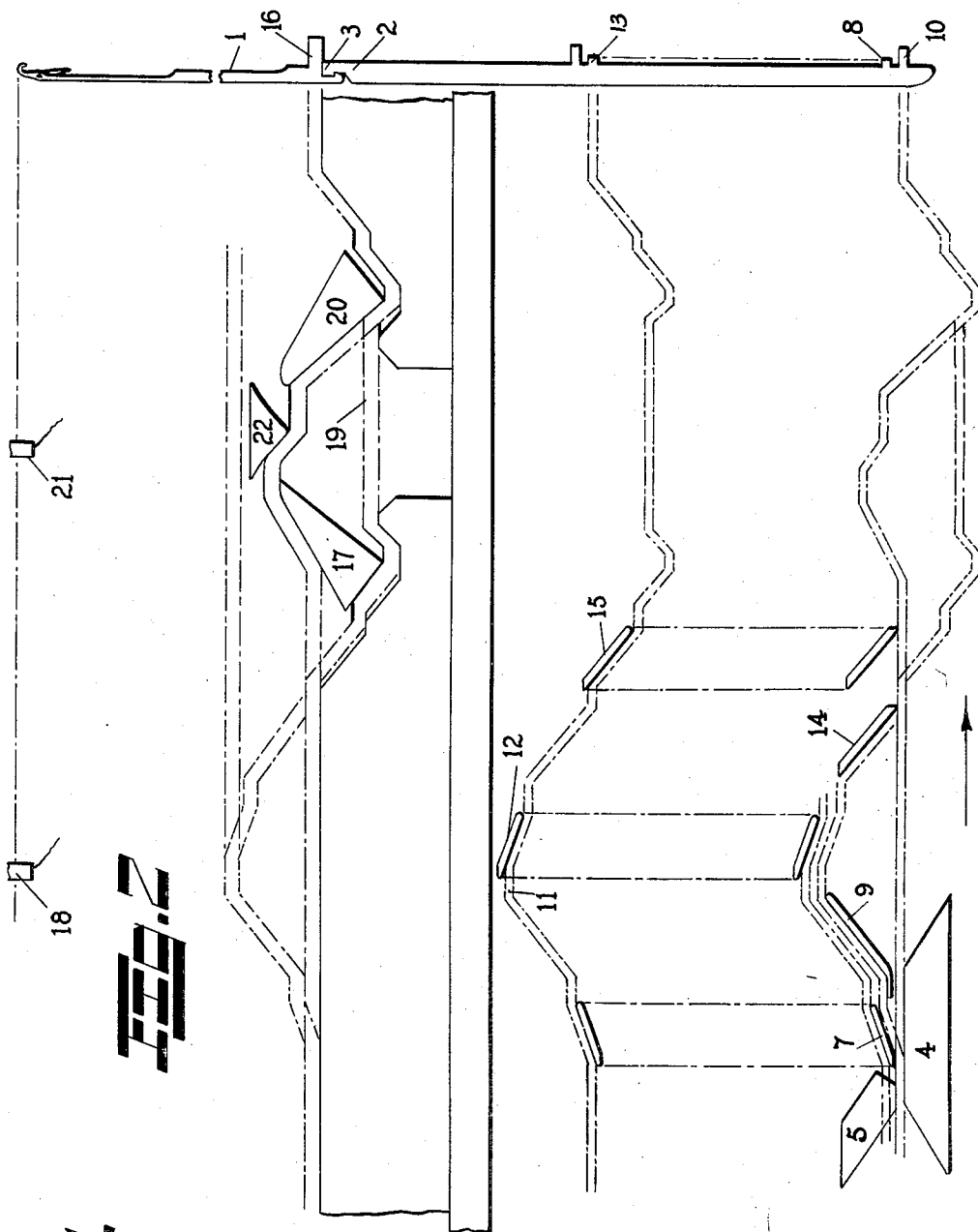
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METHOD AND APPARATUS FOR KNITTING

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METHOD AND APPARATUS FOR KNITTING

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8 Claims. (Cl. 66—43)

This invention relates to circular, independent needle, knitting machines.

An object of the invention is to provide an improved method of making a knitted fabric with a solid color pattern of any desired shape, such, for example, as a diamond, which is further patterned as desired by a yarn of another color which is knit into instead of upon the fabric. An example of such a pattern is the well-known overplaid or overlaid stripe in solid color Argyle hosiery. The invention will be described with reference to fabric having such an overplaid pattern therein.

In the accompanying drawing,

Fig. 1 is a diagrammatic view of fabric produced by the method and mechanism of the invention; and

Fig. 2 is a diagrammatic representation of a cam path for needles and jacks after the manner of the invention.

The fabric of Fig. 1 features four differently colored solid diamonds, B, Y, G and R, indicated by the heavy black lines of the figure. The lighter lines intersecting the different diamonds represent stitches of overplaid yarns of a different color or colors than the diamonds which they intersect. Many combinations of colors may be used since the invention offers wide yarn changing possibilities.

Referring to Fig. 2, each needle 1 is joined to a jack 2 by interlocking hooks as shown at 3. This permits the jacks to raise or lower the needles so that they will follow the paths required by the method of knitting to be described.

The jacks connected to the needles which are to knit an individual diamond, say B, with its overplaid O and O', are caused to pass between the levelling cams 4 and 5. Then the needle or needles which are to knit the overplaid O are selected by selector blades such as 7 operating on butts such as 8. The selected jacks and corresponding needles are then raised by master cam 9 acting on master butts 10 to the latch clearing and yarn taking positions indicated at 11.

After the selected needles have taken their yarn, they are lowered by the action of de-selecting blades such as 12 acting on butts 13. After the needles have been started downwards by this de-selecting action, they are brought into line with the unselected needles by cam 14 acting on master butt 10. At this point, a selecting device such as 15 is brought into action on jack butts such as 13 to lower the selected needles. This causes the butts 16 of the selected needles to pass down and under the front stitch cam 17 and knit the overplaid yarn O which they have previously taken from the yarn feed 18. These needles then proceed along the path 19 and under the rear stitch cam 20.

The unselected needles which are to knit the solid color or body portion of the same course of the diamond pass straight through the levelling cams 4 and 5 and, not being affected by the selectors, are raised over the front stitch cam 17 to take the body yarn from the feed 21 and pass under the guard cam 22 and down rear stitch cam 20, thus knitting the body yarn on all of the needles

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except those which had been selected to take the overplaid yarn. The solid color yarn is floated across these needles.

This completes one course of the diamond. The next succeeding course is knit in a similar manner but in the reverse direction. The selecting cams and yarn feed of the pattern yarn are repeated on the other side of the cam block so that on the reverse stroke of the machine needles are selected to take another overplaid yarn O' and knit it at the rear stitch cam 20 in the same manner described above for the forward stroke of the machine, after which the rest of the needles knit the body yarn as before, only under stitch cam 17. In this manner, overplaid lines, smaller diamonds, and other patterns can be knit.

Although the above description has been confined to knitting in the reciprocatory manner an area of fabric ornamented by an overplaid of another color, it should be understood that the method may also be employed to pattern any desired area of fabric knit in one direction of rotation, the nature of the patterning being determined by the scope of the pattern mechanism available.

We claim:

1. A method of knitting on a circular, independent needle, knitting machine a pattern of a first yarn and a second yarn into a fabric of a third yarn which comprises the steps of knitting in one course loops of said first yarn in accordance with said pattern, next in the same course and on the same stroke of the machine knitting loops of said third yarn and floating said third yarn across the wales in which said loops of said first yarn were knit, then reversing the direction of knitting to knit the next course, first knitting loops of said second yarn in accordance with said pattern and then on the same reverse stroke of the machine knitting loops of said third yarn and floating said third yarn across the wales in which said loops of said second yarn were knit.

2. A method of knitting a pattern of a first yarn into a fabric of a second yarn which includes the steps of drawing with some needles loops of said first yarn under the same cam over which other needles are raised to clear their latches of said second yarn.

3. A method of knitting a pattern of a first yarn into a fabric of a second yarn which comprises feeding said first yarn to the needles which are to knit it forward of the yarn feeding station of said second yarn, then knitting said first yarn under the same cam over which the needles which knit said second yarn are raised to clear their latches.

4. A method of knitting on a circular, independent needle, knitting machine having a single knitting station a course of fabric in which a first and a second yarn form separate loops with the second yarn being floated across the loops of the first yarn which comprises selectively raising needles to clear their latches and take the first yarn, lowering these needles below the level of the remaining needles which knit the second yarn and to a sufficient depth to knit, and retaining said selected needles below the level of said remaining needles while said remaining needles take said second yarn, thereby causing said second yarn to be floated across the wales in which said first yarn was knit.

5. A method of knitting on a circular, independent needle, knitting machine having a cam block with a front stitch cam and a rear stitch cam which includes the steps of drawing loops with some needles only under said front stitch cam clearing the latches of other needles by raising them over said same front stitch cam and then knitting with said other needles only under said rear stitch cam all on a single passage of said needles through said cam block.

6. A method of knitting at a single knitting station having a front stitch cam and a rear stitch cam on a circular,

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independent needle, knitting machine fabric having a body knit with one yarn and a design knit with a second yarn and wherein said one yarn is floated behind the loops of said second yarn which comprises the steps of reciprocating the needles which knit said one yarn and the needles which knit said second yarn through said knitting station, drawing loops of said one yarn under one of said cams, and drawing loops of said second yarn under the other of said cams.

7. In or for a circular, independent needle, knitting machine a needle bearing cylinder, a plurality of needles mounted in said cylinder, a knitting station having a front stitch cam and a rear stitch cam proximate said cylinder, means for selecting individual ones of said needles to clear their latches and take yarn, means for further selecting said individual needles and causing them to pass under said front stitch cam and thereby draw loops of yarn.

8. In or for a circular, independent needle, knitting machine a needle bearing cylinder, a plurality of needles

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in said cylinder, needle selecting means for selectively raising individual ones of said needles from a common level to clear their latches and take a design yarn, means for returning said selected needles to said common level, and further needle selecting means for selectively moving said needles which have taken design yarn below said common level and causing them to knit said design yarn in single yarn stitches.

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