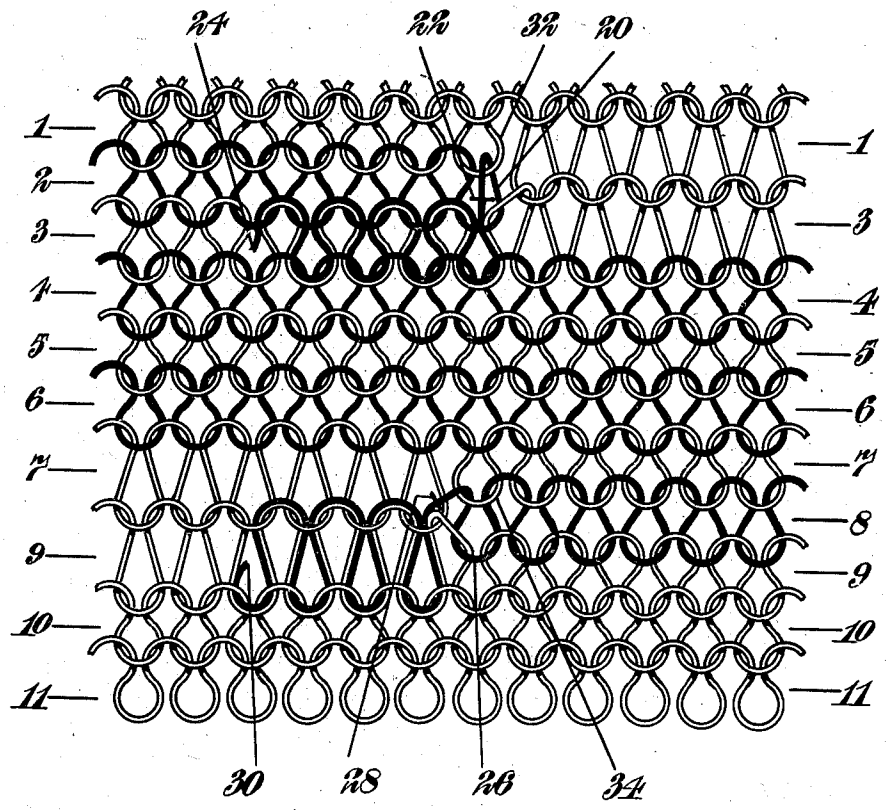
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KNITTED FABRIC AND METHOD OF KNITTING FABRICS BY CIRCULAR KNITTING MACHINES

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Inventors
F. E. Deans,
C. F. Ranger
C. H. Wainwright

By Watson, Coit, Morse & Grindle
Attorneys.

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## KNITTED FABRIC AND METHOD OF KNITTING FABRICS BY CIRCULAR KNITTING MACHINES

Frederick Edward Deans, Charles Frederick Manger, and Carlyle Herbert Wainwright, Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England

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This invention is for improvements in knitted fabric and methods of knitting fabric by circular knitting machines.

In certain types of circular knitting machines it is common practice to provide the machine with two or more feed points spaced around the needle circle. The fabric knitted by such machines is thus composed of two or more helices of interlinked loops of yarn, there being one helix to each feed point.

In such a machine, if knitting is suspended, begun, or resumed at one of the feed points during the operation of the machine whereby the number of the helices of interlinked loops of which the fabric is composed is varied, there is a tendency in work produced by the machine for a hole to appear in the work at the point in the work where a helix begins or ends. This is due to the fact that the yarn at the ends of the helix tends to work out of and thereby partially or wholly release the loops with which it is initially interlinked.

An object of the present invention is to provide a method of knitting by which method occurrence of such holes in the work is avoided.

In accordance with the present invention a helix, the knitting of which into the fabric is started or stopped, or both started and stopped, while another helix of the fabric is being knitted, has an end or each of its ends, as the case may be, anchored in the fabric so that said end or each end does not tend to work out of the fabric and thus form a hole therein. The said anchoring is effected by providing a relatively long loose length of yarn at the end of the helix and then interlinking both the said length of yarn and the yarn of another helix of the fabric into one and the same loop of the fabric. At the starting end of the helix the said length of yarn and the yarn of the other helix are both interlinked with the initial loop of said starting end. At the finishing end of the helix the said length of yarn and the yarn of the other helix are both interlinked with one and the same loop of said other helix. Preferably, the said length of yarn at an end of the helix together with the companion yarn is interlinked with the loop referred to and also with a few loops following that loop so as to secure a good anchorage for the helix end.

The accompanying drawing is a diagrammatic representation of a piece of knitted fabric one part of which is composed of two helices of interlinked loops, the drawing being illustrative of a method according to this invention of anchoring in the fabric the two ends of one of the helices. The drawing is purely diagrammatic, the lengths of the loops of the fabric being exaggerated solely for the sake of clearness in the understanding of the invention.

In the drawing, courses 1, 3, 5, 7, 9, 10 and 11 form part of one of said helices, and courses 2, 4, 6 and 8 form part of the second helix which has been knitted into part of the fabric. The loop 20 is the first loop of the said second helix. From the loop 20 there extends, say from the point 22, a length of yarn which ends at 24. This length of yarn and the yarn of course 3 of the first-mentioned helix are both interlinked with the loops of course 2 of the second helix. The starting end of the second helix is thus firmly anchored in the fabric. The last loop of the second helix is loop 26 from which, say from the point 28, there extends a length of yarn ending at 30. This yarn length and the yarn of course 9 of the first helix are both interlinked with the loops of course 7 of the first helix, thereby firmly anchoring in the fabric the finishing end of the second helix.

It will be appreciated that in the absence of the anchoring lengths of yarn above referred to, the ends of the loops 20 and 26, which loops in that case would terminate respectively at the points 22 and 28, would readily work out of the loops 32 and 34 above them, thus starting the formation of holes in the fabric, which holes would increase in size as the ends of the loops 20 and 26 slipped out of further loops of the fabric with which loops they were initially interlinked.

A method according to the present invention may be performed by any usual form of circular knitting machine which is provided with a plurality of feed points spaced round the needle circle and in which machine, at least at one of said feed points, there is provision of known character for suspending, at times, the knitting action of the needles and the supply of yarn to the needles. Also at said feed point, the usual yarn trapper and cutter will be arranged at an appropriate distance from the needle circle as to afford the yarn-lengths extending between the points 22 and 24, and 28 and 30, respectively; or the timing of the trapper and cutter may be delayed in relation to the knitting operation at the finishing end of a helix knitted at that feed point so as to allow the length of yarn 28 to 30 to pass the trapper and cutter before the yarn is cut at the point 30. The timing of the trapper and cutter may also be delayed in relation to the knitting operation at the starting end of the second helix so that the trapper and cutter device retains its hold on the yarn end until the yarn-length 22 to 24 is folded

back and lies on the outer side of the needles which knitted the first loop 20 and a few loops of the second helix following the loop 20.

In such a machine, which will be assumed to have but two feed points, the helix composed of courses 1, 3, 5, 7, 9, 10 and 11 will be knitted at the first of said feed points while the second helix composed of courses 2, 4, 6 and 8 will be knitted at the second feed point which will be spaced from the first feed point round the needle circle. The lengths of yarn 22 to 24 and 28 to 30 extending from the second helix will, however, be knitted at the first feed point with the result that these yarn-lengths will be knitted into the fabric together with the yarn supplied from and knitted at the first feed point.

In practice, it is found that with yarns of usual character, each of the yarn-lengths 22 to 24 and 28 to 30 in the knitting operation naturally lays itself in a position in which it will be knitted into the fabric by the needles at the first feed point, but in cases where there is any difficulty in this connection, a brush or like wiping or sweeping device may be arranged on the machine in front of the usual latch guard to lay said yarn-lengths in their proper position in relation to the needles.

Although in the accompanying drawing the fabric is shown as composed of plain knitting and in the description thereof is referred to as consisting of but two helices of knitted loops, it is to be understood that the invention is not limited in these respects.

It will be appreciated that the present invention deals with a fabric of which at least some parts of the fabric are composed of a plurality of helices, the loops of each of which are interlinked with the loops of an adjacent helix of said plurality. This language is employed herein to distinguish from a fabric having a single helix composed of a plurality of yarns, the compound loops of which single helix are interlinked with loops of an adjacent course of that helix.

We claim:

1. A method of knitting circular knitted fabric composed at least at some parts of the fabric of a plurality of helices, the loops of each of which are interlinked with loops of an adjacent helix of said plurality, in which to anchor in the fabric an end of one of said helices a length of yarn of said helix at the said end and the yarn of another of said helices are both interlinked with one and the same loop of the fabric.

2. A method of knitting circular knitted fabric composed at least at some parts of the fabric of a plurality of helices, the loops of each of which are interlinked with loops of an adjacent helix of said plurality, in which to anchor in the fabric the starting end of one of said helices, a length of the yarn of said helix at the said starting end and the yarn of another of said helices are both interlinked with the initial loop of said starting end.

3. A method of knitting circular knitted fabric composed at least at some parts of the fabric of a plurality of helices, the loops of each of which are interlinked with loops of an adjacent helix of said plurality, in which to anchor in the fabric the finishing end of one of said helices, a length of the yarn of said helix at the said finishing end and the yarn of another of said helices are both interlinked with one and the same loop of said other helix.

4. A method of knitting circular knitted fabric composed at least at some parts of the fabric of a plurality of helices, the loops of each of which are interlinked with loops of an adjacent helix of said plurality, in which to anchor in the fabric an end of one of said helices a length of yarn of said helix at the said end and the yarn of another of said helices are both interlinked with one and the same series of loops of the fabric.

5. A method of knitting circular knitted fabric composed at least at some parts of the fabric of a plurality of helices, the loops of each of which are interlinked with loops of an adjacent helix of said plurality, in which to anchor in the fabric the starting end of one of said helices, a length of the yarn of said helix at the said starting end and the yarn of another of said helices are both interlinked with one and the same series of loops constituted by the initial and following loops of said starting end.

6. A method of knitting circular knitted fabric composed at least at some parts of the fabric of a pluraltiy of helices, the loops of each of which are interlinked with loops of an adjacent helix of said plurality, in which to anchor in the fabric the finishing end of one of said helices, a length of the yarn of said helix at the said finishing end and the yarn of another of said helices are both interlinked with one and the same series of loops of said other helix.

7. Knitted fabric comprising two courses of loops of yarn which loops at one part of the fabric are mutually interlinked, a course of loops of yarn which at another part of the fabric is intercalated between said two courses and has its loops interlinked with the loops of said two courses, and a length of yarn extending from an end of said intercalated course which length of yarn and the yarn of one of said two courses are interlinked in company with at least three loops of the fabric.

8. Knitted fabric comprising two courses of loops of yarn which loops at one part of the fabric are mutually interlinked, a course of loops of yarn which at another part of the fabric is intercalated between said two courses and has its loops interlinked with the loops of said two courses, and a length of yarn extending from an end of said intercalated course which length of yarn and the yarn of one of said two courses are interlinked with the yarn of said intercalated course by being interlinked in company with at least an end loop of said course.

9. Knitted fabric comprising two courses of loops of yarn which loops at one part of the fabric are mutually interlinked, a course of loops of yarn which at another part of the fabric is intercalated between said two courses and has its loops interlinked with the loops of said two courses, and a length of yarn extending from an end of said intercalated course which length of yarn and the yarn of one of said two courses are interlinked in company with at least one loop of the other of said two courses and two loops of a course adjacent the said one course.

FREDERICK EDWARD DEANS.
CHARLES FREDERICK MANGER.
CARLYLE HERBERT WAINWRIGHT.