Aug. 16, 1938. W. REYNOLDS ET AL 2,127,139

KNITTED FABRIC AND IN THE METHOD OF PRODUCING SAME

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Fig. 1.

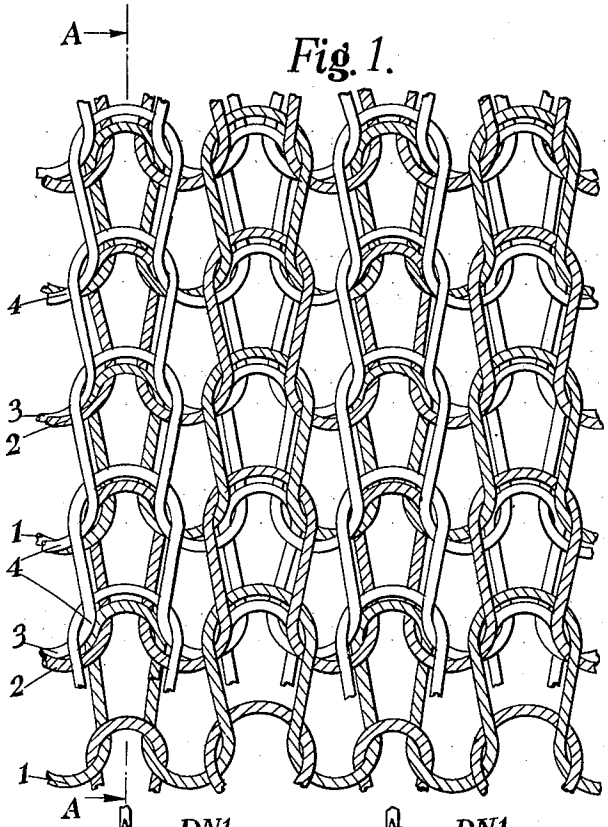
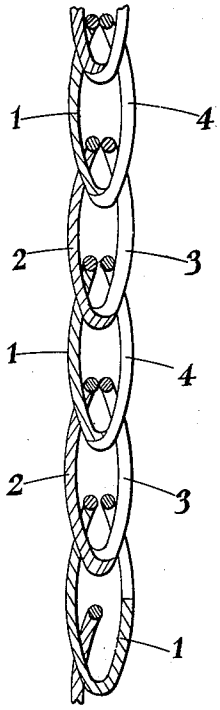


Fig. 2.



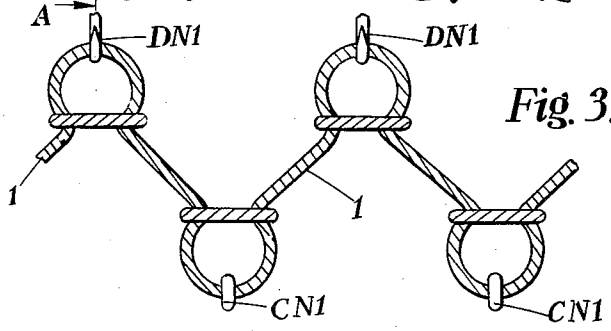


Fig. 3.

Fig. 4.

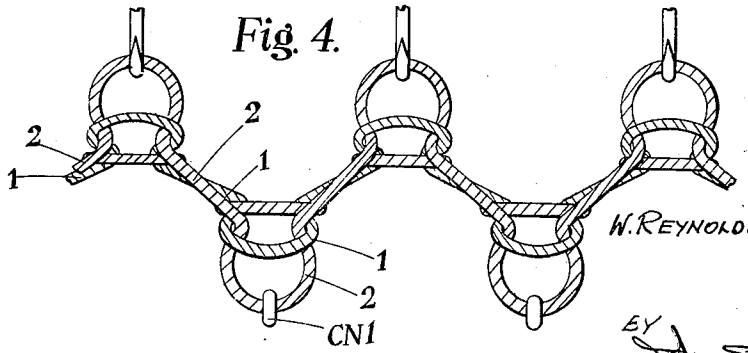


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Fig. 5.

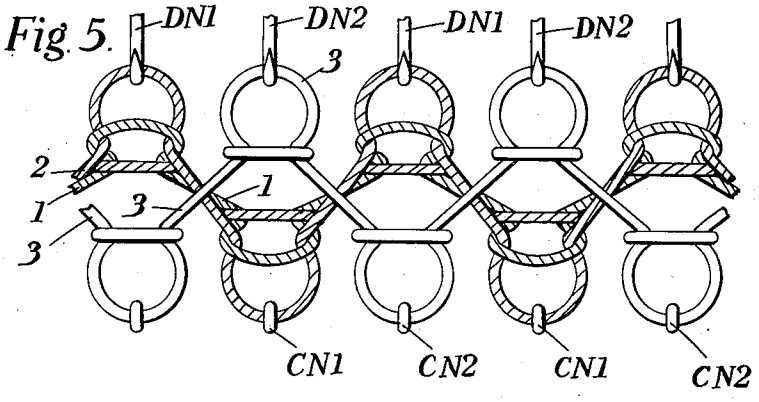


Fig. 6.

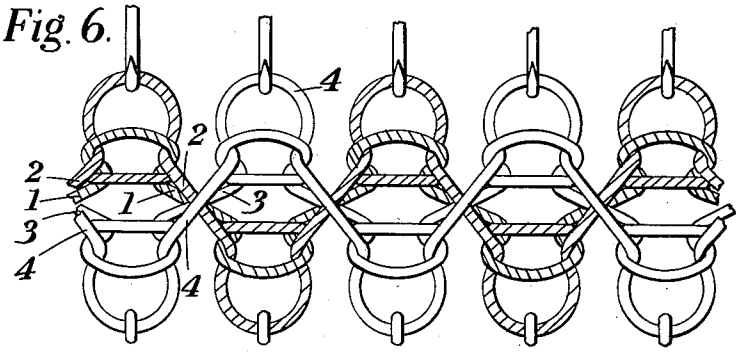
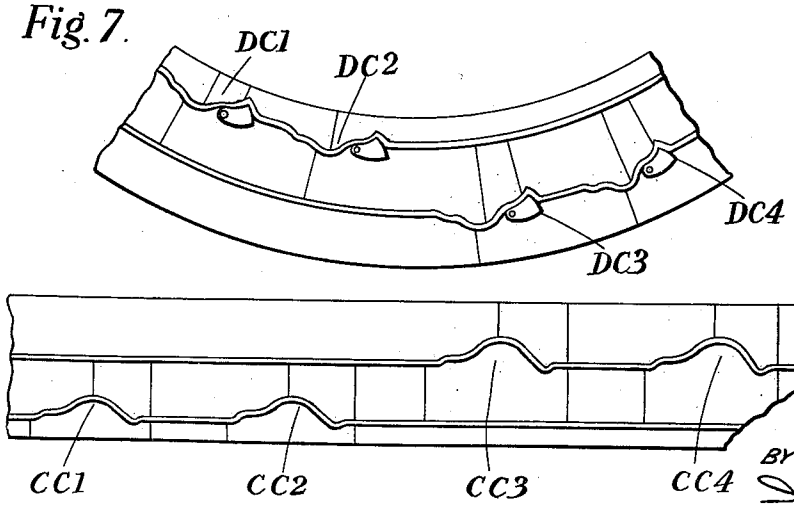


Fig. 7.



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2,127,139

KNITTED FABRIC AND IN THE METHOD OF PRODUCING SAME

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Application May 7, 1936, Serial No. 78,326
In Great Britain May 9, 1935

19 Claims. (Cl. 66—197)

This invention comprises improvements in knitted fabrics and in the method of producing same. The invention refers to rib knitted fabric, and has for its main object so to construct such fabric that a finer gauge or closer rib can be obtained than heretofore without appreciably impairing or diminishing elasticity of the fabric.

The rib fabric according to this invention is of the interlock type having the stitch wales of one face directly over or imposed upon those of the opposite face. As compared with the usual interlock fabric, however, the improved fabric possesses increased elasticity, a more uniform texture and pleasing appearance and greater porosity.

In interlock fabric as heretofore produced the stitches appertaining to successive stitch wales are not in alignment across the fabric; in other words, the successive stitches produced from one thread lie at a different level from that of the stitches produced from another thread, and consequently also the stitch loops at one face of the fabric are not accurately disposed directly over the stitch loops at the opposite face.

According to the present invention, however, rib fabric of the type referred to is provided wherein the stitches of adjoining or successive stitch wales at each side or face of the fabric are level or aligned across the fabric; in other words, the fabric has at each face parallel rows of transversely aligned stitches extending across same, each row consisting of stitches of adjoining or successive stitch wales.

Viewing the invention from another aspect, same provides a rib fabric of the type referred to wherein the stitch loops at one face are disposed directly over or accurately register with those at the opposite face.

Advantageously the improved rib fabric is composed of four threads, from two of which are produced stitches of alternate stitch wales at each side of the fabric and from the remaining two of which are produced stitches of the remaining alternate wales at each side of the fabric.

The invention also includes a method of producing the improved fabric as above on a rib knitting machine, said method comprising the following cycle of operations, namely:—feeding thread to and making stitches on alternate or selected needles of each needle row or bed (the operated needles of one row being opposed to those of the other row that are not so operated), feeding thread to and making further stitches on the same needles of each row, feeding further thread to and making stitches on the remaining alternate needles of each row and finally feeding thread to and making further stitches on the last named needles.

For the purpose of more fully describing the nature of this invention reference will now be made to the accompanying drawings, wherein:—

Fig. 1 is a face view of a fabric constructed in accordance with the present invention, the stitch loops on the rear face of the fabric being shown smaller than those on the front face solely for the purpose of giving a clear indication of the construction.

Fig. 2 is a section on the fabric on A—A of Fig. 1.

Figs. 3, 4, 5 and 6 illustrate four successive steps in the production of the fabric.

Fig. 7 is a plan view of cams for operating cylinder and dial needles in the production of the improved fabric.

In a convenient method of carrying out the invention a circular rib knitting machine is employed having cylinder and dial needle carriers each containing two separately operated sets of needles, and the cylinder and dial needles being directly opposed or radially aligned as in the well known machine for making interlock fabric. Advantageously each separately operated set of needles in each needle row or bed is composed of alternate needles, separate stitch cams functioning to operate the needles of each set in each carrier in such a manner that when one set of cylinder needles is projected to take thread and produce stitches, one set of dial needles is simultaneously projected between said cylinder needles; and for this purpose the needles of one set in each carrier are advantageously long needles and those of the other set short needles.

A preferred method of producing the improved fabric will now be described. At the first feed the long cylinder needles CN^1 and long dial needles DN^1 are projected to take thread **1** and operated by their respective cams CC^1 and DC^1 to make stitches, (Fig. 3). At the next or second feed the same needles i. e. the long cylinder CN^1 and long dial needles DN^1, take another thread **2** and are operated by the further cylinder and dial cams CC^2, DC^2 to produce further stitches, (Fig. 4). At the third feed the short cylinder CN^2 and short dial needles DN^2 are projected and operated by cams CC^3 and DC^3 to take thread **3** and produce another course of stitches (Fig. 5), and at the fourth feed the short cylinder CN^2 and short dial needles DN^2 are again operated by further cams CC^4 and DC^4 to take another thread **4** and produce a further stitch course, (Fig. 6).

In this way it will be appreciated that two successive courses of stitches are produced on the long cylinder and long dial needles followed by two successive courses on the short cylinder and short dial needles. In the customary type of interlock fabric sinker bars or loops passing from front to rear of the fabric alternate with sinker bars or loops passing from rear to front in each sinker wale, consequently there is nothing to pre-

vent the stitch loops produced from one thread at one knitted course from taking up a position out of transverse alignment with stitch loops produced from another thread at the next preceding course, and the stitch loops on one face of the fabric, therefore, are not disposed directly over those at the other face and the fabric is rendered less porous, i. e. less open. In the fabric according to the present invention, however, the formation of stitches on the same alternate needles of each set or row at two successive courses causes two successive sinker bars or loops in a wale to extend in the same direction from one side of the fabric to the other between bars or loops extending in an opposite direction and in this manner the stitch rows are levelled up i. e. transversely aligned, on both faces of the fabric and the stitches at the front face of the finished fabric lie directly and accurately over the stitches at the opposite face.

We claim:—

1. A rib knitted fabric of the interlock type wherein the stitches of adjoining or successive stitch wales at each side or face of the fabric are aligned across the fabric.

2. A rib knitted fabric of the interlock type having at each face of the fabric parallel rows of transversely aligned stitches, each row consisting of stitches of adjoining or successive stitch wales.

3. A rib knitted fabric according to the last preceding claim wherein the rows of transversely aligned stitches on one fabric face are level with corresponding stitch rows on the opposite face.

4. A rib knitted fabric of the interlock type wherein stitch loops at one face of the fabric accurately register with stitches at the opposite face.

5. A rib knitted fabric according to claim 3 composed of four threads, the stitches of alternate stitch wales at each side of the fabric being formed from two of said threads and the stitches of the remaining alternate wales at each side of the fabric being formed from the other two threads.

6. A rib knitted fabric of the interlock type wherein stitch loops at one face of the fabric are disposed directly over stitches at the opposite face.

7. A rib-knitted weft fabric having ribs in register at both faces of the fabric and having the stitches, in consecutive ribs at any one face of the fabric, in alignment across that face.

8. A weft knitted fabric consisting of two ribbed webs disposed with the ribs of one web in the spaces between the ribs of the other web and having the sinker wales of the two webs crossing each other in an alternating sequence, down the fabric wales, of a plurality of sinker wales of one web, a plurality of sinker wales of the other web, and so on.

9. A knitted fabric consisting of two ribbed webs disposed with the ribs of one web in the spaces between the ribs of the other web and having the sinker wales of the two webs crossing each other, which fabric is composed of four separately knitted threads whereof two are knitted separately into each web, and has a plurality of courses of one web alternating, walewise, with a plurality of courses of the other.

10. A weft knitted fabric consisting of two ribbed webs disposed with the ribs of one web in the spaces between the ribs of the other web and having the sinker wales of the two webs crossing each other, in which fabric even ribs at one face thereof are composed of two separately knitted threads and odd ribs at said face are composed of two other separately knitted threads, and in which the loops of said even and odd ribs are aligned course-wise.

11. A weft knitted fabric consisting of two ribbed webs disposed with the ribs of one web in the spaces between the ribs of the other web and having the sinker wales of the two webs crossing each other, in which fabric even ribs at one face thereof are composed of two separately knitted threads and odd ribs at said face are composed of two other separately knitted threads, the two threads in any rib alternating down it, and in which the loops in any rib at one face register with the loops of a rib at the other face.

12. A weft knitted fabric consisting of two ribbed webs disposed with the ribs of one web in the spaces between the ribs of the other and with the sinker wales of the two webs crossing as they extend between ribs at the front and back of the fabric, in which, down the fabric, a plurality of sinker wales of one web alternate with a plurality of sinker wales of the other web.

13. A weft knitted fabric consisting of two ribbed webs disposed with the ribs of one web in the spaces between the ribs of the other and with the sinker wales of the two webs crossing, in which a plurality of successive courses in one web alternate with a plurality of successive courses in the other.

14. A rib-knitted fabric of the interlock type wherein down each sinker wale pairs of sinker bars extending in one direction from one face of the fabric to the other alternate with pairs of sinker bars extending in the reverse direction.

15. A method of weft knitting which comprises knitting a series of successive courses of a ribbed web, knitting a series of successive courses of an oppositely disposed rib web, and so on in alternation, the loops of the initial course of each series of either web being drawn through the loops of the last course of the preceding series of the said web.

16. A rib-knitted fabric of the interlock type having crossed sinker bars and having, interposed between two successive sinker bars in a wale that extend in the same direction from one face of the fabric to the other, a plurality of successive sinker bars extending transversely of said two successive sinker bars.

17. A rib-knitted weft fabric consisting of two ribbed webs with the needle wales of one web disposed in the spaces between the needle wales of the other and having the sinker bars of the two webs crossing, in which fabric down the wales a plurality of sinker bars of one web alternate with a plurality of sinker bars of the other web.

18. A rib-knitted weft fabric consisting of two ribbed webs with the needle wales of one web disposed in the spaces between the needle wales of the other and having the sinker bars of the two webs crossing, in which fabric down the wales a plurality of sinker bars of one web alternate with at least one sinker bar of the other web.

19. A rib knitted fabric consisting of two ribbed webs with the needle wales of one web disposed in the spaces between the needle wales of the other web and having the sinker bars of the two webs crossing, in which fabric down the wales two courses of one web alternate with two courses of the other web.

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