

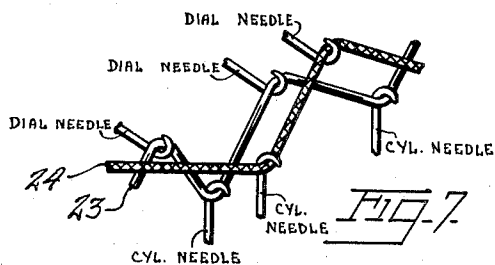
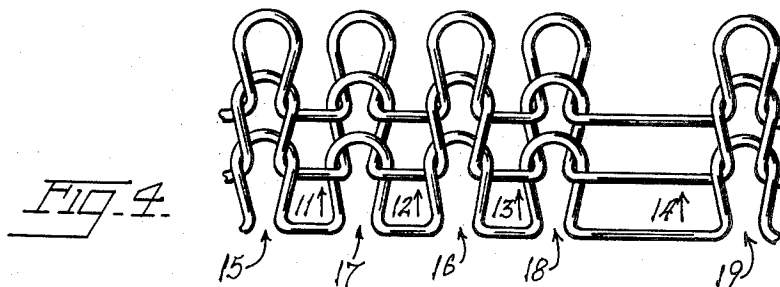
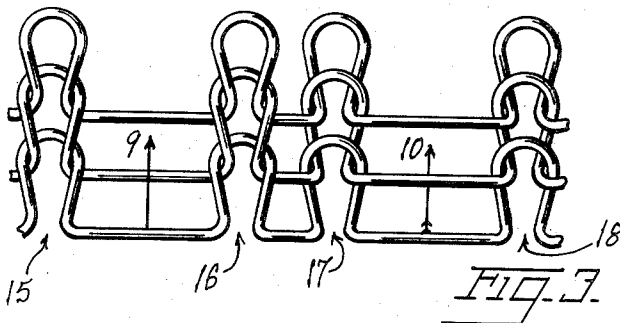
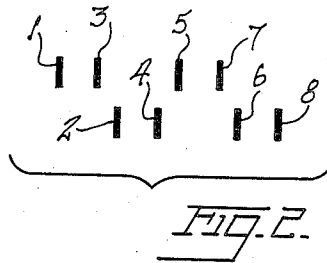
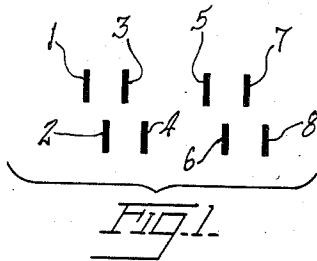
Oct. 7, 1958

J. L. MORRIS
METHOD OF FORMING AN EDGE AND KNITTING SWISS
RIBS ON KNITTED FABRICS WITHOUT RACKING

2,854,832

Filed Jan. 17, 1955

2 Sheets-Sheet 1



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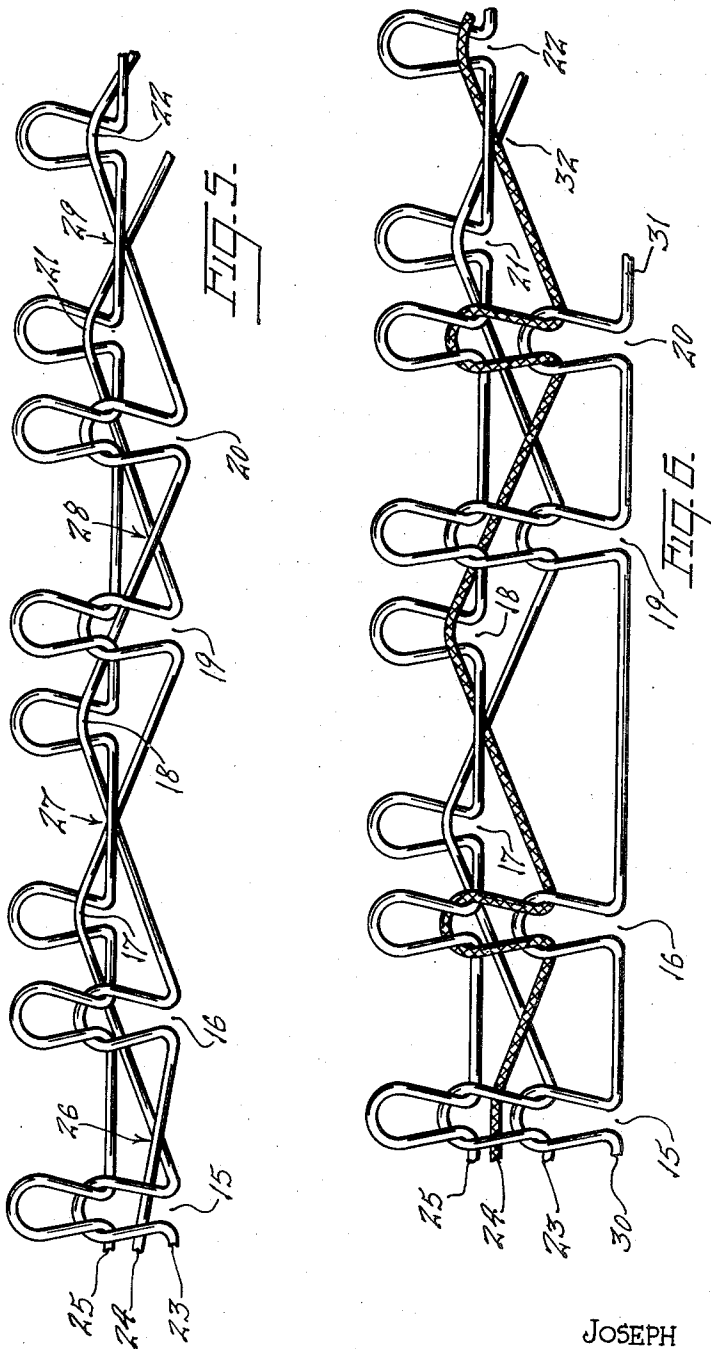
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2,854,832

METHOD OF FORMING AN EDGE AND KNITTING SWISS RIBS ON KNITTED FABRICS WITHOUT RACKING

Joseph L. Morris, Elmhurst, N. Y.

Application January 17, 1955, Serial No. 482,236

4 Claims. (Cl. 66—24)

This invention relates to an improved method, to be practiced in the knitting of fabrics on commercial knitting machines such as a Jacquard knitting machine, for locking the loops formed along the first few courses at the start of knitting edges on various Swiss rib patterns. It is customary, under these circumstances, to lock the loops along the start of the edge to prevent runs. Conventionally, Swiss rib knitting, to be continued immediately after the edge is formed, requires the use of racking devices.

An object of the present invention is to eliminate the racking devices which have heretofore been required under the circumstances indicated, while at the same time providing an improved edge on Swiss rib knitting.

Another object is to provide a method of forming endless flat fabric in a Swiss rib knitting without racking being required for the formation of the edge on said fabric. In this respect, the present invention constitutes an improvement on the method of forming endless flat fabric disclosed in my U. S. Patent No. 2,145,522, issued January 31, 1939, wherein the method of forming and knitting endless fabric comprises knitting a tube of series of helically disposed courses, each series being formed of a continuously knit separate yarn and one of said series being formed of a continuously knit removable yarn and removing said removable yarn, whereby an endless fabric is formed. In that patent, no provisions were made for Swiss rib knittings, due to the difficulties encountered with the racking devices provided upon true multiple feed knitting machines.

In order to avoid confusion in terminology, the term Swiss rib, a well-known term in the art, as used throughout this application refers to knitting preformed on a rib knitting machine where two banks of needles are used, and where a predetermined number of needles knit on one bank, and a predetermined number of needles then knit on the other bank, with this alternate knitting of predetermined needles in both banks of needles being repeated. While there are many variations of Swiss rib knitting, such as 2 x 2, 3 x 3, 6 x 3, etc., the instant application will be confined to 2 x 2 Swiss rib knitting, in view of the fact that this particular type of Swiss rib is that which is most generally used in the industry. It will be understood, however, that the present invention is not limited to 2 x 2 Swiss rib knitting.

Cognizance is taken of the fact that Swiss rib edges are made without racking on "Links and Links" knitting machines, in which machine needles are transferred from one bank of needles to another bank of needles and racking is not necessary. The present invention relates to knitting machines other than those of this particular type, in which other machine needles are not transferred from one bank of needles to another bank.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

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In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a diagrammatic illustration showing the position of needles for locking loops in knitting edges on Swiss rib knittings, on machines equipped with racking devices.

Fig. 2 is a view similar to Fig. 1 showing the position of the needles after racking one bank of needles to knit a Swiss rib.

Fig. 3 is a fragmentary view in elevation of a portion of a 2 x 2 Swiss rib knitting, illustrating the loops as they would run along the edge if not properly locked.

Fig. 4 is a view similar to Fig. 3 wherein one bank of needles has been racked to lock the loops along the edge.

Fig. 5 is a view in elevation of a portion of a Swiss rib edge and Swiss rib knitting, formed according to the present invention.

Fig. 6 is a view of the portion shown in Fig. 5 in which has been incorporated a separation thread at the start of the Swiss rib edge.

Fig. 7 is a greatly enlarged, somewhat diagrammatic view showing the start of a Swiss rib edge on bare needles, web holding sinkers associated with the needles not being shown.

In Fig. 1 is shown the position of needles after one bank thereof has been racked to form the edge on Swiss rib knitting. Fig. 2 illustrates the position of the needles after the edge is formed and the bank of needles is racked back to knit 2 x 2 Swiss ribs. In Fig. 1, as well as in Fig. 2, the needles have been numbered 1 through 8. The needles knit in the following sequence in Fig. 1: 1, 2, 3, 4, 5, 6, 7, 8, etc. In Fig. 2, the needles knit in the following sequence: 1, 3, 2, 4, 5, 7, 6, 8, etc.

This is a well-known method of locking the loops along the Swiss rib edge and Swiss rib knitting. If the machine is not racked, following the method shown in Figs. 1 and 2, the loops will run to cause damage at the locations shown by the arrows 9 and 10 in Fig. 3. When, however, the machine is properly racked, the loops will be locked along the edge as shown by the arrows 11, 12, 13 and 14 in Fig. 4. In Figs. 3 and 4 the cylinder needle loops are numbered 15, 16 and 19, while the dial needle loops are numbered 17 and 18.

As will be readily understood from the above, the showing in Figs. 1-4 does not constitute part of the present invention, and these figures have been inserted in the drawing entirely for the purpose of promoting a better understanding of the invention through the showing of conventional racking practices and the results that will take place under ordinary conditions if these racking practices are not followed.

The improved method of locking the loops along the first two courses of a Swiss rib edge and the Swiss rib knitting continuing immediately thereafter without racking is shown in Fig. 5 in its simplest form. In this figure of the drawings, the cylinder needle loops are numbered 15, 16, 19 and 20, while the dial needle loops are numbered 17, 18, 21 and 22. In practicing the invention, the first course 23 of the Swiss rib edge knits one cylinder needle loop 15, and then one dial needle loop 17, then one cylinder needle loop 19, and then one dial needle loop 21. The second course 24 of the Swiss rib edge is knit on another cylinder needle 16, then another dial needle 18, then another cylinder needle 20, then another dial needle 22. The third course 25 immediately begins knitting the Swiss rib fabric, by knitting on needles in the following sequence: 15, 16, 17, 18, 19, 20, 21, 22, etc., thus to lock the loops on the Swiss rib edge at the location shown by the arrows 26, 27, 28, 29, without racking.

It is preferred to use elastic threads on courses 23, 24 to produce a neat, clean edge having high properties of

elasticity, and variations may be made at the edge by repeating courses 23 and 24 in the same sequence of knitting, thus to create a raised edge which is preferred in some instances. The purpose of the elastic threads is to directly and indirectly take up and draw together the slack of the loops along a Swiss rib edge for providing a neat and clean and improved edge in Swiss rib knitting without racking. The slack of the loops is caused by welt and tuck loops, that are enlarged by alternate needle knitting which causes extra distance between the needles that form the Swiss rib edge. In machines that rack, this undesirable slack of loops is taken up by racking, and much elasticity is lost. The elastic threads also provide high properties of elasticity along a Swiss rib edge. In small Swiss rib constructions such as 2 x 2, and in knittings where a separation thread is used, the slack is taken up indirectly by knitting the first two courses with yarn and the next two courses with elastic threads, while in larger Swiss rib constructions such as 6 x 3 and in knittings where no separation thread is used, the slack is taken up directly by knitting the first two courses with elastic threads, the preferred method being to take up the slack in combinations directly and indirectly in variable combinations and sequences of elastic thread courses and yarn courses along the various Swiss rib edges and constructions.

The preparation for the Swiss rib edge is done in any well-known manner by pressing off selected loops on banks of needles and by transferring selected loops from one bank of needles to another, this depending on the equipment provided upon the machine.

In Fig. 6 there is shown a partial separation thread 30, wherein the dial needles 17, 18, 21, 22 have been pressed off on the preceding knitting feed after usual tuck stitch preparations. The separation thread 30 knits on cylinder needles 15, 16, 19, 20 which when removed at 31 separates the Swiss rib edge 32 from the preceding fabric.

The method may also be used to form a Swiss rib edge without racking on bare needles to form and knit endless fabrics having Swiss rib constructions at the start of endless finished sweater fabrics and endless collars, cuffs, bottoms, without a separation thread as disclosed in my pending application Serial No. 482,237, filed January 17, 1955, in the manner shown in Fig. 7, where 23 is the first course and 24 is the second course, and the next course may immediately knit Swiss ribs by knitting on all needles.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. The method of locking the loops of a Swiss rib knit edge without racking that comprises knitting in succession first and second courses in the following sequence; a first cylinder loop of the first course, a first cylinder loop of the second course, a first dial loop of the first course, a first dial loop of the second course, a second cylinder loop of the first course, a second cylinder loop of the second course, a second dial loop of the first course, a second dial loop of the second course, a third cylinder loop of the first course, a third cylinder loop of the second course, a third dial loop of the first course, and a third dial loop of the second course, and continuing in this sequence until the edge is completed, and then knitting the loops

of a conventional Swiss rib third course in an arrangement in which the third course loops correspond in number to and are respectively interlocked with successively following loops of the first and second courses.

2. The method of locking the loops of a Swiss rib knit edge without racking that comprises knitting in succession first and second courses in the following sequence; a first cylinder loop of the first course, a first cylinder loop of the second course, a first dial loop of the first course, a first dial loop of the second course, a second cylinder loop of the first course, a second cylinder loop of the second course, a second dial loop of the first course, a second dial loop of the second course, a third cylinder loop of the first course, a third cylinder loop of the second course, a third dial loop of the first course, and a third dial loop of the second course, and continuing in this sequence until the edge is completed, and then knitting the loops of a conventional Swiss rib third course in an arrangement in which the third course loops correspond in number to and are respectively interlocked with successively following loops of the first and second courses, in positions in which the loops of the third course loops overlie each cylinder loop of the first two courses and underlie each dial loop of the first two courses.

3. In association with a commercial knitting machine having two banks of needles that produce a series of knitted articles joined together in string formation by a separation thread on Swiss rib selvaged edges, the method of forming an improved Swiss rib edge, without racking, having a neat clean edge comprising elastic threads, consisting of forming the first two courses of said edge to take up the slack of knitted loops and draw the edge together by forming the first course of said edge with selected needles in a first bank of said banks of needles alternating with selected needles in the second bank of said banks of needles and then forming a second course with selected needles in said banks of needles alternating the needles of the said first bank with the needles of the said second bank in which the said needles of the said second course alternate with the said needles of the said first course.

4. In association with a rib knitting machine having two banks of needles wherein a predetermined number of needles knit on one bank and a predetermined number of needles knit on the other bank, this alternate knitting of predetermined needles in both banks of needles being repeated, the method of forming and locking the knitted loops of a finished Swiss rib edge of indefinite length without racking, consisting of forming a first course of said rib edge with selected needles in a first bank of said banks of needles alternating with selected needles in the second bank of said banks of needles and forming a second course with selected needles in said banks of needles alternating the needles of the said first bank with the needles of said second bank in which the said needles of the said second course alternate with the said needles of the said first course thereby forming and locking the knitted loops of a finished Swiss rib edge of indefinite length without racking, the first two courses of said Swiss rib edge being formed of elastic threads to take up the slack of loops and draw the edge together to produce a neat, clean edge having high properties of elasticity.

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