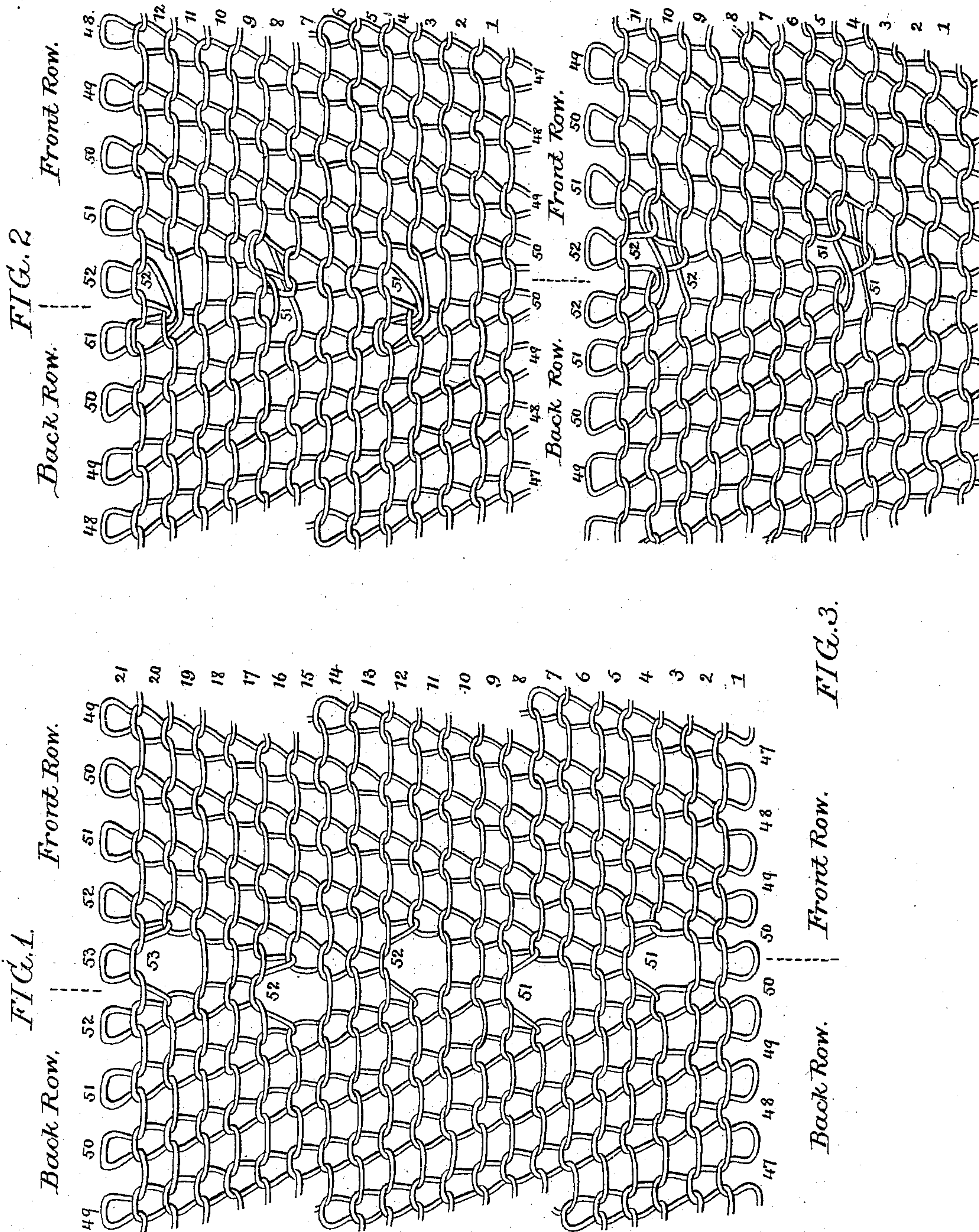


(Specimens.)

R. W. SCOTT.
WIDENED TUBULAR KNIT FABRIC.

No. 398,191.

Patented Feb. 19, 1889.



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WIDENED TUBULAR KNIT FABRIC.

SPECIFICATION forming part of Letters Patent No. 398,191, dated February 19, 1889.

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To all whom it may concern:

Be it known that I, ROBERT W. SCOTT, a citizen of the United States; and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Widened Tubular Knit Fabrics, of which the following is a specification.

My invention relates to widened tubular knit fabrics, and especially to that portion of the fabric where the additional or widening wales are introduced, the object of my invention being to close or cover any gaps in the fabric which may result from the introduction of the widening-wales. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is an exaggerated diagram representing the objection to the ordinary manner of widening a knitted fabric, and Figs. 2 and 3 are similar views illustrating how a close texture is produced in the widened portion in accordance with my invention.

The fabric is produced upon a machine of that class in which opposite needle-beds with traveling cam-slides and thread-guide are employed, the needles of the front row being operated and the thread applied thereto as the guide is moved along from one end of the machine to the other, while on the return movement the back needles are operated and receive the thread, the webs produced upon the front and back rows of needles being thus connected at the ends, so as to form a continuous tubular fabric.

I will first describe the method of widening upon which my invention is an improvement. The additional or widening wales are formed by bringing additional needles into action successively at one end of each row of needles, a new needle, for instance, being first brought into action on the front row, and then, after the formation of one or more courses of stitches, a new needle being brought into action on the back row, and so on until the desired widening has been effected. For example, supposing that in knitting the narrow portion of the tube fifty needles in each row have been in action, the widening operation can be started by lifting the needle 51 at the finishing end of the front row into op-

erative position before the thread-guide reaches the limit of its movement across said front row, so that an extra loop will be applied to this needle 51 before the thread-guide starts to lay the thread on the needles of the back row in its return course. On the next course on the front row of needles this loop will be cast off and a stitch drawn on the extra needle 51, which will now remain in action, the front web being thus widened to the extent of one wale. When the desired number of courses have been made and the thread-guide is at the starting end of the back row, the needle 51 at the starting end of said back row will be drawn into operative position before the thread-guide reaches the same, so that a loop will be formed upon this extra needle, and in forming the next course in the back row this loop will be cast and a stitch drawn upon the extra needle, which will now remain in action, so as to widen the back web to the extent of one wale, and these operations will be repeated until the desired number of extra needles have been thrown into action and the fabric has been widened to the desired extent. It will be evident that, if desired, the widening operation may be started on the back row instead of on the front row, this being wholly immaterial. In the diagram, Fig. 1, this method of widening is illustrated, the upright wales of stitches being numbered to correspond with the number of the needle in the front or back row upon which said wales are produced, and the horizontal courses being numbered consecutively, beginning at the bottom. It will therefore be seen, on reference to the diagram, that the first three courses are plain, the thread being carried directly from needle 50 of the front row to needle 50 of the back row; but in course 4 a loop is formed upon needle 51 of the front row before the thread is carried to needle 50 of the back row, and this loop is cast off and a stitch drawn on this extra needle 51 in forming course 5, while in course 8 a loop is formed upon needle 51 of the back row before applying the thread to needle 50 of the same row, this loop being cast off in course 6, and in course 12 needle 52 of the front row is thrown into action, needle 52 of the back row being thrown into action in course 16 and needle

53 of the front row in course 20, and so on. When this method of widening is adopted, however, a gap in the fabric is produced wherever an extra needle is thrown into action, owing to the fact that the thread is simply looped upon the extra needle in that course. While this objection may not be material in coarse fabrics, or in those which are subsequently subjected to a fulling or shrinking operation, it would materially detract from the appearance of fine fabric; hence, in order to close the gaps in the fabric, I form at each widening operation an extra loop in one of the standing wales adjacent to the widening wale or wales being introduced, as hereinafter described, and I am thus enabled not only to draw together said standing wales, so as to decrease the size of the opening which would otherwise be formed, but I also throw a thread across said opening, and thus practically close the same.

Figs. 2 and 3 of the drawings are diagrams illustrating two plans which I have used in carrying out my invention.

On reference to Fig. 2 it will be seen that the first three courses are plain, as in the diagram, Fig. 1. Before the thread-guide reaches needle 50 of the front row in knitting course 4, however, not only is needle 51 in this row raised so as to take the thread, but needle 50 in the back row is also brought forward, so that it will receive the thread before the latter is applied to needle 51 of the front row, it being understood that the needles in the back row work in the spaces between the needles in the front row, so that when needle 50 of the back row is advanced it occupies a position between needle 50 and needle 51 of the front row. In consequence of this it will be seen that the thread is carried across the opening between wale 50 of the front row and wale 50 of the back row, so as to form an extra loop in wale 50 of the back row, the thread being then brought back to form on needle 51 of the front row the first loop of the first additional or widening wale 51. As the guide is then moved along over the needles of the back row, both the regular stitch and the additional loop on needle 50 of said back row are cast off as said needle is operated in the ordinary way. After the formation of any desired number of plain courses—say in course 8, as shown in the diagram—needle 51 of the back row is brought into action when the thread-guide is at the starting end of the back row, and at the same time needle 51 of the front row is raised, so that on the movement of the guide the thread, after forming a loop around needle 51 of the back row, will lay a loop around needle 51 of the front row before applying the thread to needle 50 of the back row, said needle 51 of the front row casting both of its loops when it draws its stitch in course 9, and the needle 51 of the back row also casting its loop onto a loop in said course 9, so as to add another widening-wale to the

fabric. These operations are repeated as additional wales are introduced, the last acting needle of the back row receiving a loop just in advance of each new needle brought into action in the front row and the last acting needle of the front row receiving a loop immediately after the looping of the thread around each new needle brought into action in the back row.

The fabric shown in diagram, Fig. 3, although embodying the same principle as that shown in Fig. 2, so far as regards the drawing of the extra loop at each widening, is produced in a simpler manner, and is hence preferable to the fabric shown in Fig. 2.

In making the fabric Fig. 3 the widening operation is started in course 4 by bringing new needle 51 of the back row into action when the guide is at the starting end of said back row and throwing in needle 50 of the front row ahead of needle 50 of the back row, so as to receive the extra stitch; but instead of forming several plain courses before bringing needle 51 of the front row into action, this latter needle is thrown into action at once and receives its loop in the next course, 5, this loop being caught and held by the loop thrown off from the new needle 51 of the back row in said course 5, and a stitch being drawn through it in making course 6, as shown. The widening-wales are thus practically started in pairs, instead of singly, as in the fabric shown in Fig. 2, and in this respect, also, the fabric shown in Fig. 3 is preferable in some cases to the other.

The fabric may be widened in two portions instead of one by throwing in additional needles at both ends of the rows of needles, instead of at one end only, as described.

In making the fabrics shown in Figs. 2 and 3 it should be understood that the needles which receive the extra loops in the wales adjacent to the widening-wales are not, in order to receive said loops, raised to such an extent as to slip back of their latches the stitches already on the needles, or, if so raised, are then not drawn down so as to cast their stitches, and although this mode of working is not absolutely essential to the proper carrying out of my invention it has been deemed best to refer to it in order to explain the formation of the double-loop stitches shown at the widening-points.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A tubular knitted fabric widened by the introduction of additional wales and having at each such widening an extra loop drawn in one of the adjacent standing wales, the thread being carried from said extra loop across the space formed by the widening-wale to the standing wale on the opposite side of said widening-wale, substantially as specified.

2. A tubular knitted fabric widened by the introduction of additional pairs of wales, the

wales of each pair starting in successive
courses, and the thread, after starting the first
wale of the pair, being drawn into an extra
loop in a standing wale at one side of the said
5 widening-wale, and then crossed to a stand-
ing wale on the opposite side of the same, all
substantially as specified.

In testimony whereof I have signed my name
to this specification in the presence of two sub-
scribing witnesses.

ROBERT W. SCOTT.

Witnesses:

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