

R. W. SCOTT.
METHOD OF PRODUCING OPENWORK KNITTED FABRIC.
APPLICATION FILED JAN. 31, 1908.

981,318.

Patented Jan. 10, 1911

2 SHEETS—SHEET 1.

Fig. 1

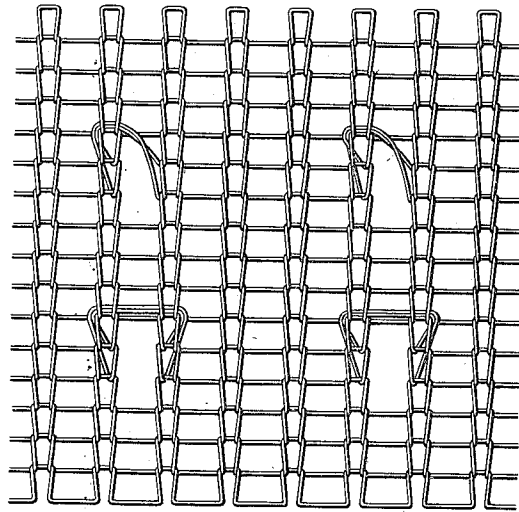


Fig. 2.

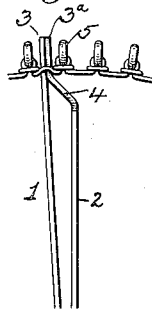


Fig. 3.

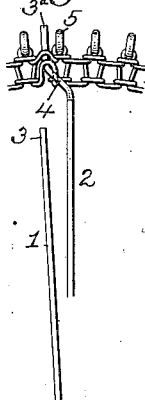


Fig. 4.

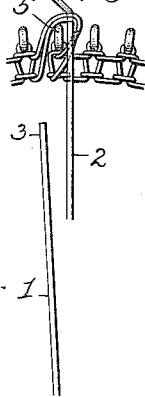


Fig. 5.

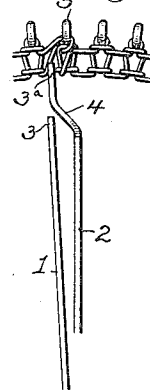


Fig. 8.

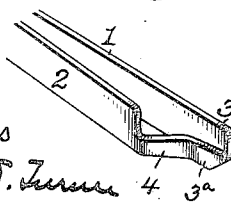
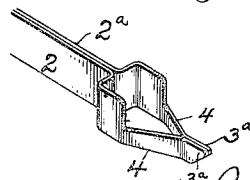


Fig. 9.



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2 SHEETS—SHEET 2.

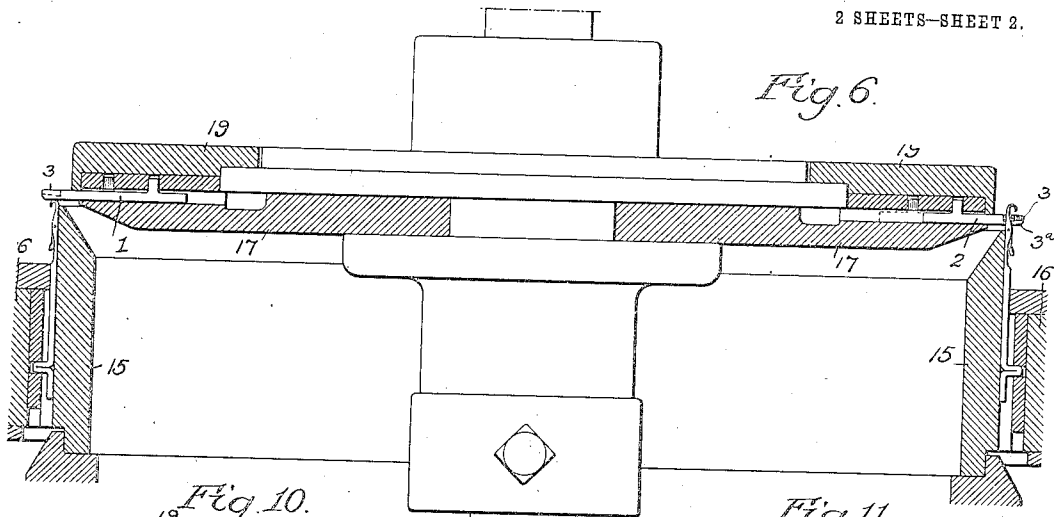


Fig. 6.

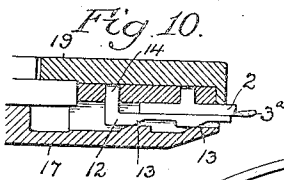


Fig. 10.

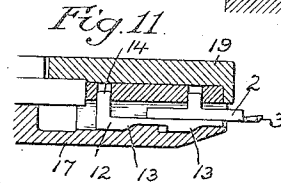


Fig. 11.

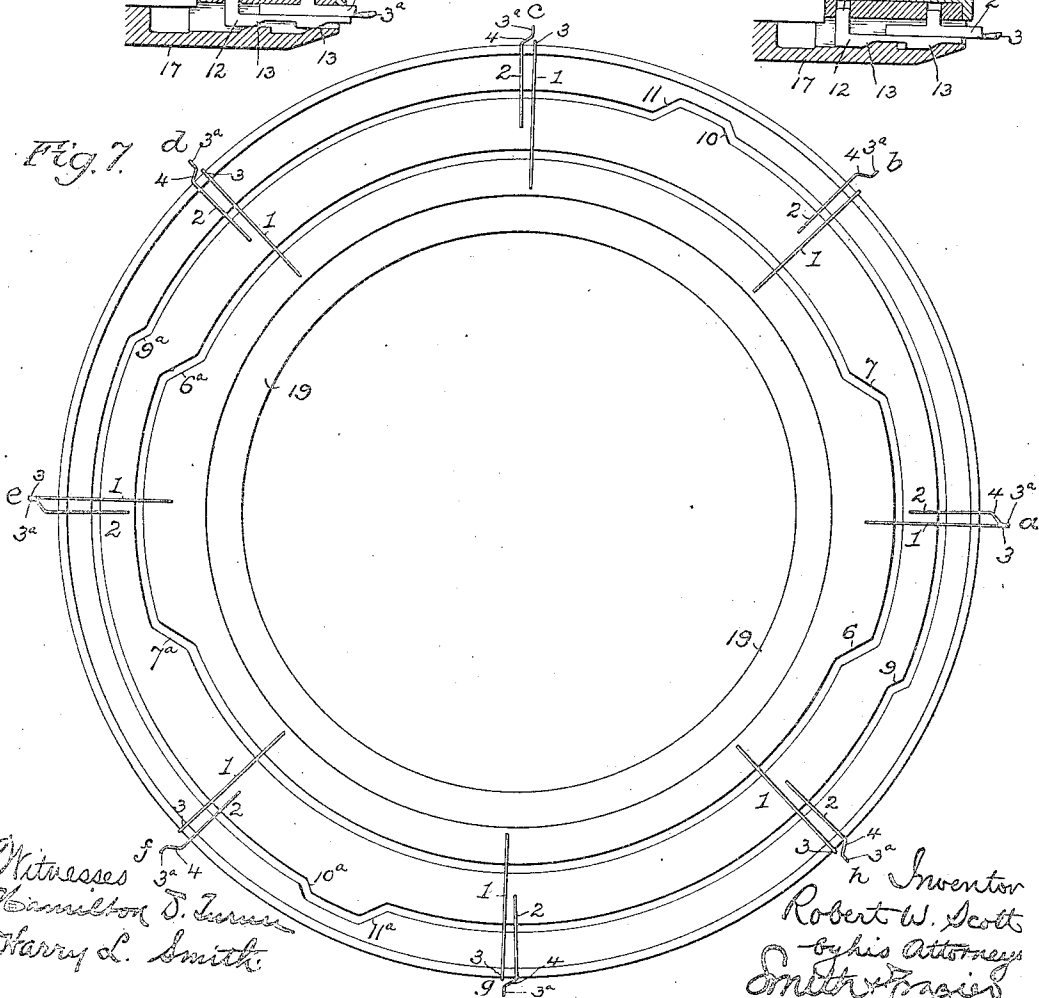


Fig. 7.

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UNITED STATES PATENT OFFICE

ROBERT W. SCOTT, OF LEEDS POINT, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO SCOTT & WILLIAMS, INCORPORATED, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

METHOD OF PRODUCING OPENWORK KNITTED FABRIC.

981,318.

Specification of Letters Patent. Patented Jan. 10, 1911.

Application filed January 31, 1908. Serial No. 413,685.

To all whom it may concern:

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, residing in Leeds Point, Atlantic county, New Jersey, have invented certain Improvements in Methods of Producing Openwork Knitted Fabric, of which the following is a specification.

My invention consists of certain improvements in the method of producing the openwork knitted fabric forming the subject of my Letters Patent No. 846,353, dated March 5th, 1907, the object of my invention being to provide for the making of larger or less obstructed eyelet holes than those in the previously patented web. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is an exaggerated view of a piece of fabric produced in accordance with my present invention; Figs. 2, 3, 4, and 5 are views, on an enlarged scale, illustrating the production of that type of web in which the sinker wale loops are transferred to an adjoining needle wale; Fig. 6 is a vertical sectional view of part of the machine for producing the fabric; Fig. 7 is an inverted plan view of a cam ring forming part of said machine; Fig. 8 is a perspective view of the transfer points used in connection with the machine for effecting such transfer; Fig. 9 is a perspective view of the points for effecting transfer of the sinker-wale loops into needle wales on each side of the same, and Figs. 10 and 11 are sectional views illustrating a modification of my invention.

The present invention relates to the production of that type of the patented fabric in which sinker wale loops of successive courses are transferred either into an adjoining needle wale or into needle wales on each side of the sinker wale.

Formerly, the sinker wale yarn in both courses was laid upon the same transfer point, disposed to deflect the sinker-wale loops to right or left, or upon a pair of similar transfer points, disposed to spread the sinker-wale loops in both directions, and, in consequence, the loop first applied to the transfer point or points was subjected to greater tension than the loop subsequently applied, because, before the transfer of the loops, the course from which the first loop

was drawn had been cast off and drawn forward with the web, and therefore this first loop was compelled to rob the needle wales on each side of the same, with the effect of shortening the stitches of said wales or drawing the wales together and thereby contracting the size of the eyelet hole, the tension of the first loop of the transferred pair, in the case of their transfer into a single needle wale, causing said first loop to be drawn diagonally across the eyelet hole, thereby obstructing the same, as shown at *e* in Fig. 1 of my Letters Patent No. 846,353, and when the sinker wale loops were transferred into needle wales on each side of the same, the tendency of the tension upon the first loop of the pair to shorten the stitches in the adjoining needle wales, or to draw said needle wales toward each other, had the effect of decreasing the area of the eyelet hole correspondingly. If, on the other hand, the first loop was drawn long enough to overcome this objection, the second loop would be too loose and would slacken the stitches on either side of the sinker wale, or drop down across and obstruct the eyelet hole.

In the machine for carrying out my present invention, the needle cylinder or other carrier, its needles, and the cams for operating the same may be similar to those of the previously patented machine, and may operate in the same manner as before, the novel feature of the present invention consisting in a different formation of the sinker-wale loops which are transferred to form the eyelet hole.

In carrying out my present invention I provide a greater length of yarn for the formation of the first loop than for the formation of the second, and I thereby relieve the tension upon said first loop or prevent the slackening of the succeeding loop and therefore overcome the objections before noted as arising from these causes. In order to effect this result in a machine for effecting transfer of the loops into a needle wale on one side of the same, I employ, wherever a transfer is to be effected, a pair of transfer points 1 and 2, the point 1 having the yarn-receiving portion 3 of greater depth than the yarn-receiving portion 3^a of the other point. The yarn for forming the first loop of the pair to be transferred can be applied to both

points, as shown, for instance, in Fig. 2, but before reaching the next yarn feed the point 1 is withdrawn, whereby the yarn for forming the second loop is applied only to the reduced portion 3^a of the point 2, as shown in Fig. 3, the second loop being consequently shorter than the first and the latter being long enough to compensate for the carrying forward of the course from which it was drawn, whereby both of the transferred loops may be under corresponding tension and no robbing and consequent shortening of the stitches of adjoining needle wales will take place, nor will there be any tendency to draw the needle wales toward each other or to slacken the upper loop and the stitches adjacent thereto, unobstructed eyelet holes of full area being consequently produced.

By preference, the point 1 consists simply of a straight bar with butt for the action of the cams whereby it is projected and retracted, the transfer point 2 having the inclined member 4, whereby, when said point is projected as shown in Fig. 4, the sinker wale loops hanging upon the same will be deflected laterally into position for engagement with the adjoining needle 5 in the same manner as before, the point being retracted, as shown in Fig. 6, after the needle has properly engaged the loops. As the movements of the point 1, therefore, are different from the movements of the point 2, independent cams are employed for operating the same, and in Fig. 2 I have illustrated cams available for the purpose, the cams 6 and 6^a being the projecting cams for the points 1, the cams 7 and 7^a the retracting cams for said points, the cams 9 and 9^a those for effecting the initial projection of the points 2 to position for receiving the sinker wale loops, the cams 10 and 10^a those intended for effecting the final or transfer projection of said points, and the cams 11 and 11^a those for effecting the retraction of the points 2 after the transfer.

The cam ring shown is intended for use in connection with an eight feed machine, both points being projected to the loop-receiving position at the feeds *a* and *e*, the points 1 being retracted at the feeds *b* and *f*, the points 2 being further projected after passing the feeds *b* and *f*, in order to transfer their loops to the adjoining needle and being then retracted, and both sets of points being retracted at the feeds *c* and *d*, and *g* and *h*, in order to provide for the formation of plain courses of stitches between the courses in which the eyelet holes are formed, it being understood, of course, that there may be as many of these intervening feeds as the number of such plain courses to be produced.

In Fig. 2, I have shown one pair of transfer points for each feed, but it will be understood that in operating the machine the transfer points will be located in reference

to the needles wherever it is desired to produce eyelet holes in the web.

The needles are mounted as usual to reciprocate vertically in a cylinder 15 and operated by cams in a cam ring 16, and the transfer points are mounted to reciprocate radially in a dial 17, and are operated by cams in a dial cap 19, as shown in Fig. 6.

In producing that class of fabric in which the sinker wale loops are laterally spread so as to engage with a needle wale on each side of the same, a pair of transfer points 2 and 2^a are used, as shown for instance in Fig. 9, these points being first projected to such an extent that the initial sinker wale loop will be formed upon the forward portions of the diverging members 4 of the points, after which said points are slightly retracted, in order that the next sinker wale loop may be formed upon the contiguous ends 3^a of the points, and then said points are first fully projected and then fully retracted in order to transfer the loops to adjoining needles.

While, in the use of the points 1 and 2, it is advisable to project both of the points for receiving the initial loop in order to insure the engagement of said loop by the point 2, said initial loop may, if desired, be formed over the point 1 only, and the point 2 may then be projected so as to engage this loop either before or after the retraction of the point 1 and before the application of the second loop, the objection to this arrangement being the possibility of the point 2 failing to properly enter the initial loop, which objection cannot apply when said loop is formed on said point as well as upon the point 1.

When the points 2 and 2^a are used, the stems or shanks of said points are, by preference, disposed closely side by side in order that they may work in the same groove and be operated by the same cams.

A single transfer point only may be used, if, in addition to its longitudinal reciprocating movement, it has a rising and falling movement, so that at different feeds it will occupy different relations to the draw-down points of the needles. Such rising and falling movement may be effected in different ways, and in Figs. 10 and 11 I have shown for the purpose a jack 12 upon which the transfer point rests, this jack being guided in the same groove as the transfer point, and having one or more beveled portions 13 for engagement with corresponding bevels in the base of the groove, whereby it will, as it is reciprocated by the action of the cams on its butt 14, be caused to rise and fall in the groove and will carry the transfer point with it. Sinker wale loops in more than two adjoining courses of the web may also be transferred simultaneously to an adjoining needle wale or wales, each loop being of a different length from the

others. This would simply involve the use of a plurality of points 1 of different depths, or successive adjustment of the jack 12, so as to lower it by a succession of movements instead of one.

It is preferable, in most cases, to bevel the top of each point from the end of the same back to the shoulder at the base of the inclined member 4, in order to gradually lessen the depth of the point and thus slacken the sinker wale loops during the transfer operation, the lateral stretching or displacement of the loops incident to their transfer being thereby facilitated.

15 I claim:—

1. The mode herein described of producing a knitted web having eyelet holes therein, said mode consisting in drawing sinker wale loops of abnormal length between certain needles before the yarn entering into said loops is knit and locked into stitches in the same course, then drawing other sinker wale loops at the same points in the fabric

in the next succeeding course under the same circumstances, and then transferring said pairs of sinker wale loops onto adjoining needles. 25

2. The mode herein described of producing a knitted web having eyelet holes therein, said mode consisting in drawing sinker wale loops of abnormal length between certain needles before the yarn entering into said loops is knit and locked into stitches in the same course, then drawing other sinker wale loops at the same points in the fabric in the next succeeding course under the same circumstances, and then transferring said pairs of sinker wale loops onto adjoining needles on each side of the same. 30 35

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses. 40

ROBERT W. SCOTT.

Witnesses:

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KATE A. BEADLE.