

(No Model.)

R. W. SCOTT.

STOCKING AND METHOD OF MAKING THE SAME.

No. 473,787.

Patented Apr. 26, 1892.

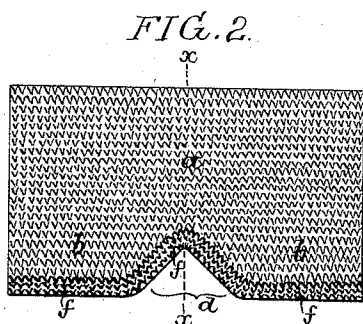
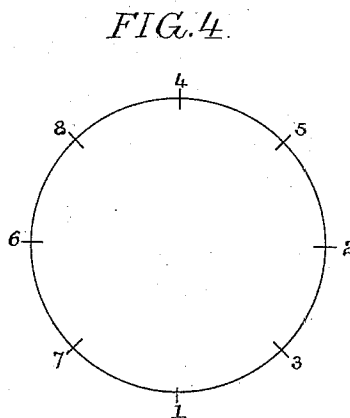
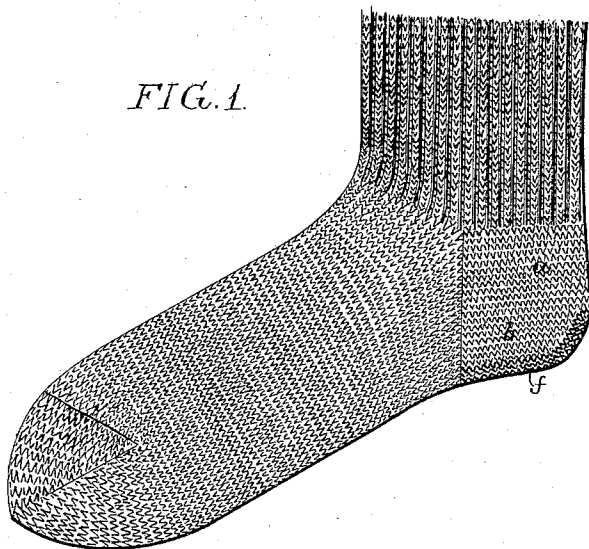


FIG. 5.

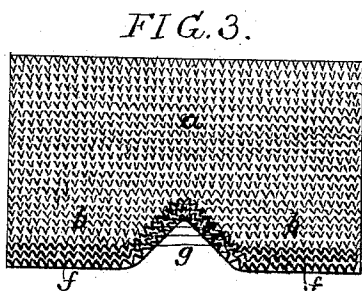
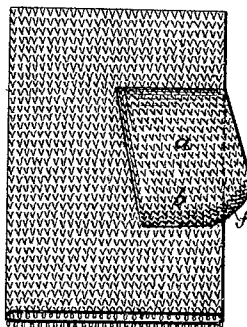
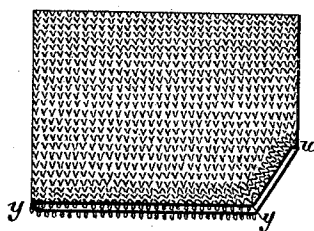


FIG. 6.



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UNITED STATES PATENT OFFICE.

ROBERT W. SCOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO LOUIS N. D. WILLIAMS, OF SAME PLACE.

STOCKING AND METHOD OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 473,787, dated April 26, 1892.

Application filed June 24, 1891. Serial No. 397,300. (No model.)

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 Stockings and Method of Making Same, of which the following is a specification.

One object of my invention is to provide a stocking with what is known as a "square heel," resembling in a measure the heel of what is known as a "full-fashioned" stocking, but to produce it in a simpler and cheaper way upon knitting-machines in ordinary use, a further object being to apply the same method of construction which is adopted in the formation of the heel for the purpose of widening the leg of the stocking at the calf. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a view of part of a stocking having a heel produced in accordance with my invention. Fig. 2 is a view of the heel portion of the stocking shown in a flat plane. Fig. 3 is a similar view representing another method of forming the heel. Fig. 4 is a diagram illustrative of the operation of knitting to form the heel. Fig. 5 is a view illustrating a method of carrying out the invention, and Fig. 6 is a view illustrating the method of forming the calf of the stocking in accordance with my invention.

What is known as a "square heel" is a desirable feature in stockings; but such heels as usually produced are expensive and require the employment of special machinery.

In order to make upon ordinary knitting-machines such as are in common use a heel resembling such expensive square heel, I produce a heel-blank having in it at the rear a central tapering recess formed by courses of varying length produced by narrowing or widening in the knitting operation and having around its lower edge a series of running courses of stitches—that is to say, courses of stitches extending from edge to edge of the blank and along the ends of the graduated courses, so that loops are presented along the lower edge and rear corner of the blank to permit of the uniting of the edges at these points without the formation of bulky seams.

The blank shown in Fig. 2 is of a width equal to twice the width of the heel in the finished stocking and has in the upper portion *a* courses of stitches extending across it from edge to edge; but toward the bottom of the heel these courses are gradually contracted in length on each side of the center of the heel, as shown at *b b*, so as to form a central tapering recess *d*; but along the bottom of the heel-blank are a number of courses *f*, extending from edge to edge of the heel and following the contour of the central recess. When this heel is folded, therefore, on the central line *x x*, it forms the desired square heel with a rounded or tapered lower corner presenting along the bottom edge and corner a running course of stitches, so that this portion of the heel can be readily united by means of an ordinary seaming-machine, and the heel thus closed without the formation of a bulky seam therein.

In carrying out the invention I may form two heels at one time upon two different stocking-legs, and for this purpose half of one leg-tube may be applied to half of the needles around the circular-knitting-machine head, (represented by the circular line in Fig. 4,) half of the tube, constituting another stocking-leg, being applied to the needles around the other half of said head. Circular knitting is then carried on, so as to form a tube of the desired length for that portion of the heel-blank extending from the top of the same down to the point where the narrowings are to begin. Three-fourths of the needles of the head are then thrown out of action, but retain their stitches, and to-and-fro knitting is proceeded with upon the other one-fourth of the needles—say upon the needles 1 to 2, Fig. 4—needles being successively thrown out of action, but retaining their stitches at the end 2 of the set until the desired narrowing has been effected, whereupon all of the needles which remain in action—say from one to three—are thrown out of action, but retain their stitches, and the needles of that quarter of the head from 2 to 4 are thrown into action and to-and-fro knitting is carried on upon these needles in the same way until the web is narrowed—say to the point 5—whereupon the needles from 1 to 2 are brought into action and a series of

courses of stitches are formed around the half of the head from 1 to 4, so as to form the band *f*. The needles from 1 to 3 to 5 to 4 are then thrown out of action and a similar heel-blank is formed upon the opposite side of the head by to-and-fro knitting upon the needles from 1 to 6, narrowing to 7, throwing the needles from 7 to 1 out of action, but permitting them to retain their stitches. Then knitting to and fro upon the needles from 4 to 6, narrowing to 8, and then forming continuous courses of stitches from 4 to 1. The continuous tube is then severed on opposite sides up to the point of attachment to the leg-tubes, and the front half of each leg-tube is then applied to the needles of the footing-machine, upon which a foot-tube is produced in any ordinary way, any desired form of toe being formed upon such foot-tube. The heel is then completed by uniting the front edges of the heel-blank to the rear edge of the sole portion of the foot and by closing the bottom and rear corner of the heel by uniting the loops at the lower edges of the band *f*, as above set forth; or, if desired, the front edges of the heel-blank may be united to the sole portion of the foot by jabbing said edges upon the needles around about one-half of the footing-machine before commencing to knit the foot. It will be evident, however, that the heel can be formed singly by reciprocating knitting on one-half of the needles of the head from the start, the heel-blank in this case having the advantage of front selvage edges instead of edges partly cut, as in the heel-blank produced in the manner before set forth; or the heel-blank may be made in halves, the edges at the rear of the heel being united to complete said heel. The two narrow portions *bb* of the heel may, if desired, be simultaneously produced by reciprocating knitting on the needles—say from 1 to 4 around one-half of the machine—and by throwing needles out of action at the center of the set first on one side and then on the opposite side of the center, the needles so thrown out of action retaining their stitches and the knitting-thread being carried across the needles which are out of action in the form of floats *g*, as shown in Fig. 3, all of the needles being restored to action when the desired narrowings have been effected, so as to provide for the formation of the running courses *f*. The heel may also be produced by a knitting operation the reverse of either of those described—that is to say, all of the needles may first be in action and a sufficient number of courses may be formed thereon to produce the band *f*, whereupon sufficient of the needles may be thrown out of action to limit the knitting to the narrowest portion of the web, and these needles may be successively brought into action until the web has been properly widened.

In forming two heels simultaneously in the manner set forth in connection with Fig. 3, the knitting may be continuous circular knitting throughout, and the heels may be subse-

quently severed from each other by cutting them apart at each side.

Instead of knitting the heel onto the leg in the manner set forth, the heel may be separately produced, and the stitches around the upper end of the same may be run onto the needles around one-half of the ordinary circular machine having either beard or latch needles and upon which tubular work is being produced, the heel in this case simply hanging upon the outside of the tube, as shown in Fig. 5, and the tube being afterward severed throughout half its circumference at a point immediately beneath the point of attachment of the heel, so that the foot portion of the tube can be bent around and the stitches at the rear end of the sole portion of the foot united to the front edges of the heel-pocket.

Another plan, and what may be considered the preferable plan, of forming the heel upon a machine adapted for the production of continuous tubular work is to throw one-half of the needles out of action, but permit them to retain their stitches, and then to produce the heel upon the other half of the needles in either of the ways above set forth, the other half of the needles being then brought into action and the formation of tubular work proceeded with, the heel in this case being in the form of a pocket or projection upon a continuous tube, and the latter being cut just below the starting-point of the heel, so that it can be turned around to form the foot in the manner last above mentioned; or, if desired, the stitches may be cast off of the needles around one-half of the head on the completion of the heel and a fresh course started on these needles in commencing to knit the foot.

In forming the enlarged calf portion of the leg-tube in accordance with my invention I form the opposite side narrowings and the band of running stitches in either of the ways described; so as to produce a tube with a termination of the character shown in Fig. 6, and the stitches around the lower edge of this tube from *y* to *y* are then applied to the needles of a smaller machine for forming the ankle and foot portion of the stocking, the stitches on the edges from *y* to *w* being united to complete the calf.

The plan before described of forming the heel-pocket in halves is preferred when making stockings in which the shaping of the ankle is effected by cutting the leg-tube, as the stitches around the upper edges of the two halves of the heel may then be applied to separated sets of needles of the circular head—for instance, to the needles from 1 to 3 and from 4 to 5 in Fig. 4—thus leaving the fabric produced on the needles from 3 to 5 to be cut out in shaping the ankle.

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

1. A stocking having a heel with graduated courses of stitches on each side of the lower portion and having along the bottom and rear corner running courses of stitches, forming a

V at the rear corner of the heel, and united at their meeting edges along the bottom and corner of the heel, substantially as specified.

5 2. A stocking having a leg with enlarged or calf portion having graduated courses of stitches on each side and below the same running courses of stitches extending around the ends of the graduated courses, the lowermost of said running courses of stitches being
10 united throughout a portion of its length to the top course of the ankle-tube and the opposite stitches throughout the remaining portion of the course being united to each other, substantially as specified.

15 3. The mode herein described of forming the tapered portion of a stocking, said mode consisting in forming courses of stitches graduated in length on opposite sides of a central line, and forming running courses of stitches
20 beyond said graduated courses and extending along the ends of the same, so as to form a V-shaped recess at the center of the courses, substantially as specified.

4. The mode herein described of forming the heel upon a stocking, said mode consisting 25 in first throwing out of action a portion of the needles upon which the leg-tube was produced, but permitting them to retain their stitches, forming heel-stitches upon the remaining needles, graduating the courses on 30 opposite sides of a central line, forming running courses beyond said graduated courses and extending along the ends of the same, then throwing into action the other needles and forming the foot-tube, and finally uniting 35 the rear edges of the sole to the front edges of the heel and uniting the running courses along the bottom and corner of the heel, substantially as specified.

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

ROBERT W. SCOTT.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.