

No. 617,040.

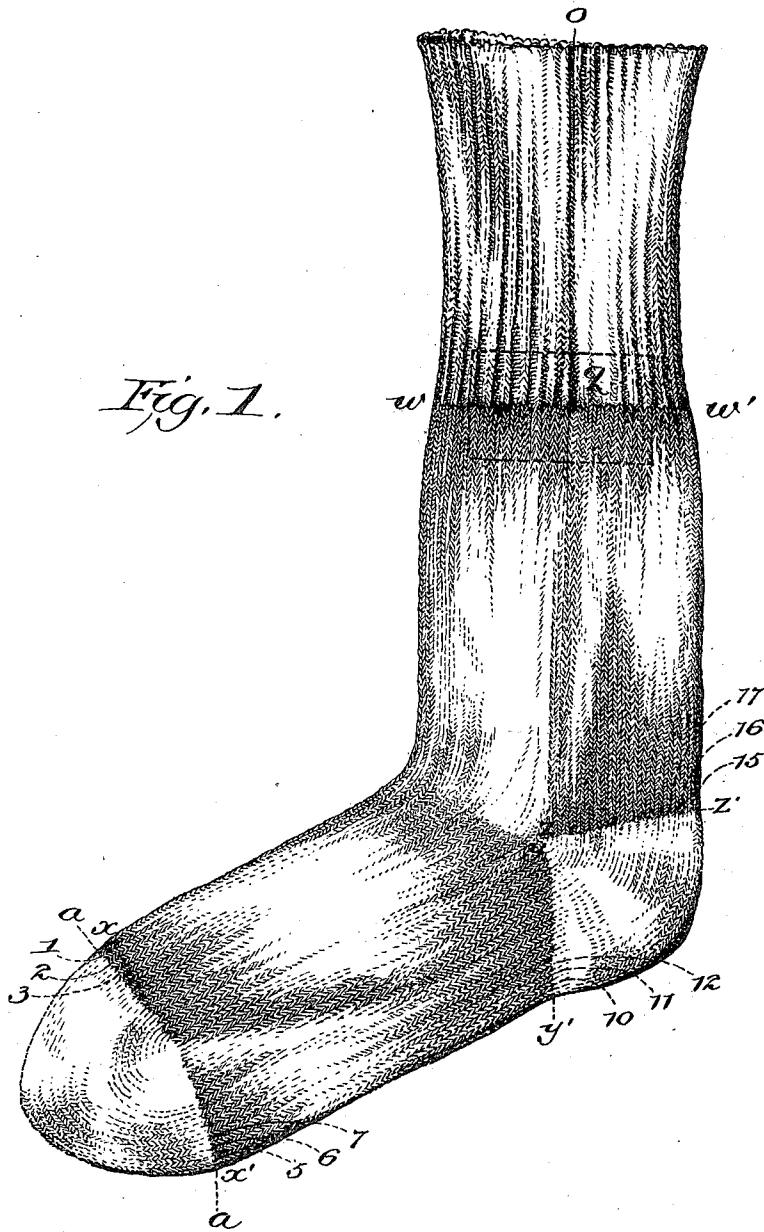
Patented Jan. 3, 1899.

J. F. NELSON.
STOCKING.

(Application filed Dec. 29, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
Wm. H. Davidson
E. J. Balloch

Inventor:
John F. Nelson,
By his Attorneys,
Palmon, Davidson & Wright.

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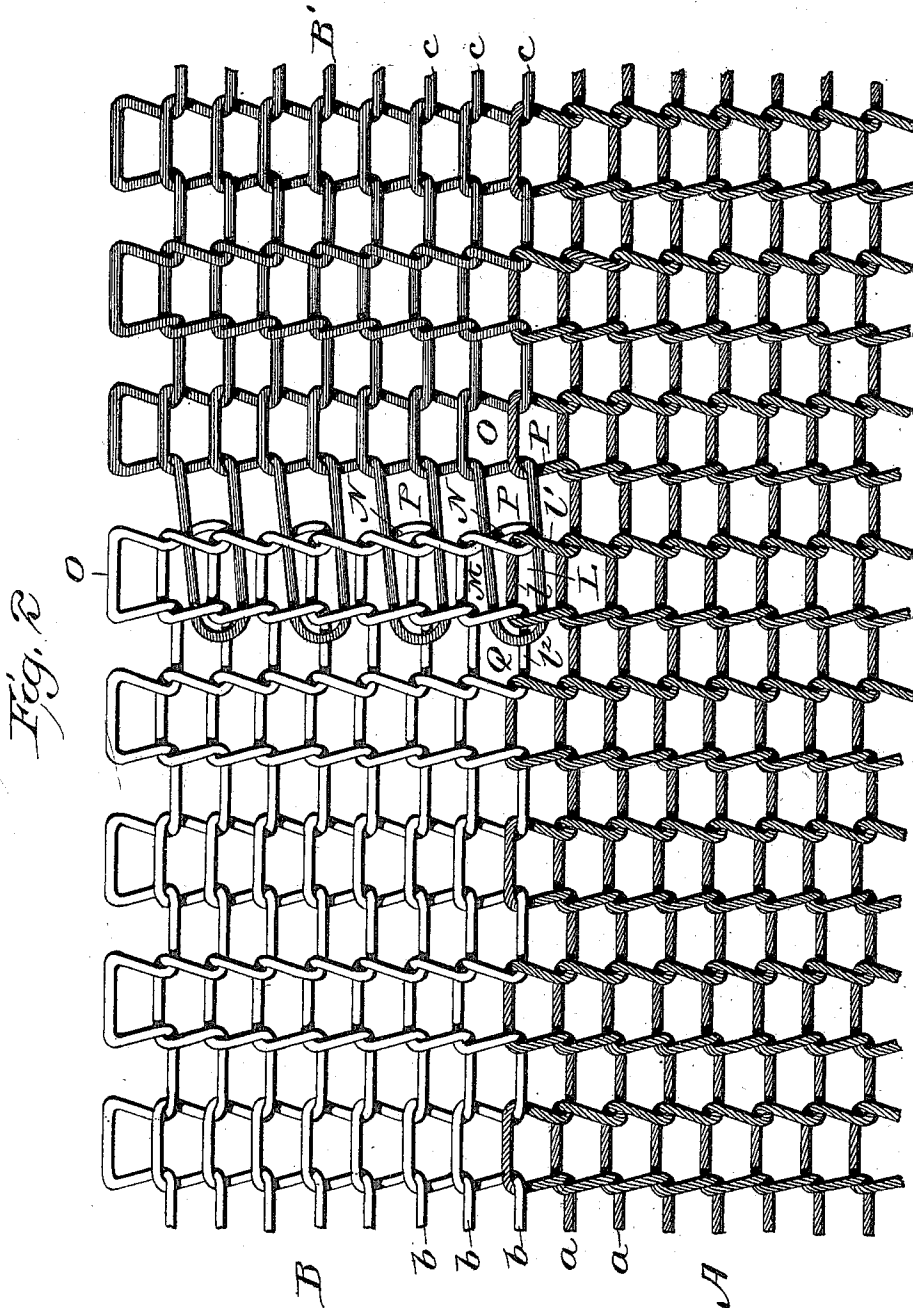
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Witnesses:
Wm. L. Spindler
C. A. Balloch

Inventor:
John F. Nelson,
By his Attorneys,
Palmer, Davidson & Wright

UNITED STATES PATENT OFFICE.

JOHN F. NELSON, OF ROCKFORD, ILLINOIS.

STOCKING.

SPECIFICATION forming part of Letters Patent No. 617,040, dated January 3, 1899.

Application filed December 29, 1897. Serial No. 664,356. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. NELSON, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Stockings, of which the following is a specification.

According to the invention herein described I have provided a machine-made ribbed-top knit stocking without seam throughout. Heretofore when ribbed-top stockings have been made on circular-knitting machines it has been customary to first knit a ribbed top on one machine, then transfer the ribbed top to another machine, and then continue the knitting thereon to complete the article; but the stocking thus made is not finished, as it invariably has an opening at the toe which must be closed by hand or by a separate machine.

In making ribbed-top stockings on straight or parallel row machines the ribbed tops and the other portions of the stockings are knit on separate machines and are joined by seams made by a third machine. In my application for patent Serial No. 664,355, filed December 29, 1897, I have described a machine which knits by one continuous operation of automatic mechanism the entire stocking from the toe to the end of the ribbed top by simply forming a series of interlocking loops to produce wales which are continuous throughout not only the toe, foot, heel, and leg of the sock, but also throughout the rib and at the joint of the rib with the leg, no seam whatever being formed to close any openings as no openings are left in the process of knitting and no parts are separately formed that are required to be joined by seams.

In the accompanying drawings, Figure 1 is an elevation of a sock embodying my improvements. Fig. 2 is a diagram showing the manner in which the ribbed top of the sock is joined to the body portion thereof and in which the two sides of the ribbed top are joined to each other.

In knitting my improved sock by the mechanism shown and described in my application for patent above mentioned the "set-up" is formed on the line *a a*, and the toe is knit

by a series of courses in order forming a series of wales 1 2 3, &c., until the knitting is completed from *x* to *x'*. After the toe is completed the foot is formed by a series of courses forming a series of wales 5 6 7, &c., until the knitting is completed from the line *x x'* to the line *y y'*, where the heel commences. The heel is formed, as heretofore, by knitting a series of courses forming a series of wales 10 11 12, &c., from the line *y y'* to the line *z z'*, and the leg of the stocking is knit by a series of courses forming a series of wales 15 16 17, &c., until the line *w w'* is reached. The toe is knit by one row of needles, such as the back row, the foot portion is knit by both rows of needles, the heel is knit by the back row, and the leg is knit by both rows of needles.

It will be observed that the wales are continuous throughout the sock not only in the toe, foot, heel, and leg portion, but also in the rib and at the joint of the rib with the leg. By this arrangement the stocking is made elastic and there are no seams or ridges, which would be produced if the wales were broken.

A single yarn may be used to knit the toe, foot, leg, and heel, or different-colored yarns may be used—for instance, white yarn may be employed to knit the toe and heel and blue yarn to knit the foot and the leg—it being perfectly practicable to change the yarns without leaving openings or otherwise marring the texture of the goods. In knitting the toe and the foot no opening is left between them, as is the case when socks are knit on circular machines, but the toe is joined to the foot in the process of knitting by interlocking loops in the manner described in my application for patent above mentioned. In fact, there is no opening left in any part of the sock, the knitting-needles being so operated in my machine as to properly form and join loops in such manner as to produce a uniform fabric.

Fig. 2 shows the manner in which the ribbed top is joined to the body portion of the sock. A indicates the body portion of the sock, and B B' the two sides or parts of the ribbed top. The section of the fabric shown in Fig. 2 is supposed to be taken out of the

sock within the lines *q*, as indicated in Fig. 1.

1. The ribbed top in my improved sock is most conveniently made by two separate yarns. The yarn *a* of the body portion of the sock is indicated in Fig. 2 by parallel lines and cross-shading. The yarn *b* of one side of the ribbed top is indicated by parallel lines with white centers, while the yarn *c* of the other side of the ribbed top is indicated by parallel lines and parallel shading.

It will be observed that the first course of loops in the ribbed top are joined on to the last course of loops in the body portion by the regular or usual method of joining loops. Each alternate loop of the ribbing passes over the end portion of a loop in the body, while each other alternate loop of the ribbing passes under the end portion of a loop in the body. This is the usual way of producing ribbed work, and throughout the ribbed top the loops are alternately arranged in the manner just described.

The manner of joining the two sides or two parts of the ribbed top is indicated in the central portion of Fig. 2. This joint is of peculiar and novel formation. In Fig. 1 the joint between the two parts of the ribbed top on one side is indicated at *o*. There is a joint directly opposite to that shown in the drawings, and the manner of forming both joints is the same as that indicated in Fig. 2. The thread *b* for forming the ribbed fabric on one side is carried back and forth to form a series of loops, as indicated on the left-hand side of Fig. 2. There is nothing peculiar in the manner of forming the loops in the main body of this fabric; but there is a peculiarity in the manner of turning the yarn at each end of the ribbed fabric. Following, for instance, the first line of loops *b* in Fig. 2—namely, that one which joins the last or top line of loops in the body portion A—it will be observed that the yarn passes to the right, and when it comes to the loop *L* it first passes over the end portion *l* thereof, forms a loop *M*, then passes over the portion *l* again, then under the right-hand side portion *l'* of the loop *L*, then back again under the side portion of the loop *M* formed by it, (thread *b*,) then over the end portion of the loop *L*, and then the thread *b* continues to form loops toward the left-hand side of the fabric, as shown in Fig. 2. It will be observed that the thread *b* forms a small side or selvage loop *N* at the right-hand end of the part B of the fabric. There are similar side or selvage loops *N* at one end of each course of knitting in the ribbed portion B.

The left-hand end of the portion B' of the ribbed fabric is joined to the right-hand end of the portion B in the following manner: The threads *c* are made to form loops, which are joined to the body portion A and to each other, as heretofore described, and in the usual way to form ribs; but at the left-hand end of the fabric B' the threads are disposed in a peculiar manner. Following, for instance, the first

thread *c*—namely, that just above the body portion—it will be seen that it interlocks with the body-loops in the usual way, but after it leaves the end loop *O* the thread *c* passes under the sides of the loop *L*, then over one of the yarns *b* of the adjacent loop *Q*, then under one of the sides of the loop *M*, then through the small side or selvage loop *N*, then across to the fabric B', and the yarn is then led through the previously-formed loops to form a new course of loops. The several courses are made in this way throughout the fabric. The opposite ends of the two portions of the ribbed-top fabric are joined in the same way. One portion of the ribbed top may have selvage-loops *N* at one end and elongated loops *P* at the opposite end, or one portion of the fabric may have selvage-loops at each end, while the other has elongated loops at its opposite ends. The upper edge of the ribbed top may be finished in any suitable way, the operation of finishing this edge being very simple and very quickly done. So far as I am aware I am the first to produce a machine-knit sock which is without seam throughout and which is provided with a ribbed top, and also to provide a sock in which the wales are continuous in the leg and ribbed top.

When I refer in the claims to "uninterrupted" knitted loops, I mean that the loops of the ribbed top join directly with the loops of the plain portion of the sock without the interposition of a welt of one or more courses of loops of a different or irregular formation and that the loops throughout the entire stocking are regular in formation and not interrupted by seams, welts, or the like. In my improved stocking the first course of loops in the ribbed top are joined directly to the last course of loops in the plain knitted leg of the sock and there is no seam, ridge, or welt or other irregular formation at the junction of the ribbed top with the body of the stocking.

I claim as my invention—

1. A machine-knit completed sock or stocking having a ribbed top and formed throughout its entire length without seam by uninterrupted knitted loops.

2. A machine-knit completed sock or stocking having a ribbed top and formed throughout its entire length without seam by successive rows of uninterrupted interlocking knitted loops.

3. A machine-knit sock or stocking having a ribbed top, and formed throughout its entire length without seam by uninterrupted knitted loops which produce wales that are continuous throughout the toe, foot, heel and leg, and which join by knitted loops the ribbed top.

4. A machine-knit sock or stocking having a ribbed top and formed throughout its entire length without seam by successive rows of uninterrupted interlocking knitted loops which produce a series of wales which are continuous throughout the toe, foot, heel, leg and

ribbed portion, the wales of the ribbed portion thereby forming continuations of the wales of the leg portion without any break, ridge or enlargement at the joint.

- 5 5. A machine-knit sock or stocking having a ribbed top and formed throughout its entire length without seam by uninterrupted knitted loops which produce wales in the leg and ribbed top that are continuous and without

break or interruption at the joint of the leg 10 with the ribbed top.

In witness whereof I have hereunto subscribed my name.

JOHN F. NELSON.

Witnesses:

FRITHIOF NELSON,
JOHN P. FISK, Jr.