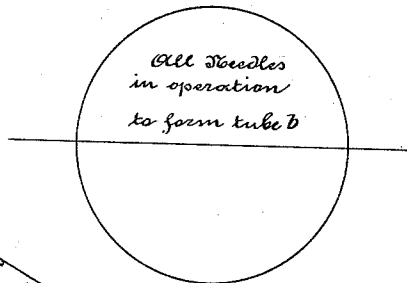
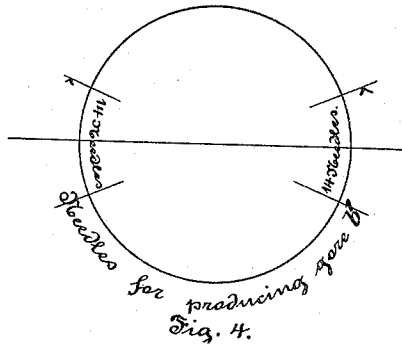
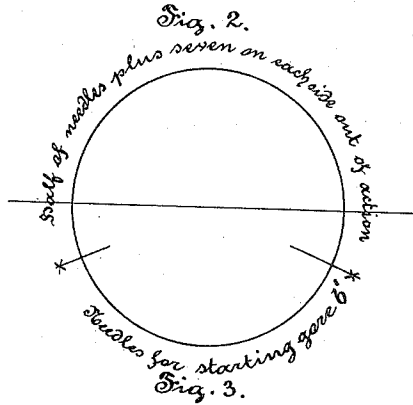
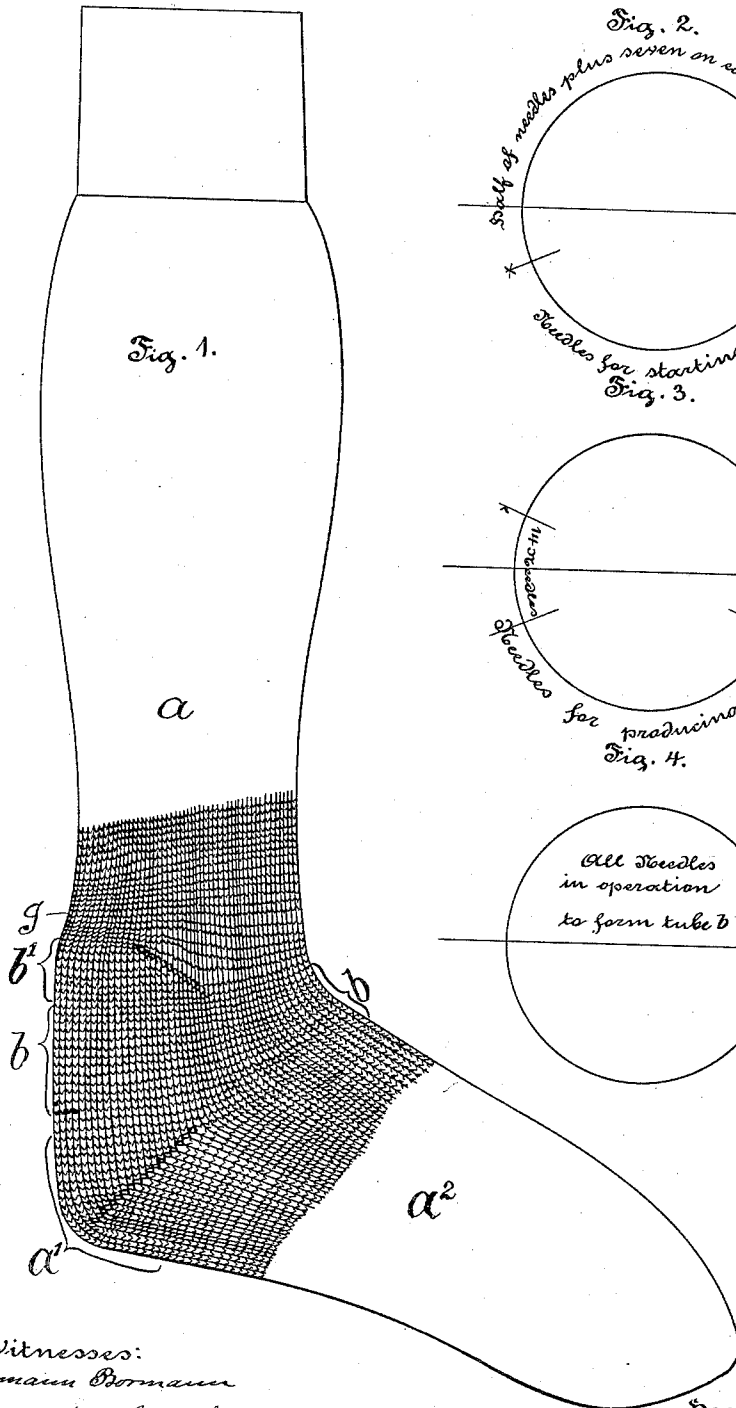


(No Model.)

H. C. RIGHTMIRE.  
STOCKING AND METHOD OF MAKING THE SAME.

No. 465,678.

Patented Dec. 22, 1891.



Witnesses:  
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Att'y.

# UNITED STATES PATENT OFFICE.

HARRY C. RIGHTMIRE, OF HAVRE DE GRACE, MARYLAND, ASSIGNOR OF ONE-HALF TO THOMAS A. PEARCE, OF PHILADELPHIA, PENNSYLVANIA.

## STOCKING AND METHOD OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 465,678, dated December 22, 1891.

Application filed July 27, 1891. Serial No. 400,851. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY C. RIGHTMIRE, a citizen of the United States, residing at Havre de Grace, in the county of Harford and State of Maryland, have invented certain new and useful Improvements in Stockings and in the Method of Producing the Same, of which the following is a specification.

My present invention relates, in general, to seamless hosiery, and more particularly to certain improvements in the shape, structure, and properties of the ankle, heel, and instep portions thereof.

An ordinary seamless stocking may be produced upon a round or circular knitting machine by first knitting a tubular leg; second, knitting a heel onto said leg and shaping the heel by narrowing and widening the same, and this widening or narrowing operation may be accomplished by throwing half of the needles of the machine out of action and then knitting back and forth on the needles remaining in action and throwing out needles one at a time first on one side and then on the other at the formation of each course of stitches during the narrowing operation and throwing needles into action in a similar manner during the widening operation, and, third, throwing all the needles into action and knitting the foot. Moreover, in the production of such stockings it is customary to introduce an extra thread or heavier and stronger thread into the machine during the operation of knitting the heel, so that the heel comprises a stronger and more durable web than the other portion of the stocking.

It is well known that the instep and ankle portions of a stocking should be as elastic and full as possible and that the portion of the stocking which fits into the hollow above the ball of the heel should be narrowed or contracted in order to conform to the shape of the foot. Moreover, the thickened or re-enforced web should extend well up upon the heel in order to provide for the wear which occurs at the points where the upper portions of so-called "Oxford ties" or "half-shoes" contact with the stockings. In ordinary stockings it is impossible to narrow the upper rear portion of the heel without unduly contact-

ing the instep and ankle, and it is also for the same reason impossible to introduce the extra thread high up on the rear part of the heel.

The principal objects of my present invention are, first, to obviate the above-mentioned defects and disadvantages and to provide a stocking or sock having a wide or full and elastic instep and a high-spliced or re-enforced heel adapted to fit the upper portion of the ball of the heel of the wearer and extending well up to the ankle, and, second, to provide a simple and expeditious method of producing such stockings or socks.

In a stocking embodying features of my invention the upper portion of the foot and of the heel-pocket are united to the leg by means of a gore knit onto certain of the stitches of the leg and a full tube knit onto the gore and the remaining stitches of the leg and onto the foot and heel-pocket, whereby a full elastic instep and a high-spliced heel adapted to fit the upper portion of the ball of the heel of the wearer are attained.

My improved method of producing stockings embodying my invention may be carried into effect by means of a round-knitting machine in the following manner: A tubular leg is knit and properly shaped in the usual manner, and a gore is then knit onto certain of the stitches of this leg by first throwing one-half the needles of the machine, and in addition thereto a certain number—for example, seven needles—on each side, out of action, and then knitting a certain number of courses of stitches and alternately throwing one needle on each side into action at each course of stitches until a certain number of needles—for example, fourteen on each side—have been thrown into action, whereupon a full-knit tube is knit onto the stitches of said gore and onto the remaining stitches of the leg by throwing all the needles of the machine into action and knitting any number—for example, thirty full courses—of stitches. The heel-pocket and foot are then knit onto the stitches of said full-knit tube in the usual or in any preferred manner.

The nature and characteristic features of my present invention will be more fully understood from the following description, taken

in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is an elevation of a stocking embodying features of my invention, showing a gore and a full-knit tube interposed between the leg and the upper portion of the foot and heel-pocket; and Figs. 2, 3, and 4 are diagrammatic views illustrating the position of the needles of a round or circular knitting machine corresponding to certain of the steps of my improved method.

Referring now to Fig. 1, *a* is a tubular leg, either plain or ribbed and shaped or straight, as preferred. *a'* is a heel-pocket of any preferred shape, and *a<sup>2</sup>* is a foot.

Having thus indicated certain of the parts of a well-known stocking or sock, I will now proceed to point out the features comprising my improvements.

*b* is a full-knit tube—*i. e.*, a tube formed by all the needles of the machine—interposed between the lower portion of the leg and the upper portion of the foot and of the heel-pocket and united to the leg by means of a gore *b'*. It may be remarked that an extra or a heavy thread is employed in knitting the full-knit tube *b* and the heel-pocket *a'*, so that the stocking is high-spliced—*i. e.*, reinforced by an extra thread—for a considerable distance above the heel-pocket, and thus is made more durable and less apt to become worn by contact with the upper portion of low shoes. Moreover, the gore serves to render the instep portion of the stocking full and elastic, as at *b*, and also to accommodate the stocking to the upper portion of the ball of the heel of the wearer, as shown at *g*.

Referring now to Figs. 2, 3, and 4 for a description of my improved method of making stockings embodying my invention, the last course of stitches of the leg *a*, if made on a rib-frame, are run onto the needles of a round or circular machine in the usual manner, whereupon one-half the needles of the machine plus certain—for example, seven—needles on each side of the machine, are thrown out of action, Fig. 2, in order to form the gore *b'*. This gore is formed by knitting back and forth across the machine and throwing certain of the needles previously thrown out of action one at a time and alternately on each side of the machine into action until a certain number—for example, fourteen needles on each side—have been thrown into action, Fig.

3. All the needles are then thrown into action, Fig. 4, and a full-knit tube *b* is produced by knitting around the machine for a certain number of courses—for example, thirty courses. The heel-pocket *a'* and foot *a<sup>2</sup>* are then knit onto the full-knit tube *b* and lower portion of the leg *a* in the usual or in any preferred manner.

It will be obvious to those skilled in the art to which my invention appertains that modifications may be made in the details thereof—for example, in the number of needles and courses of stitches employed in making the gores—and hence I do not limit myself to the exact mode of procedure hereinbefore described; but,

Having thus described the nature and objects of my present invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described stocking or sock, having a gore, and a full-knit tube interposed between the leg and the foot and heel-pocket, substantially as and for the purposes set forth.

2. The herein-described stocking or sock, having a gore, and a full-knit tube interposed between the leg and the foot and heel-pocket and having said full-knit tube and heel-pocket re-enforced or high-spliced, substantially as and for the purposes set forth.

3. The method of producing stockings or socks, which consists in knitting a leg, then knitting a gore onto certain of the stitches of said leg, then knitting a full-knit tube onto the stitches of said gore and the remaining stitches of the leg, and then knitting a heel-pocket and foot onto the stitches of said tube, substantially as and for the purposes set forth.

4. The method of producing stockings or socks, which consists in knitting a leg, knitting a gore onto certain of the stitches of said leg, knitting a tube onto the stitches of said gore and onto the remaining stitches of said leg, knitting a foot and heel-pocket onto the stitches of said tube, and introducing an extra thread into said gore and heel-pocket, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

HARRY C. RIGHTMIRE.

Witnesses:

HERMANN BORMANN,  
RICHARD C. MAXWELL.