

(No Model.)

R. M. APPLETON.
SOCK OR STOCKING.

No. 454,634.

Patented June 23, 1891.

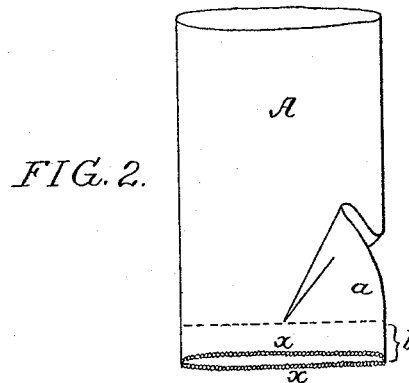
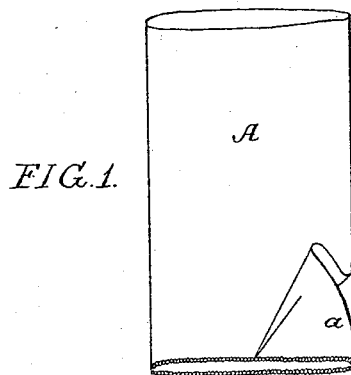


FIG. 3.

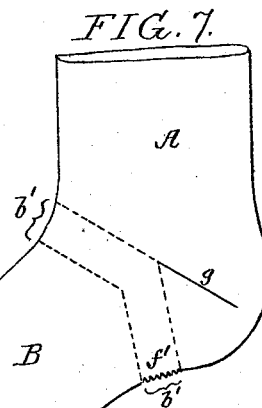
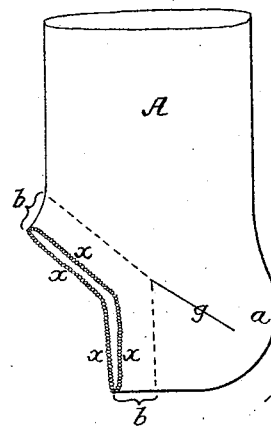
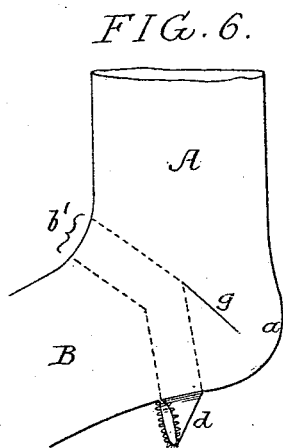


FIG. 4.

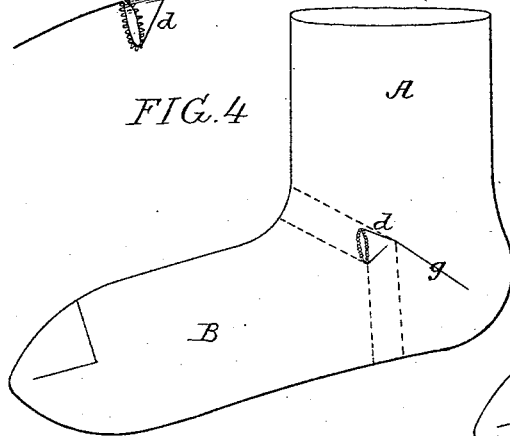
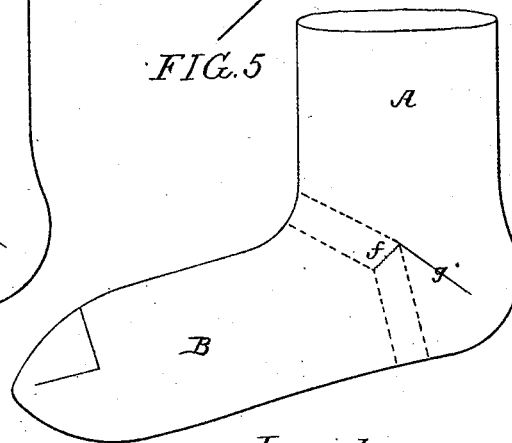


FIG. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT M. APPLETON, OF BOSTON, MASSACHUSETTS.

SOCK OR STOCKING.

SPECIFICATION forming part of Letters Patent No. 454,634, dated June 23, 1891.

Application filed January 5, 1891. Serial No. 376,734. (No specimens.)

To all whom it may concern:

Be it known that I, ROBERT M. APPLETON, a subject of the Queen of Great Britain and Ireland, and a resident of Boston, Massachusetts, have invented certain Improvements in Socks and Stockings, of which the following is a specification.

My invention relates to socks and stockings having what are known as "seamless heels;" and the object of my invention is to make a sock or stocking of this class in which the body of the foot is of less diameter than the leg, but in which there is ample room in the heel and across the instep. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figures 1, 2, 3, and 4 are diagrams illustrating successive stages in the manufacture of a stocking in accordance with my invention. Fig. 5 is a view of the foot and ankle portion of the completed stocking, and Figs. 6 and 7 are views illustrating a modification of the invention.

In making socks or stockings having what are known as "seamless heels" in accordance with the present practice it is usual to knit the leg-tube upon a circular-knitting machine having latch-needles until sufficient length of tube has been made to form the leg. A certain number of needles are then thrown out of action and a pocket or bulge is formed upon the tube by knitting to and fro upon the remaining needles, dropping out of action successively needle after needle at the ends of the fashioning set, and then bringing these needles successively into action again in reverse order, the result being that a gradually-narrowed web is first produced and then a gradually-widened web, the stitches at the edges of these webs being seamlessly united along the meeting line, so as to produce a surplus of fabric in the form of a pocket or bulge upon one-half of the tube. When this bulge or pocket has been completed, the remaining needles of the head are thrown into action and round-and-round knitting is resumed for the formation of the foot-tube, a like pocket or bulge being formed for the toe when the foot-tube has been completed. The objection to this plan is that the tube forming the body

of the foot is necessarily of as great a diameter as the tube forming the leg, whereas in a properly-proportioned stocking the foot-tube should be of considerably less diameter than the leg-tube. If, on the other hand, the toe, foot, heel, and ankle are formed on a small machine and the ankle-tube united to a larger leg-tube, from which the surplus is trimmed off and the opening closed, the heel and the space across the instep are too small.

In carrying out my invention, therefore, with the view of forming such a smaller foot-tube without unduly contracting the heel and instep, I proceed in the following manner:

The knitting operation is carried on as usual for the formation of the leg-tube A and the pocket or bulge *a*, as shown in Fig. 1; but instead of then proceeding to form the tube for the body of the foot I simply form beyond the heel-pocket a short tubular section *b*, as shown in Fig. 2, the work being then cast off of the needles of the machine, so as to form around the lower edge of the tube a row of stitches *x*, the tube *b* thus constituting an instep-zone *b'* on the stocking in advance of the heel, as shown in Fig. 3. So many of the stitches *x* as can be accommodated by the needles of a smaller machine are then run onto the said needles stitch for stitch, the surplus portions of the web being preferably disposed at opposite sides of the heel in the form of projecting pockets *d*, as shown in Fig. 4. For instance, supposing that the machine upon which the leg-tube was knitted contained one hundred and fifty needles, while the machine upon which it is proposed to knit the foot-tube contains but one hundred and twenty needles, the stitches *x* may be run upon the needles of the smaller machine until, say, thirty stitches on each side of the center of the instep, or sixty stitches in all, have been applied to the needles of the smaller machine, whereupon fifteen stitches on each side may then be grouped or bunched to form the pocket *d*, thus leaving sixty stitches to be run onto the remaining sixty needles of the small head, upon which the knitting of the foot-tube is then proceeded with, a seamless pocket or any other desired form of closure of said tube being employed to form the toe. A line of stitches is run along the base of each of the side pockets *d*, and said pockets are trimmed off either before, during, or after the

formation of said lines of stitches, so that in the finished stocking there will simply be a short seam *f* on each side of the stocking in advance of the heel, as shown in Fig. 5, the presence of the seams at these points being unobjectionable, or, if desired, the formation, sewing, and trimming of the pockets *d* may precede the running of the stitches *x* onto the needles of the smaller head. As the stitches *x* are run onto said needles stitch for stitch, there will be a seamless union of the foot-tube with the instep-zone *b'*, and as the pockets *d* are tapering the number of stitches in the successive courses in this zone will vary—that is to say, supposing the number of needles in the two machines to be as before given, there will be in the course at the rear or heel end of the zone *b'* one hundred and fifty stitches, while in the course at the front or foot end of said zone there will be but one hundred and twenty stitches.

It is preferable to so form the pockets *d* that the seams *f* will extend to the upper ends of the lines *g*, representing the joinings of the narrowed and widened webs forming the heel-pocket, although this is not absolutely essential, nor is it essential that the pockets *d* should in all cases be formed on the opposite sides of the heel, although this location is, as before stated, the preferable one.

In Figs. 6 and 7, for instance, I have illustrated a modification of my invention, in which the surplus stitches of the zone *b'* are bunched at one point at the bottom of said zone, so that the seam *f'* is formed under the hollow of the foot in advance of the heel, where its presence is not objectionable.

If desired, the leg-tube *A* may be sewed and trimmed at the rear, so as to give the proper shape to the ankle in accordance with the usual practice.

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

1. The mode herein described of making a stocking having a seamless heel and a foot-body less in diameter than the leg, said mode

consisting in first knitting the leg-tube and forming a pocket or bulge upon a portion of the same, knitting a tubular section beyond the pocket or bulge, then running onto the needles of a smaller machine stitch for stitch as many of the stitches at the end of said tube as said needles will accommodate, bunching the surplus web, and closing the pocket or pockets thereby formed, substantially as specified.

2. The mode herein described of making a stocking having a seamless heel and a foot-tube of less diameter than the leg, said mode consisting in first knitting the leg-tube with a seamless bulge or pocket upon one side, forming a tubular section beyond said pocket, running upon the needles of a smaller machine as many stitches at the end of this tube as the needles will accommodate stitch for stitch, and bunching the surplus fabric at opposite points, so as to form two pockets or projections and closing these pockets, substantially as specified.

3. A sock or stocking having a seamless bulge or pocket heel, a foot-tube of smaller diameter than the leg-tube, and an instep-zone in advance of the heel, having courses of stitches graduated in length from those of the foot-tube to those of the leg-tube, and a seam or seams extending from the heel to the foot-tube across said instep-zone, substantially as specified.

4. A sock or stocking having a seamless bulge or pocket heel, a foot-tube of less diameter than the leg, and an instep-zone in advance of the heel, having courses of stitches graduated in length from those of the foot-tube to those of the leg-tube, and short seams on opposite sides extending across the instep-zone, substantially as specified.

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

ROBERT M. APPLETON.

Witnesses:

JAMES R. MURPHY,
MICHAEL J. MOORE.