

(No Model.)

F. E. BUSIEL.

ART OR METHOD OF KNITTING STOCKINGS.

No. 563,740.

Patented July 14, 1896.

Fig. 1.

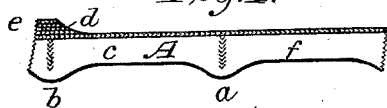


Fig. 2.

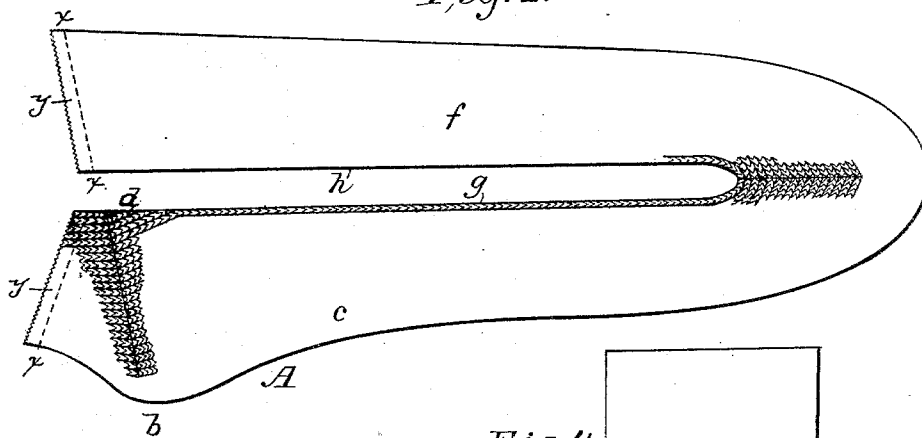
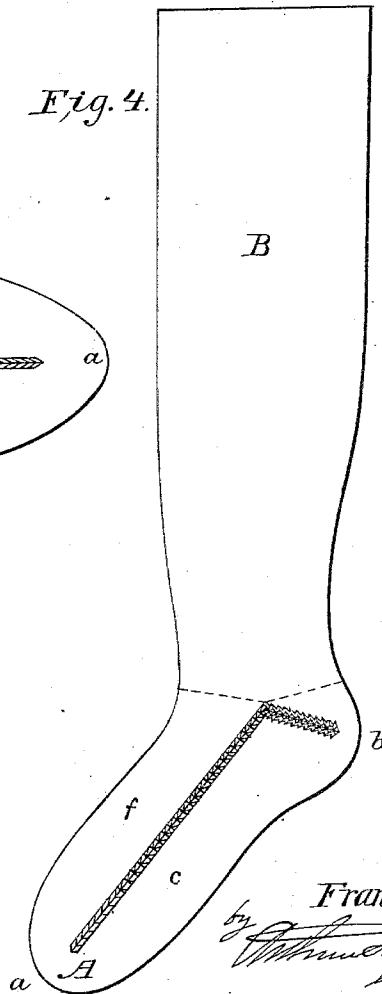
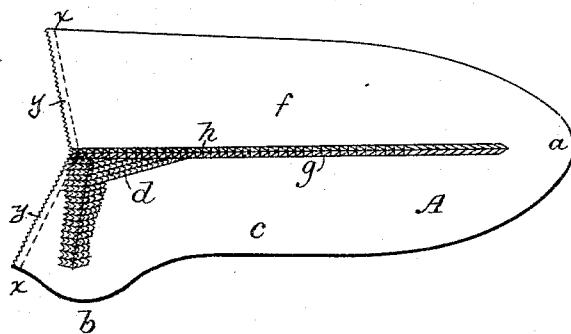


Fig. 4.

Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK E. BUSIEL, OF LACONIA, NEW HAMPSHIRE.

ART OR METHOD OF KNITTING STOCKINGS.

SPECIFICATION forming part of Letters Patent No. 563,740, dated July 14, 1896.

Original application filed February 5, 1892, Serial No. 420,415. Divided and this application filed December 29, 1892. Serial No. 456,648. (No specimens.)

To all whom it may concern:

Be it known that I, FRANK E. BUSIEL, a citizen of the United States, residing in Laconia, in the county of Belknap and State of New Hampshire, have invented an Improved Art or Method of Knitting Stockings; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

This application is a division of my application, Serial No. 420,415, filed February 5, 1892.

In the drawings, Figure 1 represents a side view of a flat-knit web formed with bulges for the stocking toe and heel and constituting a foot-blank, the view representing the foot-blank doubled longitudinally with the two selvage edges of the blank laid side by side. Fig. 2 is a side view of the foot-blank, the portions which respectively constitute the top and bottom of the stocking-foot being doubled toward each other nearly in position to seam together. Fig. 3 is a side view of a completed stocking-foot formed from such a foot-blank. Fig. 4 is a side view of a stocking completed by knitting a circular stocking-leg begun at the heel or open end of such a stocking-foot, as shown in Fig. 3, and ended at the upper end of the stocking-leg.

My improved art or method of knitting stockings is as follows: First, a flat foot-blank A, Fig. 1, is knit in a flat web and in straight courses, the two flat portions of the web constituting the sole *c* and the instep *f*, and two bulges, pouches, or pockets *a b* constituting a seamless toe and heel for the stocking, the toe *a* connecting the instep and sole portions and the heel *b* being at the other end of the sole portion. The knitting is performed upon a flat-knitting machine of the kind known as "footing-machines." The seamless toe and heel bulges or pockets *a b* are knit in the usual way of forming the heels and toes on a flat-footing machine by narrowing the web while retaining the loops of the edges of the web on the needles and widening again; and the web is preferably knit in such direction that the sole portion *c* of the foot-blank shall be knit from the toe toward the heel, for the purpose of making gus-

sets or gores *d d* next to the heel by widening the web, which can be more rapidly done than by narrowing the web, since narrowing requires the use of transferring-points to take the loops from the needles thrown out of action.

The particular method shown in the drawings of forming the gussets or gores *d d* is as follows: The flat sole and instep *c f* of the foot-blank are knit in straight courses with a given normal number of needles. When the point is reached at which the gussets or gores *d d* are to commence, the flat web is widened by bringing into action needles at opposite ends of the gang of needles until the gussets or gores are brought to their full widths. As shown in the drawings, four additional needles are thus thrown into action at each side of the gang of needles. When the web has thus been widened to its maximum extent, the formation of the heel-pouch or seamless heel *b* is proceeded with. This heel-pouch is knit in the manner usual with footing-machines by narrowing without dropping any of the stitches on the needles which are thrown out of action, and then subsequently widening to the maximum width. The knitting of a flat web in straight courses then continues with the maximum number of needles for several courses until the gussets are completed and until the foot-blank is completed. Then the stocking-foot is completed by folding or lapping over the instep *f* upon the sole *c*, as shown in Fig. 2, and by seaming or otherwise uniting together the adjacent selvage edges *g h* of the instep and sole portions on each side, as shown in Fig. 3. This makes a completed foot. Then the heel end of the stocking-foot (that is to say, the terminal or top edges of the heel and instep) is transferred to a circular-knitting machine (preferably a spring-needle machine) having substantially as many needles as there are loops on the open end of the stocking-foot, and the stocking-leg B is knit in complete circular courses from the foot to the top by the machine.

The operation of transferring the stocking-foot to the circular machine, by picking or running it onto the needles of the machine, is performed in the usual manner, and I have

made the transfer in each of these ways in practicing my invention. When the transfer is performed by running the foot onto the circular machine, the transfer is made at a line $x x$ several rows or rounds of stitches back of the row of terminal stitching, and there is thus formed a marginal portion y beyond the line $x x$ on which the transfer is made, which marginal portion or attaching-margin is subsequently unraveled. For this reason, when the transfer is to be made by running on, the instep and heel are knit with sufficient surplus rounds of stitches to provide for the attaching-margins. The unraveling of the attaching-margins can be performed immediately after the transfer is made and while the fabric is on the needles of the circular machine, but before the knitting on the circular machine has proceeded; or it may be performed after the knitting has been completed and the work removed from the circular machine. When the transfer is made by picking on, the loops of the terminal round or course are transferred singly to corresponding needles upon the circular machine. The plan of running on, or making the attaching-margins at the top edges of the heel and instep portions or several courses beyond the line on which the transfer is made, and subsequently unraveling the attaching-margins, is the more quickly and easily performed and is the plan commonly adopted in practicing this invention.

It may be remarked that it is not essential in this method of knitting to seam together the selvage edges $g h$ of the foot-blank before knitting the stocking-leg thereon. This seaming may be done last, and it is to be understood that this variation from the order of the method described would not change the same essentially and is intended by me to be included as part of my invention. The order of method above described is best, however, being more convenient and expeditious.

The method of knitting stockings above set forth is simple, rapid, and cheap, and the stockings made have full-fashioned feet and no seams joining them with the legs, all the seams in the stockings being the selvage seams on the sides of the feet.

I claim as my invention—

1. The art or method of knitting a stocking, which consists in knitting in straight courses a foot-blank with toe and heel bulges, completing the foot by uniting together the selvage edges of the instep and sole portions of the blank, transferring the heel and instep, and knitting the leg onto the foot in complete circular courses, substantially as set forth.

2. The method of knitting a stocking, which consists in knitting in straight courses a foot-blank and attaching-margins at the top of the heel and instep portions thereof, transferring the said foot-blank on lines of transfer near the ends thereof, unraveling said attaching-margins down to the lines of transfer, and knitting the leg onto said foot-blank in complete circular courses, substantially as set forth.

3. The method of knitting a stocking, which consists in knitting in straight courses two selvaged flat webs constituting the instep and sole portions of the foot, a seamless toe connecting said foot portions, a seamless heel connected to the sole portion, and attaching-margins at the top of the heel and instep, transferring said foot portions on lines of transfer, unraveling said attaching-margins down to the lines of transfer, and knitting a leg onto said foot portions in complete circular courses, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

FRANK E. BUSIEL.

Witnesses:

E. F. REEVES,
JOHN W. ASHMAN.