

June 16, 1931.

J. M. ALLEN

1,810,098

SEAMLESS HOSIERY AND PROCESS OF MANUFACTURING SAME

Filed March 5, 1929

2 Sheets-Sheet 1

Fig. 1.

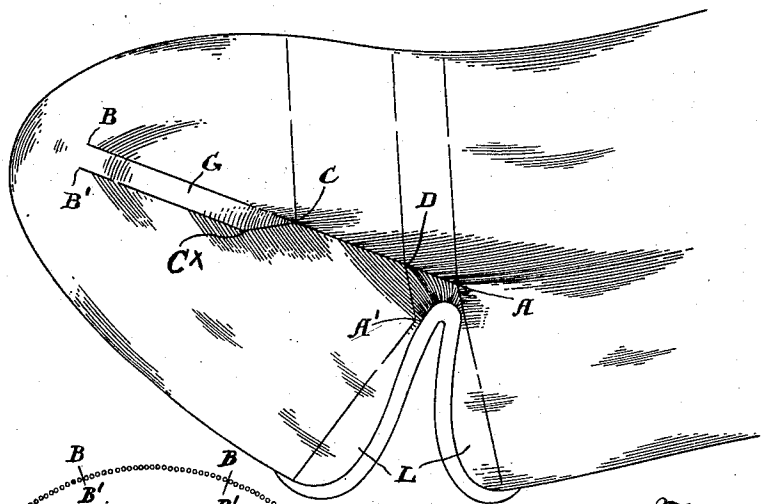
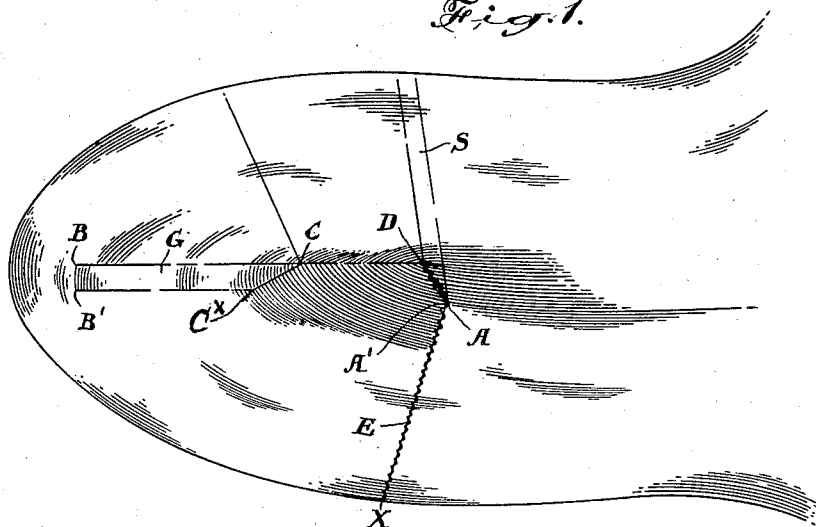


Fig. 2.

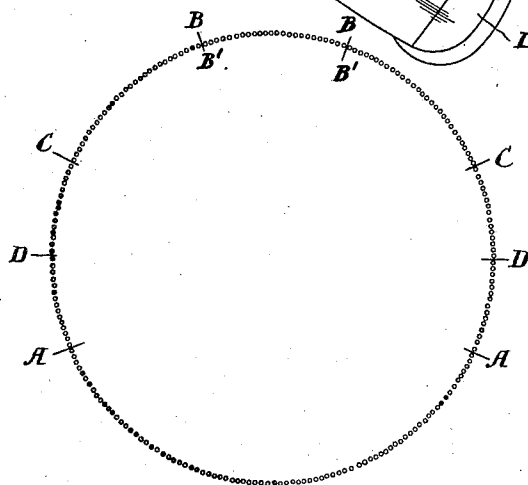


Fig. 5.

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Fig. 3.

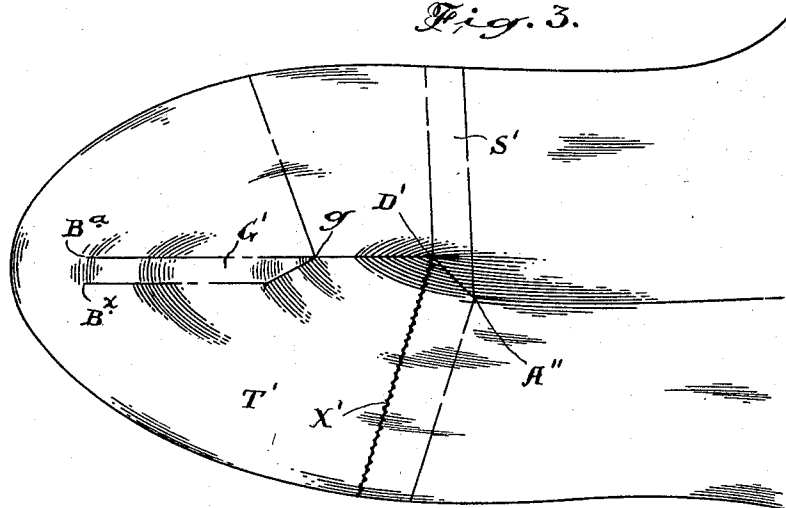


Fig. 4.

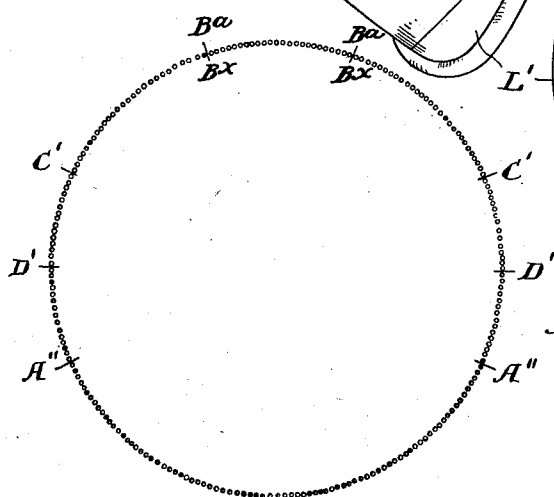
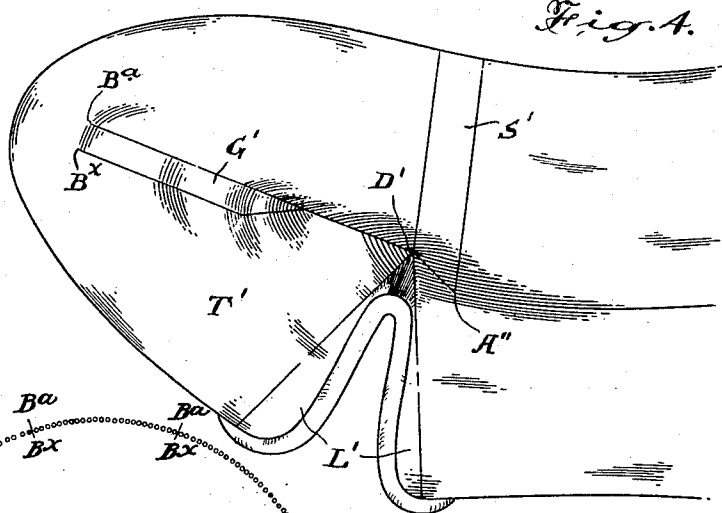


Fig. 6.

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UNITED STATES PATENT OFFICE

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SEAMLESS HOSIERY AND PROCESS OF MANUFACTURING SAME

Application filed March 5, 1929. Serial No. 344,192.

The principal objects of this invention are, to provide a seamless stocking with a foot particularly shaped to the contour of the foot of the wearer without the formation of puckers or dog-ears at the inner ends of the sutures and having the widest part of the toe arranged at the widest part of the foot of the wearer. Further, the structure provides an extra long length of fabric in the bottom section of the toe and the neatness of the looping line greatly improves the appearance.

A further and important object is to devise a stocking structure which will enable the carrying of a silk instep yarn well into the top of the toe portion to effect the shortening of the toe structure and to enhance its efficiency.

The principal feature of the invention consists in the novel formation of the toe of the stocking by lengthening the gore to extend from the widest part of the foot of the wearer and widening a portion of the toe by knitting a gusset into the gore of a lesser length than said gore, and fitting a segment of fabric between the toe and instep and looping the end of the bottom of the toe to the bottom of the foot opposite said insert segment.

In the drawings, Figure 1 is a side elevational view of a stocking formed with a specially long toe structure having a segment formed with tapered ends inserted in the instep forward of the looping line connecting the end of the bottom of the toe to the sole.

Figure 2 is a side elevational view showing the manner of fitting the fabric prior to looping the ends of the toe bottom and sole together.

Figure 3 is a side elevational view of a stocking formed with a specially long toe structure having a tapered segment inserted in the instep back of the looping line connecting the end of the bottom of the toe to the sole.

Figure 4 is an elevational view showing the manner in which the fabric of the stocking shown in Figure 3 is knitted prior to looping.

Figure 5 is a diagram illustrating the man-

ner of manipulating the needles in forming the stocking illustrated in Figures 1 and 2.

Figure 6 is a diagram similar to Figure 5 illustrating the arrangement of needles in the knitting of the stocking shown in Figure 3.

The construction of stocking herein shown is carried into effect upon a circular knitting machine and the leg, heel and body portion of the foot is formed in the usual manner.

The body of the foot shown in Figures 1 and 2 is circularly knit with the full complement of needles indicated in Figure 5 to the point A in Figure 1. The gore is then commenced by lifting less than half of the lower segment of needles out of action as a group between the points A—A Figure 5 and knitting by reciprocation while removing more needles from action from the points A.

The knitting of the instep is continued progressively picking further needles out of action right up to the point B of the gore at which point only the needles between B—B Figure 5 remain in action. A change of yarn from the light instep yarn to the reinforced toe yarn is made intermediate of the length of the gore and preferably about the point C thereof.

When the point B has been reached in the knitting of the toe the needles between the points B—C on each side are brought into action simultaneously and a plurality of rows of knitting are knitted to extend along the gore edge to form the gussets G. Upon completion of the desired rows for the gussets the groups of needles from C* to B' Figure 5, are taken out of action, leaving only those between B'—B' in action. Knitting is continued from the point B' progressively picking down the needles into action until half the complement of needles is returned at the point D which represents the needles between points D—D of Figure 5.

The knitting is continued from the point D picking needles out of action on either side from the point D to the point A', the number of needles picked out of action corresponding with the number of needles between the points D and the points A Figure 5 over half the complement knitted at the beginning of the toe.

It will thus be seen that a suture is formed to the point D from the toe end of the foot.

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under portion of the stocking to be longer than the top. Further, by the knitting in of tapered segments the puckers or "dog-ears" are eliminated.

5 These features taken together with the extraordinarily long toe created by the insert of the gusset ensures a perfectly fitting stocking which covers the foot uniformly and without wrinkles or puckers.

10 What I claim as my invention is:—

1. In a process for manufacturing seamless hosiery having a toe pocket which is commenced on substantially half the needles, the step of inserting a segment of fabric between the toe and the instep by reciprocatory knitting on a number of needles varied by picking, said half the needles being in action when knitting the course which meets the inner ends of the toe gores and more of said needles being in action in the other courses of the segment and providing a compensating segment in the under side.

2. A process for manufacturing seamless hosiery consisting in first knitting the foot, then inserting a segment of fabric on the instep side by reciprocatory knitting with less than the whole but more than half the circle of needles in action when knitting the longest course and fewer of said needles being in action in the other courses of the segment, then commencing the toe pocket on the minimum number of needles used in said segment of fabric and knitting the toe pocket with diagonal sutures, then inserting a segment in the sole side of the foot to compensate for the aforesaid segment on the instep side, and finishing said pocket by looping.

3. A process for manufacturing seamless hosiery consisting in first knitting the foot on the full complement of needles, then knitting a segment of fabric on the top or instep side of the foot by reciprocatory knitting commencing on more than half the needles and using progressively less needles on the succeeding courses until half the needles remain in operation, then commencing the knitting of a long tapered toe pocket on said half the needles and knitting the toe pocket with diagonal sutures then inserting a segment in the sole side of the foot to compensate for the aforesaid segment on the instep side, and finally finishing the end of said toe pocket by looping the unconnected edges.

4. A process for manufacturing seamless hosiery consisting in first knitting a stocking foot on the full complement of needles, then commencing the toe gore by putting less than half of the lower segment of needles out of action and continuing the knitting progressively putting needles out of action until the toe end of the gore is reached, then knitting in a gusset of less length than the gore, then progressively putting needles into action until half the complement of needles are in operation, then progressively removing needles

from action until the number of needles remaining in action equals the number of needles removed from action at the commencement of knitting the toe, and then looping the unconnected ends of the foot and the toe together.

5. A knitted stocking having a toe pocket with a diagonal suture on each side in combination with a tapered gusset on the instep side of the foot arranged between the toe pocket and the foot, the points of said gusset being beyond and not joining the terminal ends of the sutures and a tapered segment inserted between the toe pocket and the under side of the foot.

6. A knitted stocking having a toe pocket with a diagonal suture on each side and a segment of fabric knitted between the instep and the toe pocket, the course of said segment next the toe pocket being the shortest and the other courses containing progressively more stitches, and a segment of fabric interposed between the toe pocket and foot on the sole side and being formed with tapered ends to co-operate with the resultant tapered ends of the aforesaid segment.

7. A knitted stocking having a narrowed and widened toe pocket and a gusset having tapered ends and inserted between the instep and the toe pocket, the shortest course of said gusset extending between the inner ends of the sutures of the toe pocket and the points of the gusset extending beyond the sutures, the widened segment of the toe pocket being tapered at its extremity to meet the tapered ends of said gusset.

8. A seamless knitted stocking having a toe pocket with a suture in each side in combination with a segment of fabric arranged between the foot and the toe pocket on the instep side of the foot, said segment of fabric having tapered ends, the shortest courses of which meet the ends of the toe sutures with the points extending beyond the same and the bottom segment of the toe pocket having a tapered end, the side edges of which match the tapered ends of the instep segment beyond the ends of the toe sutures.

9. A process of manufacturing seamless hosiery consisting in first knitting the foot on the full circle of needles, then knitting to the instep portion a plurality of partial courses knit with the same yarn as the instep with a progressively decreasing number of needles commencing with more than half and less than the full circle, then knitting the toe making a yarn change intermediate of its length from instep yarn to a heavier yarn and subsequently knitting in a plurality of courses of heavier yarn to connect with the widened end of the toe pocket, said subsequent knitting being done with a progressively varying number of needles to match the number of courses first added to the instep.

10. A knitted stocking having a toe pocket with a diagonal suture on each side and a plurality of courses of instep yarn of progressively varying length introduced in the top portion of the foot between the instep and the toe pocket, and a number of courses corresponding to said insert courses and of inversely varying length and of heavier yarn than the instep yarn introduced in the bottom portion of the foot and registering with the extremities of the upper insert.

11. A knitted stocking having a narrowed and widened toe pocket and a gusset between the instep and the toe pocket having tapered ends, the shortest course of said gusset extending between the inner ends of the sutures of the toe pocket and the points of the gusset extending beyond the sutures, and a compensating segment of fabric interposed between and connecting the widened end of the toe pocket with the underside of the foot and being formed with tapered ends to meet the tapered ends of said gusset.

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