

(No Model.)

2 Sheets—Sheet 1.

F. W. SIMONS.
METHOD OF KNITTING HOSE.

No. 476,084.

Patented May 31, 1892.

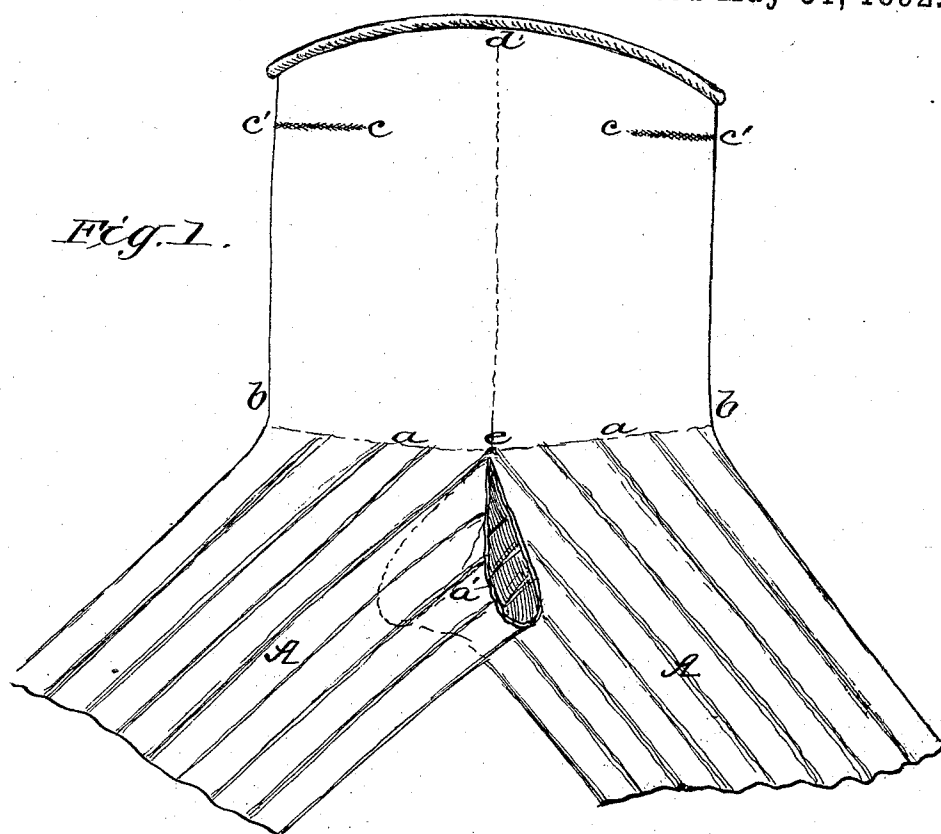
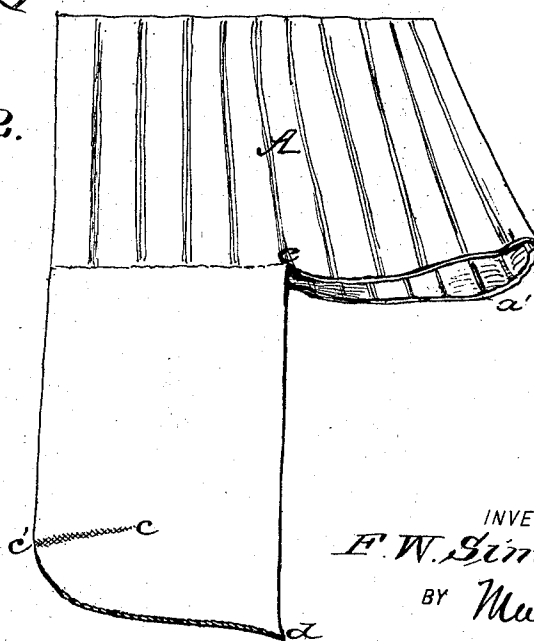


Fig. 2.



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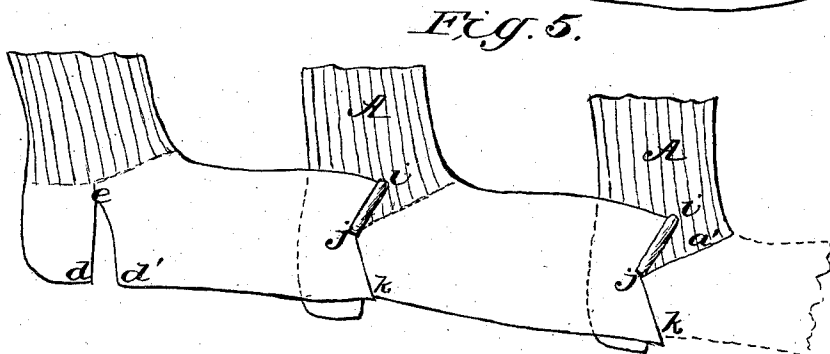
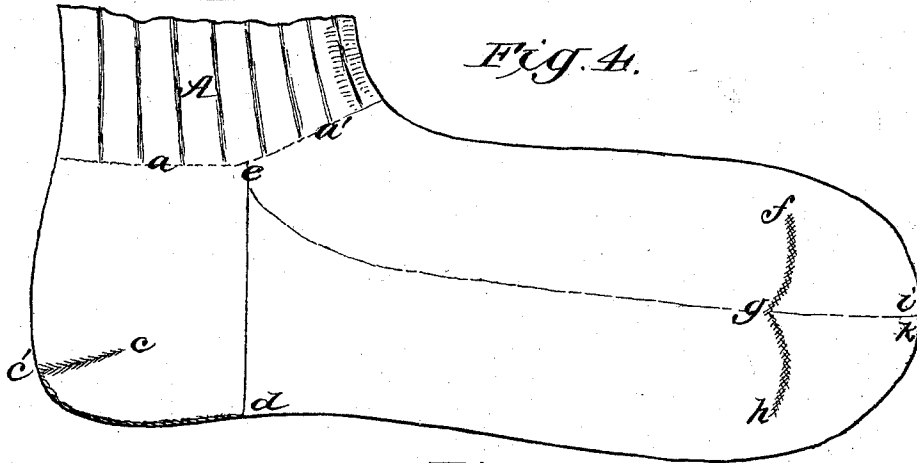
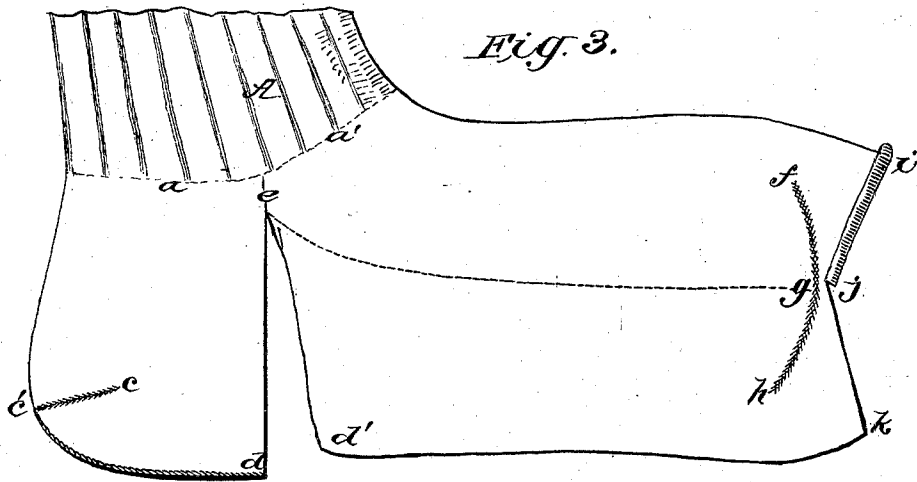
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WITNESSES:

Fred G. Dieterich
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INVENTOR:

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BY *Wm. H. [Signature]*

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UNITED STATES PATENT OFFICE.

FREDERICK W. SIMONS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO CARRIE WILSON, OF SAME PLACE.

METHOD OF KNITTING HOSE.

SPECIFICATION forming part of Letters Patent No. 476,084, dated May 31, 1892.

Application filed January 5, 1892. Serial No. 417,118. (No specimens.)

To all whom it may concern:

Be it known that I, FREDERICK W. SIMONS, of Frankford, (Philadelphia,) in the State of Pennsylvania, have invented a new and useful Improvement in Methods of Knitting Hose, of which the following is a specification.

My invention relates to methods of knitting hose; and it consists in knitting simultaneously upon the halves of two leg portions a single web to form a heel on each leg, which heel parts are fashioned or rounded on the outer side by throwing out of action certain of the needles, and afterward successively bringing them into action again, as herein-
15 after described, which heel parts are afterward severed from each other by cutting.

It also consists in the peculiar method of knitting the toe, and also further in the peculiar method of knitting continuously upon
20 the leg and heel portions a series of feet, the toe of one of which feet joins onto the rear end of the sole of the next foot and is severed from the same by cutting, as will be herein-
after fully described.

25 Figure 1 is a side view of parts of two leg portions united by the double heel. Fig. 2 is a view of one leg and heel severed or separated from the other by cutting. Fig. 3 is a side view of the foot portion of the stocking complete, so far as the knitting is concerned,
30 but not looped together. Fig. 4 is a side view of the foot of the stocking complete, and Fig. 5 is a side view of a chain or series of stocking-feet as knit continuously upon the
35 leg and heel portions shown in Fig. 2.

Referring to Fig. 1, A A are two leg portions, which, as shown, are of a ribbed web, but may be of any other form. One half *a* and *a'* of the stitches at the edge of each of the
40 leg portions is placed upon the one-half of the needles of a circular-knitting machine, the other half of the stitches of each leg portion being free, as at *a'*. The circular-knitting machine is then made to knit a plain web, as at
45 *b b*. When the knitting has progressed to the point where the ball of the heel rests, a line of fashioning-stitches is introduced on each side, as at *c c'*. For doing this all the needles on the side of the machine that knits the half of
50 the web opposite to that shown in Fig. 1 are thrown out of action, and also all the needles

on the near side of the machine from the points *c* to *c'* are also thrown out, so that the needles between the points *c c* are the only
ones in the entire circumference of the ma-
chine that are active, and at each course back
and forth as the knitting progresses a needle
on each side is brought into action until the
knitting gradually widens from *c c* to *c' c'*.
This, it will be seen, causes the web to be a
60 little longer on the middle line *d e* than it is on either side, and this gives to each heel the fullness for the ball of the heel, as shown in Fig. 2. After the near side of the web has
been knit in this way from the line *c c* the
65 needles on this near side of the machine are all thrown out of action and the corresponding needles between the points *c c* on the opposite side are brought into action, and at
each course another needle is added to the
70 active ones to produce the fashioning *c c'* upon that side. Then after the lines of fashioning *c c'* have been put in on that side all the needles of the machine are brought
into action and eight or ten rounds are knit,
75 and the web is then taken off the machine. The double-heel portion is then put on a looping-machine and the end of the heel portion *d c'* of each leg is then closed and fastened
together by said looper, and the double heel
80 is then cut upon the line *d e*, forming on each side a fashioned heel, as shown in Fig. 2.

To follow the actual order of knitting, I would next describe the method of knitting the foot; but as this is somewhat involved I
85 will pass on to the knitting of the toe, it being understood that in knitting the body of the foot before reaching the toe all the needles of the circular machine are in action. When the point is reached for fashioning the
90 toe, (see Fig. 3,) all the needles of the machine below the point *f* on each side are thrown out, and the knitting proceeds from the point *f* on one side over to the point *f* on the opposite side, and at each course of stitches another needle at
95 each end is brought into action until the web is widened to the point *g* on each side and comprehends one-half of the full web of the foot. Then all the needles that knit this portion
are thrown out, and the needles between the
100 point *h* and the corresponding point on the other side which knit the sole are thrown

in, and this part of the web is widened at each course by taking in a new needle at each course until the point *g* is reached, thus completing the other or lower half of the fashioning. Then all the needles are thrown into action, and a few courses are knit with the full web. Then one-half of the web or the part *ij* is thrown off the needles, the other part from *j* to *k* being severed by cutting, for the purpose hereinafter described. The surfaces *ij* and *jk* are then brought together and are united by a looper, as shown in Fig. 4.

In practice the foot-sections are knit continuously, as shown in Fig. 5, so that the cut at the line *jk* of Fig. 5 leaves the edge *ed'* of the next succeeding foot, which edge in turn is fastened to the edge *ed* by a looper to complete the heel. To make this clearer I would state that when the leg and heel, Fig. 2, is to be put on the machine to complete its foot and toe the following order is observed: We will suppose that the middle stocking-foot of Fig. 5 has just been knit and the stitches from *i* to *j* have just been cleared or thrown off the machine, while the part from *j* to *k* is still on the machine and is not cast off at all. The leg and heel A (shown on the right of Fig. 5 or Fig. 2) is now applied to the machine and its free edge *a'* is fitted to the half of the needles which were vacated by the toe part *ij* of the previous foot, and then the knitting proceeds with all the needles of the machine to knit the foot, as indicated by the dotted lines on the right of Fig. 5, which foot will be united to the leg of the right-hand stocking and to the toe of the middle one. The severance of these feet, which are thus knit continuously or in series, is effected by cutting on the line *jk*, leaving the heel as shown on the left of Figs. 5 and 3, whose two edges *de* and *d'e* are united by a looper, as before described.

Having thus described my invention, what I claim as new is—

1. The method of knitting the heels of stockings, which consists in knitting a continuous circular web upon one-half of each of two leg portions, then throwing out of action all the needles except a portion at the middle of one side of the machine, then successively bringing into action again the adjacent needles on that side of the machine, then repeating the

operation on the other side of the machine to round or fashion the heels, and then dividing the last knit web portion longitudinally along the median line to form a separate heel for each of the two legs, substantially as shown and described.

2. The method of knitting the toe of a stocking, which consists in first knitting the full web of the foot with all the needles, then throwing out all the needles except those that knit the top part of the toe, and gradually widening and fashioning the toe by bringing in one needle at each end at each course until one-half of the needles are at work, then throwing out this half of the needles and bringing into action a portion of the needles which knit the sole and gradually bringing into action at each course an additional needle at each end to fashion the lower part or sole of the toe until this half of the needles are at work, and then throwing in all the needles and knitting a few courses, substantially as shown and described.

3. The method of knitting the feet of stockings in a continuous series or chain, which consists in knitting the foot of one stocking to the toe, clearing or throwing the upper half of the toe from the needles and placing upon these needles the instep portion of a new leg and heel section, and continuing the knitting to form a foot which shall be united to both the new leg-section and also the foot-section of the previous stocking, substantially as shown and described.

4. The method of knitting and forming the feet of stockings, which consists in first knitting the foot of one stocking to the toe, then clearing or throwing off the upper half of the toe from the needles and placing upon these needles the instep portion of a new leg and heel section and continuing the knitting to form a foot which shall be united to both the new leg-section and also the foot-section of the previous stocking, then cutting the lower half of the toe of one foot from the rear end of the sole of the next foot, and finally looping together and closing the toes and also the heels, substantially as shown and described.

FREDERICK W. SIMONS.

Witnesses:

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