

No. 864,432.

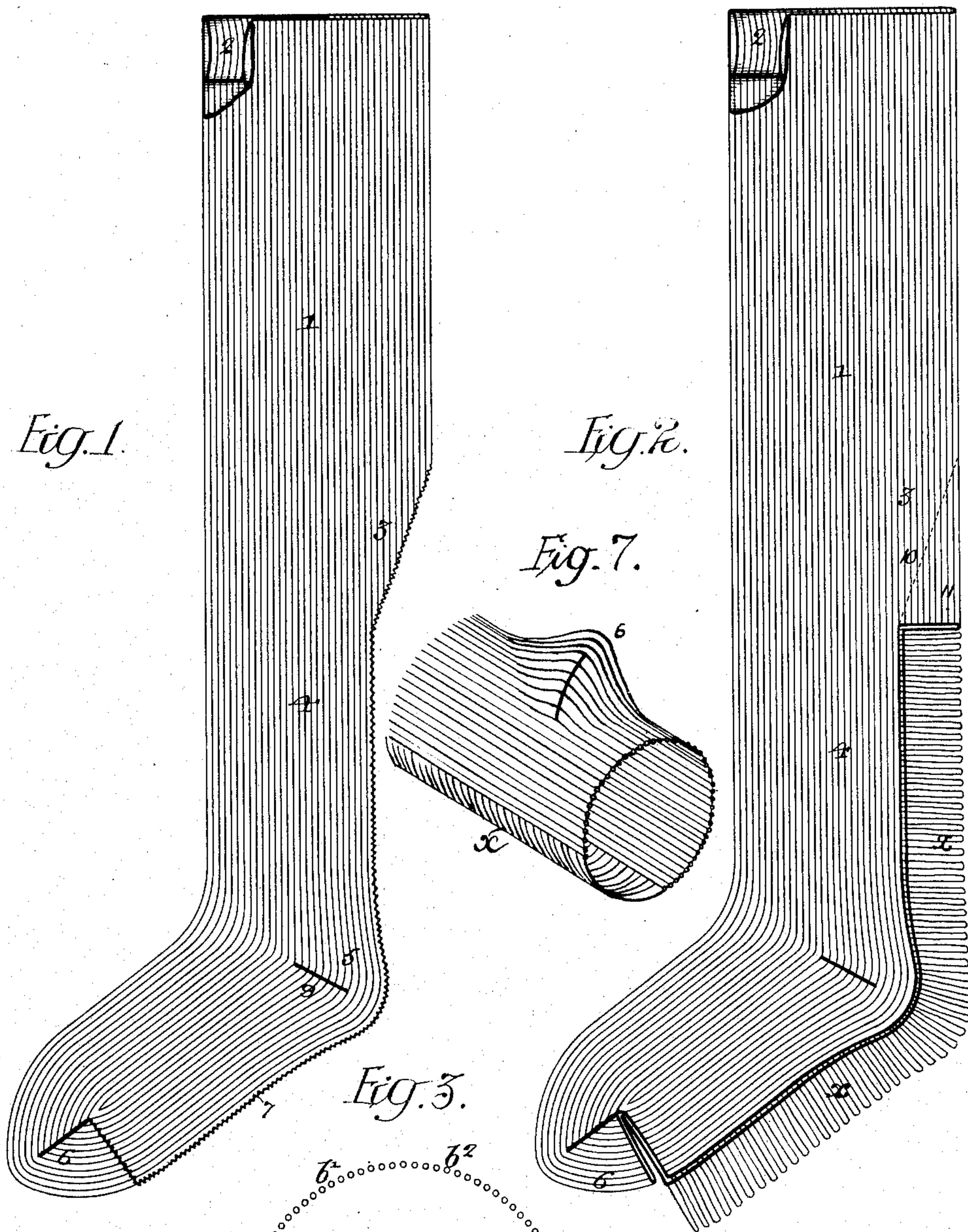
R. W. SCOTT.

PATENTED AUG. 27, 1907.

HOSIERY AND THE MANUFACTURE OF THE SAME.

APPLIOATION FILED SEPT. 20, 1905.

2 SHEETS—SHEET 1.



Witnesses:-
Hamilton D. Turner
Augustus B. Cope

Inventor
Robert W. Scott.
By his Attorneys
Housen & Howard

No. 864,432.

PATENTED AUG. 27, 1907.

R. W. SCOTT.

HOSIERY AND THE MANUFACTURE OF THE SAME.

APPLICATION FILED SEPT. 20, 1905.

2 SHEETS—SHEET 2.

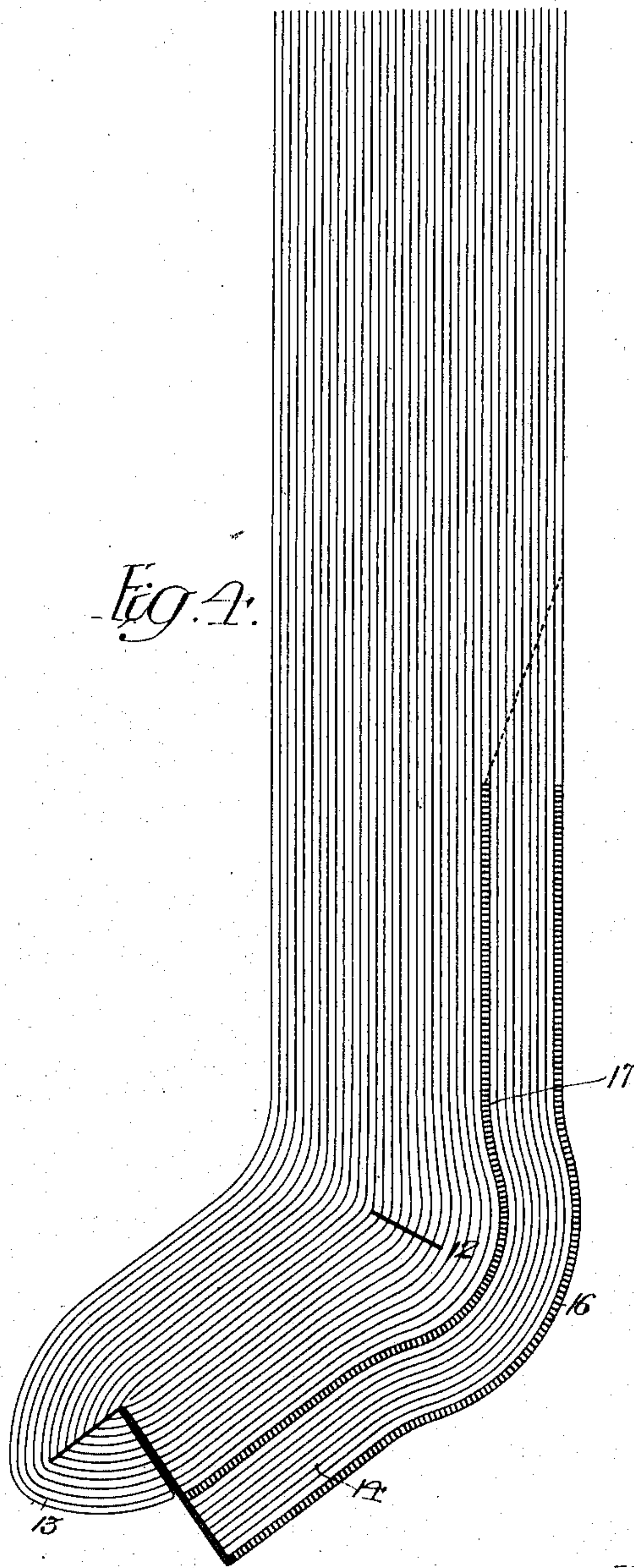


Fig. 6.

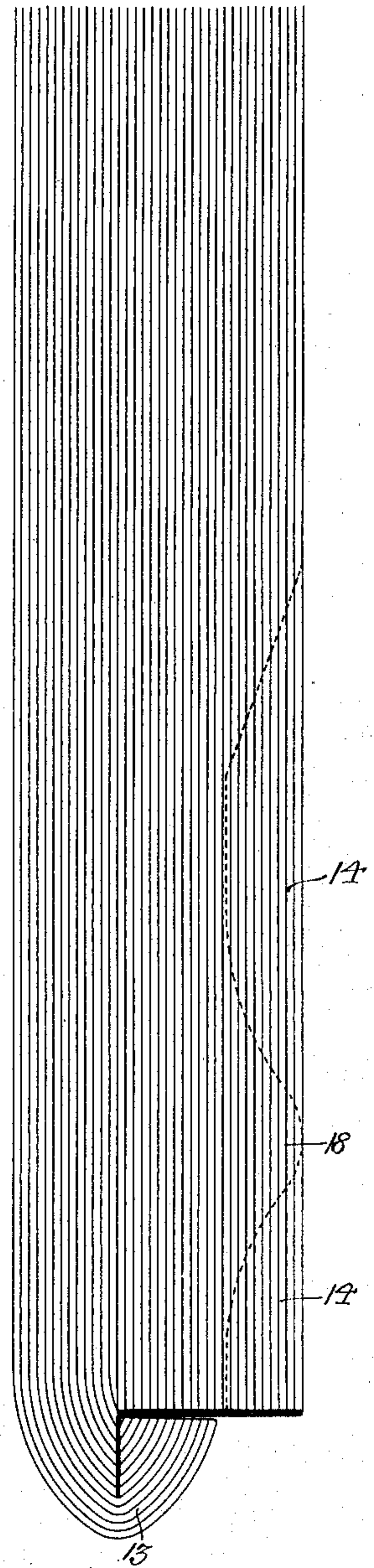
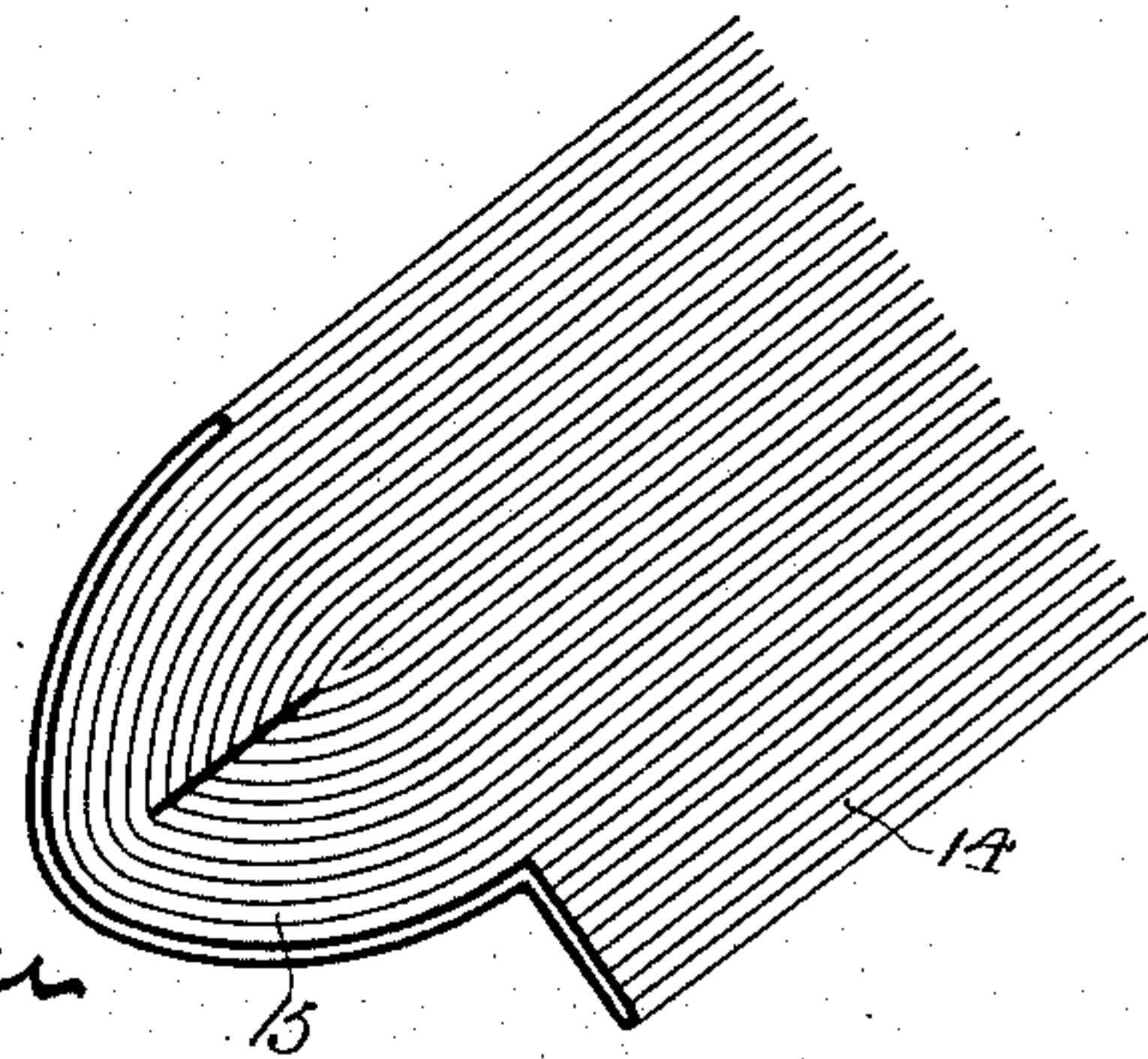


Fig. 5.



Witnesses:

Hamilton D. Turner

Augustus B. Coppes

Inventor:
Robert W. Scott.
by his Attorneys,
Hewitt & Howe

UNITED STATES PATENT OFFICE.

ROBERT W. SCOTT, OF LEEDS POINT, NEW JERSEY, ASSIGNOR OF ONE-HALF TO LOUIS N. D. WILLIAMS, OF OGONTZ, PENNSYLVANIA.

HOSIERY AND THE MANUFACTURE OF THE SAME.

No. 864,432.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed September 20, 1905. Serial No. 279,305.

To all whom it may concern:

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, residing in Leeds Point, New Jersey, have invented certain Improvements in Hosiery and in the Manufacture of the Same, of which the following is a specification.

The object of my invention is to produce a stocking having a seamless toe, and but a single seam, extending along the bottom of the foot, around the back of the heel, and up the back of the ankle and calf portions of the stocking, the leg being of tubular seamless web or being seamed at the rear as desired, the calf portion being properly shaped or fashioned, the heel being seamless except as before noted, and the stocking blank being susceptible of production by a continuous knitting operation upon one and the same circular machine, rapid production being thereby assured and the delay and expense of transferring knitted web from one machine to another being obviated.

In the accompanying drawings:—Figure 1, is a side view of a stocking made in accordance with my invention; Fig. 2, is a view of the blank from which said stocking is made; Fig. 3, is a diagrammatic representation of the needles of a circular knitting machine upon which the stocking blank can be produced; Figs. 4 to 6, are views illustrating other methods of making a stocking in accordance with my invention, and Fig. 7 is a view illustrating a certain stage in the operation of producing a web from which the blank, Fig. 2, is made.

The stocking shown in Fig. 1, has a seamless tubular leg portion 1, which may be made with or without a turned welt 2 at the top, the stocking having a shaped calf 3, narrow ankle 4, a rounded heel 5, without side seams and a seamless toe 6, a single seam 7 extending along the bottom of the foot, around the heel and up the back of the ankle and calf portions of the stocking.

In knitting the improved stocking I can use an ordinary circular machine of a proper diameter for producing the seamless tubular web for the leg of the stocking, said web being started at the top of the leg and the turned welt 2 being formed thereon in any available manner.

The production of tubular web is continued until said web is of the desired length for the leg and calf portions of the stocking, whereupon the stitches are cast off of a certain number of needles, say those occupying a segment of the circle between a and a' in Fig. 3, the needles from which the stitches have been thus cast being then retired or put out of action. Circular knitting is then resumed upon the remaining needles the knitting yarn floating from a to a' so as to form projecting loops, such as shown at x , in Fig. 2,

between the opposite edges of the knitted web, or the yarn being severed at a and inserted again at a' , if it is desired to save the waste of the floating yarn. A sufficient length of web for the ankle portion of the stocking is thus knitted and the needles comprised in that portion of the machine represented by the letters b , b' , b^2 and b^3 of Fig. 3, are then moved out of action but are permitted to retain their stitches.

To and fro knitting is now resorted to upon the needles b , a , a' , b^3 , and the web is gradually narrowed by dropping needle after needle successively out of action at each end of the acting set adjacent to b , b^3 , the needles thrown out of action being permitted to retain their stitches. This narrowing operation is continued until needles at each end of the acting set are out of action, say from b to d and from b^3 to d' , whereupon a reverse operation is begun, that is to say the inoperative needles from b to d and from b^3 to d' are brought into action successively, commencing at d and d' , the widening being continued until all of the needles from b to a and from a' to b^3 are again in operation.

With the exception that there is a gap, with or without floating yarns between the points a and a' , this is the ordinary method of making a heel or toe pocket upon a knitted tube, and the result is relatively similar, that is to say, there are at each side of the heel two triangular gussets connected by continuous wales at the bottom of the heel and by a knitted diagonal union 9 at each side of the heel. The needles b , b' , b^2 and b^3 are now again brought into action and circular knitting is resumed for the production of the foot web, this operation continuing until a web of the proper length has been knitted, whereupon the needles in the segments b , d , a and a' , d' , b^3 are retired from action, but permitted to retain their stitches.

To and fro knitting is now performed upon the needles in the segment b , b' , b^2 and b^3 and a toe pocket is formed upon these needles by first retiring successively, the needles at the ends of the set, said needles being permitted to retain their stitches until the web is narrowed to the points b' , b^2 whereupon the needles are again brought into action successively, but in the reverse order, so as to widen the web, this operation continuing until all the needles b , b' , b^2 , b^3 are again in action, whereupon all of the needles are again brought into action and the production of the tubular fabric of the full diameter for the leg is resumed. The appearance of the web at this stage of the operation will be understood on reference to Fig. 7, in which w represents the toe pocket formed upon one side of the tube. When this tube is cut adjacent to the end of the toe pocket a stocking blank such as shown in Fig. 2, is produced, the loops x or the cut ends of the yarn extend-

ing from the front ends of the foot web along the bottom of the latter, around the heel and up the back of the ankle to the beginning of the calf, the full diameter web extending from this point to the top of the stocking.

5 Courses of stitches are presented at the front end of the sole portion of the foot, and the bottom of the toe pocket so that the stocking can then be completed by looping together these courses of stitches and sewing together or otherwise uniting the edges of the webs
10 constituting the foot, heel and ankle portions of the stocking, the projecting loops x being cut off either before, during or after such sewing operation. The seam thus produced is parallel or substantially parallel with the wales bordering the foot, heel and ankle portions of the web and said seam is, as shown by the dotted
15 lines 10, Fig. 3, continued diagonally across the wales in the calf portion of the web until it reaches the edge of the seamless leg of the stocking, the triangular web 11 being cut off either before, during, or after the formation of said seam.

20 As the result of this method of manufacture, I have produced a stocking seamless as to the leg portion, properly shaped as to the calf, and having a narrow ankle and an acceptable heel and toe, the only seam
25 being that extending along the bottom of the foot, around the heel and up the back of the ankle and calf, which seam is no more objectionable than that to be found in the so-called "full fashioned" stockings which are made by a slow and laborious operation upon expensive machines, whereas my stocking can be rapidly produced upon a fast running circular machine, automatic
30 in its operation and hence requiring no attention beyond that ordinarily required by so-called automatic machines, the fact that my stocking has a seamless tubular leg constituting it an improvement upon the ordinary full-fashioned stocking which has the seam
35 extending up the back of the leg. This seamless leg however, is not essential to my invention, as the leg web may if desired, be woven with a gap and seamed up in the same manner as the other portions of the stocking, so that legs of all sizes can be made upon one and the same machine, and instead of throwing the needles from a to a' out of action in bulk so as to form an abrupt reduction in the width of the web, said needles may
40 be thrown out of action successively so as to shape or narrow the web.

In making the stocking shown in Fig. 4, the knitting of full width tubular web is continued down to the end of the foot, a seamless heel pocket 12 being formed at
50 the proper place. When the end of the foot is reached, a certain number of needles of the machine are retired, either retaining or casting their stitches, and leaving in action only sufficient needles to form the seamless toe pocket 13, the surplus portion 14 of the tubular web
55 being cut away either before, during or after the formation of the seam on the bottom of the foot, around the heel and up the back of the ankle and calf. In knitting this form of stocking, it is preferable to form a line of drop stitches 16 at the line of fold and another such
60 line of drop stitches 17 along the sewing line so as to facilitate the folding of the web, and act as a guide for the operator in sewing the blank to form the stocking. The toe may be formed either by means of a pocket as shown in Fig. 4, or by means of two flat webs 15,
65 as shown in Fig. 5, these webs being afterwards looped

together across the toe, such looping forming a substantially seamless union of the two webs, as is well understood.

In Fig. 6, a still simpler method of manufacture is illustrated. In this case full width tubular web is
70 knitted down to the commencement of the toe, no heel pocket being formed. The toe pocket 13 is then knitted upon the limited number of needles, and the surplus web 14 is trimmed off as shown by dotted lines leaving a short section 18 of full diameter web for the
75 corner of the heel. The desired angular relation of the foot to the leg must in this stocking, however, be given to it by boarding or pressing, hence a stocking having the seamless heel pocket is always to be preferred.
80

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

1. A stocking having a seamless toe, a shaped calf and a seam extending along the bottom of the foot, and up the back of the ankle and calf, said seam being substantially parallel with the wales of the foot and ankle, but
85 extending diagonally across the wales in the calf portion of the stocking, substantially as specified.

2. A stocking having a seamless toe, a shaped calf and a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the wales of the foot, heel and ankle, but extending diagonally across the wales in the calf portion of the stocking, substantially as specified.
95

3. A stocking having a seamless toe, a seamless tubular leg, a shaped calf, and a seam extending along the bottom of the foot and up the back of the ankle and calf, said seam being substantially parallel with the wales in the foot and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.
100

4. A stocking having a seamless toe, a seamless tubular leg, a shaped calf, and a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the wales in the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.
105

5. A stocking having a seamless toe pocket looped to the stitches at the front end of the sole portion of the foot, said stocking also having a seam extending along the bottom of the foot, and up the back of the ankle and calf, said seam being substantially parallel with the wales of the foot and ankle and extending diagonally across the wales of the calf portion of the stocking, substantially as specified.
110

6. A stocking having a seamless toe pocket looped to the stitches at the front end of the sole portion of the foot, said stocking also having a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the wales of the foot, heel and ankle and extending diagonally across the wales of the calf portion of the stocking, substantially as specified.
115

7. A stocking having a seamless tubular leg, a seamless toe pocket looped to the stitches at the front end of the sole portion of the foot, a seam extending along the bottom of the foot, and up the back of the ankle and calf portions of the stocking, said seam being substantially parallel with the wales of the foot and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.
120

8. A stocking having a seamless tubular leg, a seamless toe pocket looped to the stitches at the front end of the sole portion of the foot, a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf portions of the stocking, said seam being substantially parallel with the wales of the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.
125

130
135
140

9. A stocking having a shaped calf, and heel webs having a diagonal knitted union on each side of the heel, with a single seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the bordering wales of the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.

10. A stocking having a seamless toe, a shaped calf, and heel webs having a diagonal knitted union on each side of the heel, with a single seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the bordering wales of the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.

11. A stocking having a seamless tubular leg, a shaped calf and heel webs having a diagonal knitted union on each side of the heel, said stocking having a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the bordering wales of the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.

12. A stocking having a seamless toe, a seamless tubular leg, a shaped calf and heel webs having a diagonal knitted union on each side of the heel, said stocking having a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the bordering wales of the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.

13. A stocking having a seamless toe pocket looped to the stitches at the front end of the sole portion of the foot, heel webs having a diagonal knitted union on each side of the heel, a shaped calf and a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the bordering wales of the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.

14. A stocking having a seamless tubular leg, a shaped calf, heel webs having a diagonal knitted union on each side of the heel, a seamless toe pocket looped to the stitches at the front end of the sole portion of the foot, and a seam extending along the bottom of the foot, around the heel and up the back of the ankle and calf, said seam being substantially parallel with the bordering wales in the foot, heel and ankle and extending diagonally across the wales in the calf portion of the stocking, substantially as specified.

15. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon a sufficient number of needles to produce a web of the desired size for the leg of the stocking, putting out of action considerably more than one-half of said needles and knitting to-and-fro upon the remaining needles to form toe webs or a toe pocket, substantially as specified.

16. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon all of the needles to produce a seamless tubular web of the desired size for the leg of the stocking, putting out of action considerably more than one-half of said needles and knitting to-and-fro upon the remaining needles to form toe webs or a toe pocket, substantially as specified.

17. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon a sufficient number of needles of the machine to produce a web of the desired size for the leg of the stocking, putting out of action needles and upon certain of the previously inactive needles but permitting said needles or certain of the same at each end of the set to retain their stitches, then knitting to-and-fro upon the remaining needles to form a toe pocket, and then knitting round-and-round upon said needles and upon certain of the previously inactive needles which retain their stitches but not upon the central sec-

tion of said needles, so as to form a knitted web with gaps between the edge, substantially as specified.

18. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon all of the needles of the machine to produce a seamless tubular web of the desired size of the leg of the stocking, putting out of action needles around considerably more than one-half of the machine, but permitting said needles or certain of the same at each end of the set to retain their stitches, then knitting to-and-fro upon the remaining needles to form a toe pocket, and then knitting round-and-round upon said needles and upon certain of the previously inactive needles which retain their stitches, but not upon the central section of said needles, so as to form a knitted web with gaps between the edges, substantially as specified.

19. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in first knitting round-and-round upon sufficient of the needles of the machine to produce a web of the desired size for the leg of the stocking, then throwing out of action and casting the stitches from a group of needles corresponding with that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining needles to form a web with a gap between its edges, throwing out of action a certain number of needles at each side of the group previously retired and knitting to-and-fro upon the remaining needles to form a toe pocket or toe web, substantially as specified.

20. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in first knitting round-and-round upon all of the needles of a machine to produce a seamless tubular web of the desired size for the leg of the stocking, then throwing out of action and casting the stitches from a group of needles corresponding with that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining needles to form a web with a gap between its edges, throwing out of action a certain number of needles at each side of the group previously retired and knitting to-and-fro upon the remaining needles to form a toe pocket or toe web, substantially as specified.

21. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon sufficient of the needles to produce a web of the desired size for the leg of the stocking, then retiring and casting the stitches from a group of needles corresponding to that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining needles so as to form a web with a gap between its edges, then throwing out of action but permitting to retain their stitches a number of needles at each side of the group first retired, then knitting to-and-fro upon the remaining needles to form a toe pocket, then bringing into action the needles last retired and retaining their stitches, and knitting round-and-round upon these and upon those on which the toe pocket was formed, substantially as specified.

22. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon all of the needles to produce a seamless tubular web of the desired size for the leg of the stocking, then retiring and casting the stitches from a group of needles corresponding to that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining needles so as to form a web with a gap between its edges, then throwing out of action, but permitting to retain their stitches, a number of needles at each side of the group first retired, then knitting to-and-fro upon the remaining needles to form a toe pocket, then bringing into action the needles last retired and retaining their stitches, and knitting round-and-round upon these and upon those upon which the toe pocket was formed, substantially as specified.

23. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon sufficient of the needles of the machine to produce a web of the desired size for the leg of the stocking, then throwing out of action and casting the stitches from a group of needles

corresponding to that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining needles, then throwing out of action but permitting to retain their stitches a group of needles on the opposite side of the machine from that containing the group previously retired, then knitting to-and-fro and narrowing and widening upon the remaining needles at opposite sides of the machine to form a pair of heel webs, then bringing into action the needles which were previously retired but retained their stitches, knitting round and round upon the needles now in action to form a foot web, then retiring a certain number of needles at each end of the acting set and knitting to-and-fro and narrowing and widening upon the remaining needles to form a toe pocket or toe webs, substantially as specified.

24. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in knitting round-and-round upon all of the needles of the machine to produce a seamless tubular web of the desired size for the leg of the stocking, then throwing out of action and casting the stitches from a group of needles corresponding to that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining needles, then throwing out of action but permitting to retain their stitches a group of needles on the opposite side of the machine from that containing the group previously retired, then knitting to-and-fro and narrowing and widening upon the remaining needles at opposite sides of the machine to form a pair of heel webs, then bringing into action the needles which were previously retired but retained their stitches, knitting round-and-round upon the needles now in action to form a foot web, then retiring a certain number of needles at each end of the acting set and knitting to-and-fro and narrowing and widening upon the remaining needles to form a toe pocket or toe webs, substantially as specified.

25. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in first knitting round-and-round upon sufficient needles of the machine to produce a web of the desired size for the leg of the stocking, then retiring and casting the stitches from a group of needles corresponding with that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining

needles to form a web for the ankle portion of the stocking, then throwing out of action, but permitting to retain their stitches, a group of needles at the opposite side of the machine from that containing the group first retired, then knitting to-and-fro upon the remaining needles at each side of the machine to form opposite heel webs, then restoring to action the needles which were previously retired but permitted to retain their stitches, knitting round-and-round to form the foot web, then retiring a group of needles at each end of the acting set but permitting them to retain their stitches, then knitting to-and-fro upon the remaining needles to form a toe pocket, then restoring to action the needles retired at each end of the set and knitting round-and-round for a few courses, substantially as specified.

26. The mode herein described of making a stocking blank upon a circular knitting machine, said mode consisting in first knitting round-and-round upon all of the needles of the machine to produce a seamless tubular web of the desired size for the leg of the stocking, then retiring and casting the stitches from a group of needles corresponding with that portion of the web which is to form the back of the leg, then knitting round-and-round upon the remaining needles to form a web for the ankle portion of the stocking, then throwing out of action, but permitting to retain their stitches, a group of needles at the opposite side of the machine from that containing the group first retired, then knitting to-and-fro upon the remaining needles at each side of the machine to form opposite heel webs, then restoring to action the needles which were previously retired but permitted to retain their stitches, knitting round-and-round to form the foot web, then retiring a group of needles at each end of the acting set but permitting them to retain their stitches, then knitting to-and-fro upon the remaining needles to form a toe pocket, then restoring to action the needles retired at each end of the set and knitting round-and-round for a few courses, substantially as specified.

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

ROBERT W. SCOTT.

Witnesses:

WALTER CHISM,
JOS. H. KLEIN.