

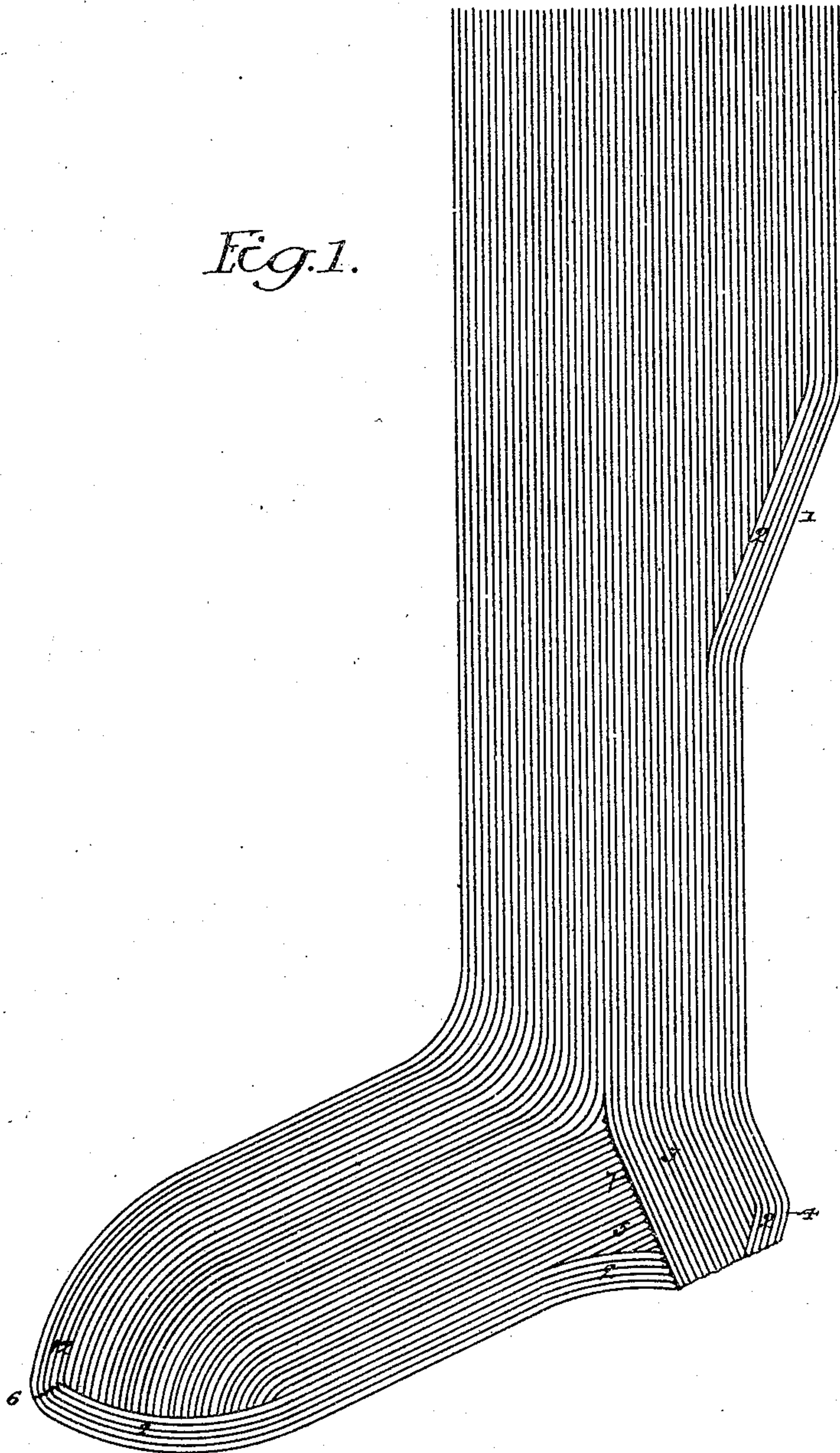
No. 789,635.

PATENTED MAY 9, 1905.

R. W. SCOTT.
KNITTED HOSIERY.
APPLICATION FILED APR. 18, 1904.

2 SHEETS—SHEET 1.

Fig. 1.



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Inventor:
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APPLICATION FILED APR. 18, 1904.

2 SHEETS—SHEET 2.

Fig. 2.

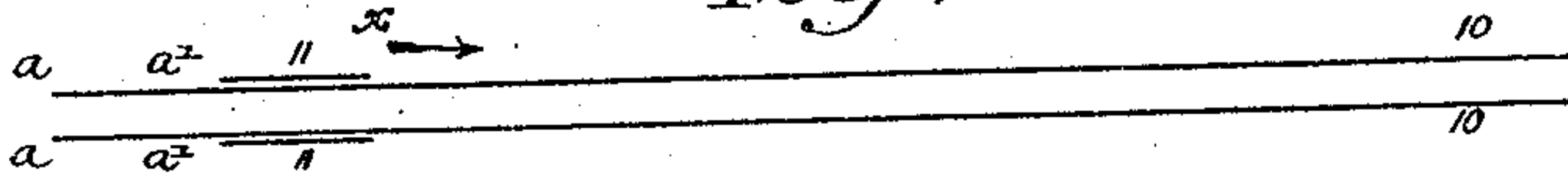


Fig. 3.

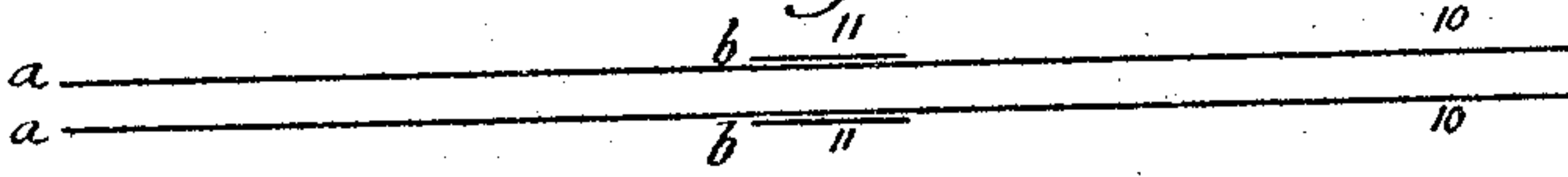


Fig. 4.

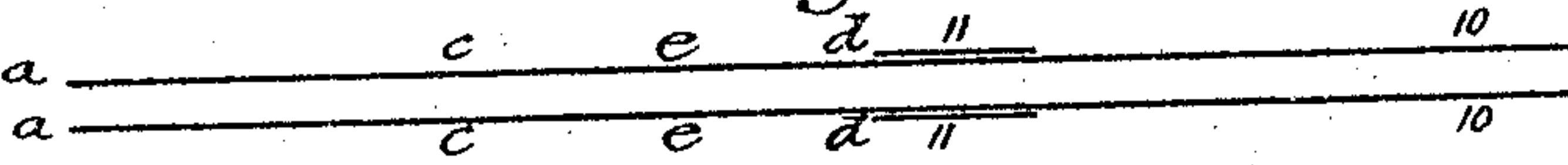


Fig. 5.

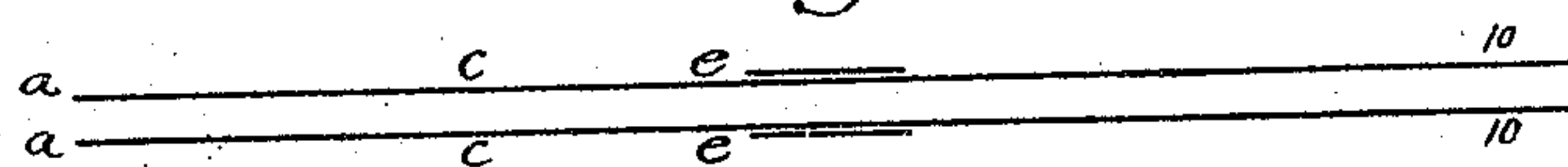


Fig. 6.

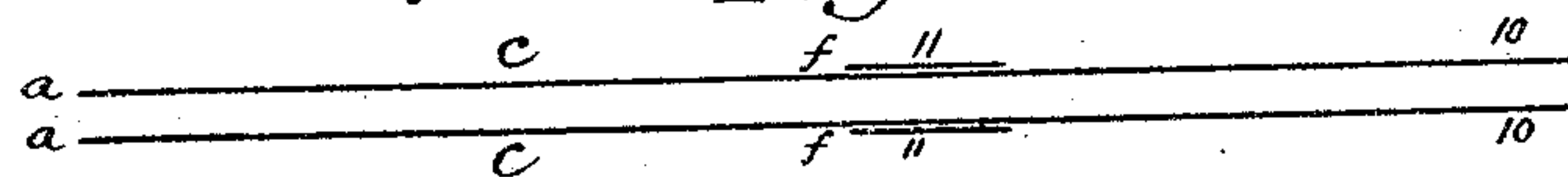


Fig. 7.

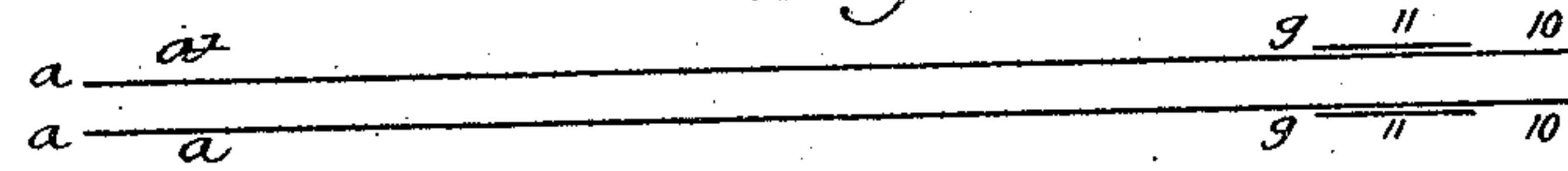
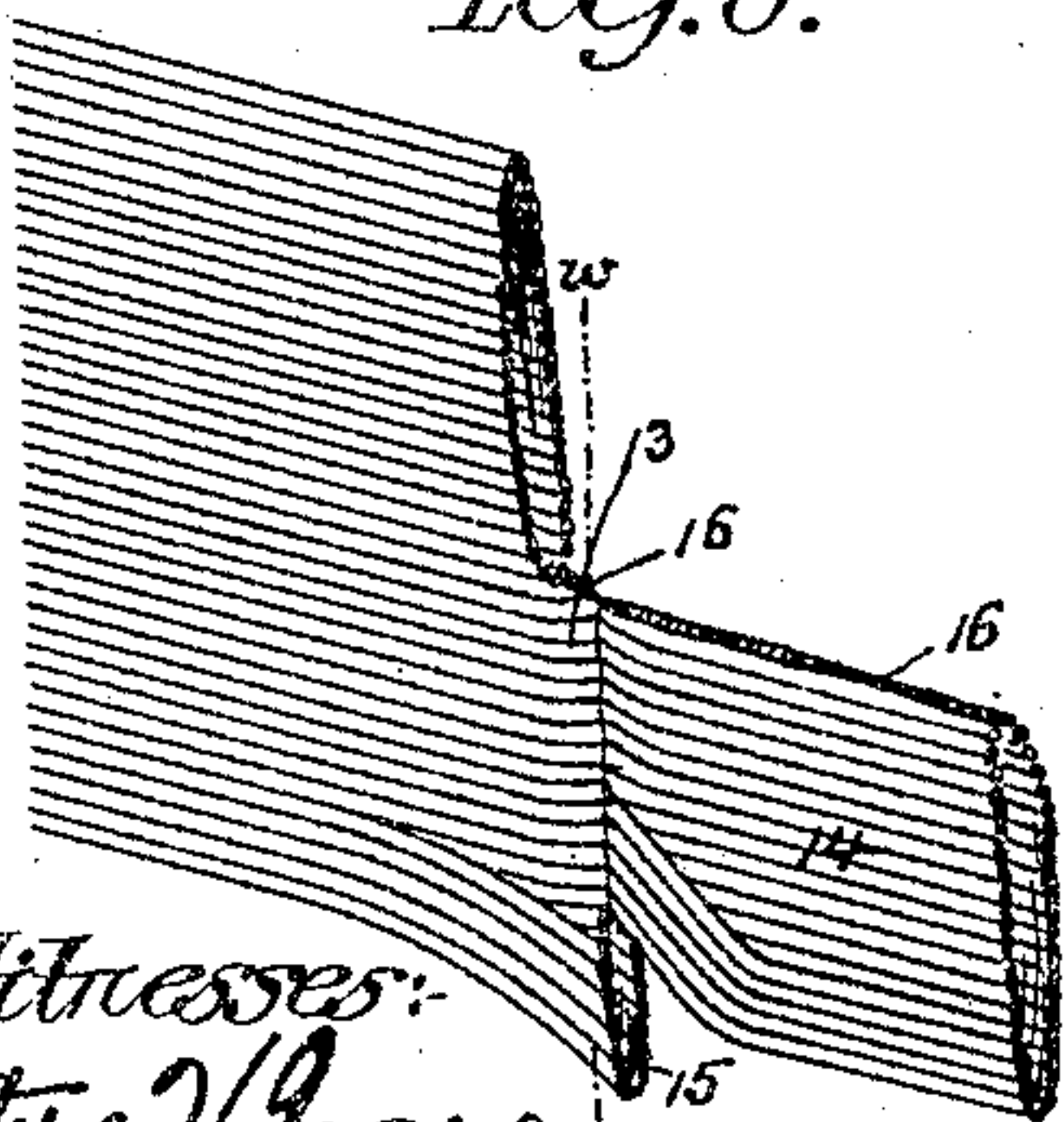
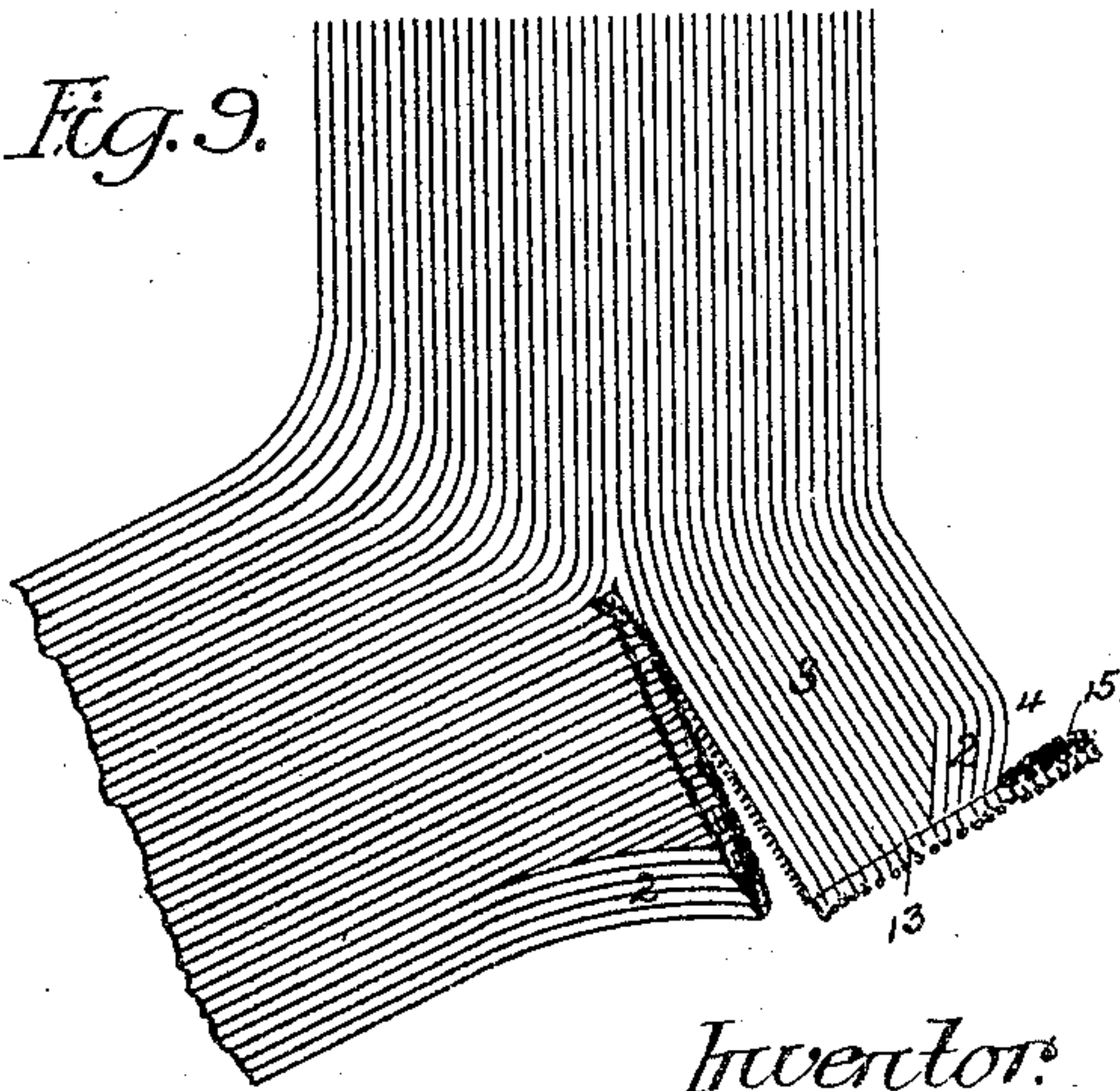


Fig. 8.



Witnesses:
Titus H. Irons.
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Fig. 9.



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UNITED STATES PATENT OFFICE.

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KNITTED HOSIERY.

SPECIFICATION forming part of Letters Patent No. 789,635, dated May 9, 1905.

Application filed April 18, 1904. Serial No. 203,709.

To all whom it may concern:

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

The object of my invention is to provide a shaped or fashioned sock or stocking which will dispense with the greater portion of the seaming or sewing operations necessary in the production of an ordinary full-fashioned sock or stocking and which, moreover, can be made in a simpler and cheaper manner than usual, being susceptible of manufacture by a continuous operation upon a single machine, thereby avoiding the expense of transfer operations, such as are necessary when more than one machine is employed in the fabrication of the stocking-blank.

In the accompanying drawings, Figure 1 is a view of the foot and part of the leg of a stocking made in accordance with my invention. Figs. 2, 3, 4, 5, 6, and 7 are views showing diagrams or needle plans of a machine for producing such sock or stocking, and Figs. 8 and 9 are views representing intermediate stages of formation of the stocking.

It may be well to state at the outset that in knitting a so-called "full-fashioned" stocking it is customary to commence the knitting at the widest portion of the leg, the knitting being performed upon flat machines having spring-beard needles and the strip being knitted of a uniform width until the calf portion is reached, whereupon the strip is narrowed by the transferring of stitches from the end needles on both sides of the machine toward the center of the fabric until said fabric has been sufficiently narrowed for the ankle portion of the stocking, the latter being then knitted of uniform width until the formation of the heel is necessary. At this juncture two yarn-guides are thrown into action, one employed for knitting a projecting heel-piece at one side of the ankle-web and the other for knitting a corresponding heel-piece at the opposite side of said ankle-web, the intervening

needles of the machine having the stitches cast from them. The heel-strips are knitted of uniform width down to the point where the rounding of the heel is to be effected, whereupon each of the strips is narrowed to the desired extent by transferring stitches from needle to needle in the same manner as when narrowing for the calf portion of the stocking. When the knitting of the heel-strips has been completed, they are cast from the needles, and the selvaged inner edges of the heel-strips are run upon the outermost needles of a separate machine known as a "footing-machine," the intermediate needles of this machine receiving the loops around the instep portion of the leg-web which were thrown from the needles of the leg-machine when the formation of the heel-strips was begun. The foot-web is then knitted upon the needles of the second machine, the web being narrowed at each side to form the desired instep-gussets and being also narrowed at the toe, so as to properly round the same. This method of manufacture is a slow and tedious operation, necessitating the use of expensive machinery and the highest class of skilled labor to operate it and necessitating, further, expensive sewing or seaming operations to complete the stocking, because as the stocking-blank is knitted in the form of a flat web it is necessary to unite the edges of this web by a seam extending down the back of the leg, calf, ankle, and heel and by another seam extending under the bottom of the toe, foot, and heel, these seams being objectionable, not only because of the expense of making them, but also because they detract from the proper fit and comfortable use of the stocking.

Of course I do not mean to imply that other methods of making fashioned stockings have not been devised; but the method which I have just described is the one generally used both in this country and abroad in the fabrication of what are termed in the trade "full-fashioned" stockings.

In carrying out my invention I form the stocking-blank by a continuous operation upon a single machine, and I effect the desired

shaping or fashioning of the web without the necessity of using transfer-points for transferring stitches from needle to needle or filling up points for transferring a previously-formed stitch of the knitted web to a naked needle, the use of such transfer or filling points being objectionable because of the reduction in the capacity of the machine, since the knitting operation must be arrested while such points are in operation.

My improved stocking (shown in Fig. 1 of the drawings) has a shaped calf 1, a square heel 3 with rounded lower corner 4, instep-gussets 5, a seam 6 across the front of the toe, and a seam 7 where the front of each heel-strip is united to the rear end of the sole portion of the foot; but the stocking is otherwise seamless. The stocking has bordering-wales 2 on each side of a central line running from the point of the toe under the toe and foot and up the back of the heel, ankle, calf, and leg of the stocking, and in its preferable form the fashioning or shaping of the different parts of the stocking is effected by a widening operation, the various widening-wales being introduced between the standing wales of the fabric and the bordering-wales. The knitting of the web is commenced at the toe, and the machine employed for the production of the fabric is provided with two parallel needle-beds 10 10, carrying the needles upon which the standing wales and widening-wales of the fabric are produced, and a pair of short needle-beds 11 11, carrying the needles upon which the bordering-wales are produced. These short needle-beds are susceptible of movement longitudinally along the needle-beds 10, and the needles or some of the needles of the latter are so controlled that they can be moved into and out of operative position and when moved from operative to inoperative position may be caused to retain their stitches or cast their stitches, as desired. In starting the knitting operation only the needles 10 from *a* to *a'* will be in operation, together with the needles 11, as shown in Fig. 2, and the yarn-guide will travel in a continuous course about these needles—that is to say, it will pass to the right along one needle-bed and then across to the other needle-bed, pass to the left along the latter, and then across to the first needle-bed, and continue as before. The result of this operation will be to produce a narrow band of standing wales 12 at the top of the toe, having on each side a band of bordering-wales 2. As soon as the knitting begins, however, the bars 11 are racked in the direction of the arrow *w*, Fig. 2, to the extent of one needle at a time, and needles 10 are successively brought into action at each end of the set of needles *a a'* until the full amount of widening for the toe has been effected, by which time the relation of the bordering-

wale needles to the needles 10 will be that represented in Fig. 3, the needles of each bed from *a* to *b* being in action. The widening-wales are preferably introduced in such a manner as to prevent the formation of eyelet-holes, as shown, for instance, in my Patent No. 614,349, dated November 15, 1898, and in subsequent applications. The toe is thus produced in the form of a properly shaped or fashioned but seamless tubular web, and the knitting of such seamless tubular web of uniform width for the foot of the stocking now proceeds until the point is reached at which it is desired to introduce the instep-gussets 5, whereupon there is a further intermittent racking out of the bordering-needles 11 and a further introduction of successive needles 10 of each bed until the desired width of gusset has been formed, the relation of the bordering-wale needles to the needles 10 being that shown in Fig. 4 and the needles 10 from *a* to *d* of each bed being in operation. The needles 10 of each bed from *a* to *c*, Fig. 4, are now put out of action, but permitted to retain their stitches, and tubular web is produced upon the needles from *c* to *d* and upon the bordering-needles. This method of knitting is continued until a few courses of stitches have been knitted upon these needles, such as shown at 13 in Fig. 8. The needles 10 from *d* to *e*, Fig. 4, and the bordering-needles are now caused to cast their stitches, and the bordering-needles 11 are racked in to the point *e*, as shown in Fig. 5. Both sets of needles 10 and 11 are then projected and a single course of stitches is formed upon said needles by feeding the knitting-yarn for such course to the needles of both beds prior to the knitting of a tubular web upon the needles from *c* to *e* and upon the bordering-needles. This web is gradually increased in diameter by introducing needles 10 in succession beyond the point *e* and racking out the bordering-needles 11 correspondingly until the desired shaping of the web for the corner of the heel has been effected—say until the needles from *c* to *f*, Fig. 6, have been brought into action—whereupon the knitting of the tubular web is continued upon the needles from *c* to *f* and upon the bordering-needles until a web of the desired depth for the heel of the stocking has been produced. If the stocking-web is now removed from the needles of the machine, it will present the appearance shown in Fig. 8, the tubular foot-web having projecting from its lower half a contracted tubular web 13, from which projects a shaped tubular heel-web 14, said web being closed at its junction with the web 13 and a partial course of stitches 15 being presented around the lower half of said web 13. Owing, however, to the fact that the stitches have not been cast from the needles from *a* to *c*, the courses of stitches constituting the web 13 and the heel-web 14 will in actual practice be crowded or pocketed be-

tween the two needle-beds. Hence if the needles from *a* to *c* are now again brought into action the production of seamless tubular web for the ankle portion of the stocking will be effected, the relation of the bordering-needles 11 to the needles 10 being that represented in Fig. 6.

When the desired length of ankle-tube has been knitted, needles 10 beyond the points *f* are successively brought into action and the

bordering-needles are racked outwardly until the desired widening of the seamless tubular web for the calf portion of the stocking has been effected—say until the needles 10 from *a* to *g*, Fig. 7, are in operation—whereupon

the knitting of seamless tubular web upon the needles 10 from *a* to *g* and upon the bordering-needles 11 is continued until the desired length of tube for the stocking-leg has been produced, whereupon all of the needles

10 from *a'* to *g*, Fig. 7, are thrown out of action and caused to cast their stitches, the bordering-needles 11 are racked in to the point *a'*, and the production of another stocking-web in the same manner as before is begun. After

the completion of the stocking-blank in the manner described the web 13 is severed on the line *ww*, Fig. 8, as are also the stitches

16 of the webs 13 and 14, the blank being now in the condition shown in Fig. 9. The stitches

of the web 13 which extend around the rear end of the sole portion of the foot-tube are then run upon the needles of a looping-machine, together with the stitches at the severed

edges 17 of the heel-web, so as to unite the heel to the sole by the side seams 7. The stitches of the web 13 which project beyond

the closed bottom of the heel are then raveled out, after which all that remains in order to complete the stocking is to unite the edges

of the web across the front of the toe, as shown at 6 in Fig. 1.

The purpose of casting the stitches from certain of the needles 10 and the bordering-needles and racking in the bordering-needles

11 before beginning to knit the heel-web is to effect a narrowing of the ankle portion of the stocking, it being desirable that this portion of the stocking shall not be of as large

diameter as the gusseted or widened rear portion of the foot of the stocking. Of course

if the narrowing of the ankle in respect to the gusseted portion of the foot is not desired the retiring of the needles from *d* to *e* and the racking in of the bordering-needles

before beginning the knitting of the heel-web need not be resorted to.

Instead of forming the heel-web as part of the continuous web in the manner described all of the stitches from *c* to *d* may be cast off

of the needles 10 after completing the formation of the web 13. The bordering-needles may then be racked in to the point *e* and the knitting of a heel-web upon the needles from

c to *e* and upon the bordering-needles may be

proceeded with by first forming a "setting-up" or closing course for the bottom of the heel by forming stitches upon both sets of needles 10 and 11 and these proceeding with the formation of the tubular heel-web, this web being shaped as before until the desired widening of the web has been effected and the knitting of the web being then continued until the proper length for the heel has been produced, whereupon the needles from *a* to *c* are restored to action and the knitting of the ankle-web proceeded with.

It will be noticed in reference to Fig. 1 that the fashioning of the toe is effected by a single group of parallel shaping-wales on each side of the same, these shaping-wales being introduced in quick succession, so as to impart the desired sharp rounding to the toe, all of the shaping-wales of each group running to or starting from the bordering-wales 2 at the bottom of the foot.

It will be evident that a stocking such as I have shown and described can be produced by a continuous operation, and hence more speedily than by the ordinary method of production, hereinbefore referred to, while the fact that it is a relatively easy task to render automatic the machine for the production of the stockings lessens the labor cost of the latter, and thus adds this advantage to the greater rapidity of production. Furthermore, the fact that the stocking is largely seamless materially reduces its cost by rendering unnecessary the relatively expensive seaming operations necessary for closing the bottom of the toe, foot, and heel and the back of the heel, ankle, calf, and leg of an ordinary full-fashioned stocking.

The front edges of the heel-web 14 produced in the manner described will be unselvaged—that is to say, they will present raw edges caused by the severing of the sinker-wales 16 of the tubular web 14, constituting the heel-blank; but if it is desired to form a heel-blank with selvaged front edges this may be readily effected by traversing the yarn-guides successively forward and back along each needle-bed, crossing at one end only, and a selvaged web 13 can, if desired, be formed in the same manner.

Although I prefer in carrying out my invention to start the knitting of the stocking-web at the toe and to fashion the web by widening in the manner described, certain features of my invention may be embodied in a stocking produced by a reversal of such process—that is to say, by starting the web at the top of the leg by knitting upon the needles 10 from *a* to *g* and upon the bordering-needles 11 to produce a seamless tube of the proper diameter for the leg, narrowing at the calf by causing the needles 10 from *g* to *f* to successively cast their stitches onto the adjacent bordering-needles and racking in the border-

ing-needles correspondingly, then knitting the seamless ankle portion of the stocking, then throwing out of action, but causing to retain their stitches, the needles from *a* to *c* and knitting the heel-web upon the needles from *c* to *f* and the bordering-needles, narrowing in the manner before described from *f* to *e* to shape the corner of the heel, forming a course upon both sets of needles from *c* to *e* and upon the needles 11 to close the bottom of the heel, racking out the bordering-needles to *d*, producing the web 13 upon said needles and upon the needles 10 from *c* to *d*, then bringing into action the needles 10 from *a* to *c* and producing a seamless tubular web for the foot, narrowing to form the instep-gussets and toe, and then racking the bordering-needles out to the point *g* again preparatory to a repetition of the operation, some form of web-holder being employed in this case in order to permit of the starting of the knitting upon naked needles. The machine may, if desired, be provided with a plurality of yarn-feeds for the purpose of facilitating production or permitting the use of yarns of different color or material in the stocking when desired.

The width of the central band of standing wales of the stocking-blank is preferably twice the width of each of the groups of bordering-wales, so that said standing wales will equal the width of the two sets of bordering-wales, and thus provide for the proper formation of the seam 6 across the toe. In the production of half-hose, where the fashioned calf is unnecessary, the ankle portion of the web will be knitted of such length as may be necessary for the subsequent attachment thereto of a ribbed top or a ribbed leg.

Although the bordering-wales produced upon the needles 11 extend throughout the bottom of the toe and foot, throughout the shaped corner of the heel, and throughout the rear of the heel, ankle, calf, and leg of the stocking and are so described in some of the claims, the only portions of the stocking in which such bordering-wales are distinguishable from the standing wales are the shaped portions.

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

1. A sock or stocking having a toe fashioned by a single group of shaping-wales on each side of the same.
2. A sock or stocking having a toe fashioned by a single group of parallel shaping-wales on each side of the same.
3. A sock or stocking having a toe with central bordering-wales at the bottom, and a single group of shaping-wales interposed on each side of the toe between said bordering-wales and central standing wales at the top of the toe.
4. A sock or stocking having a toe with cen-

tral bordering-wales at the bottom, and a single group of parallel shaping-wales interposed on each side of the toe between said bordering-wales and central standing wales at the top of the toe.

5. A sock or stocking having a toe with a central top group of standing wales, bottom bordering-wales substantially equaling in width said top group of standing wales, and a single group of shaping-wales interposed on each side of the toe between said standing wales and the bordering-wales, the front ends of the bordering-wales being secured to the front ends of the standing wales across the front of the toe.

6. A sock or stocking having a seamless tubular foot and a toe fashioned by a single group of shaping-wales on each side of the same.

7. A sock or stocking having a seamless tubular foot and a toe fashioned by a single group of parallel shaping-wales on each side of the same.

8. A sock or stocking having a seamless tubular foot and a toe with central bordering-wales at the bottom, and a single group of shaping-wales interposed on each side of the toe between said bordering-wales and central standing wales at the top of the toe.

9. A sock or stocking having a seamless tubular foot and a toe with central bordering-wales at the bottom, and a single group of parallel shaping-wales interposed on each side of the toe between said bordering-wales and central standing wales at the top of the toe.

10. A sock or stocking having a seamless tubular foot and a toe with a central top group of standing wales, bottom bordering-wales substantially equaling in width said top group of standing wales, and a single group of shaping-wales interposed on each side of the toe between said standing wales and the bordering-wales, the front ends of the bordering-wales being secured to the front ends of the standing wales across the front of the toe.

11. A sock or stocking having rectangular heel with shaped corner having bordering-wales on each side, the rear portion of the heel and its shaped corner being seamless, and the heel having unselvaged front edges which are united to the lower portion of the foot.

12. A sock or stocking having a rectangular heel shaped at the corner, and seamless throughout, and having unselvaged front edges secured to the lower portion of a tubular seamless foot-web, the shaped corner of the heel also having bordering-wales on each side.

13. A sock or stocking having a seamless tubular ankle and foot, a fashioned toe, a rectangular heel with fashioned corner, and centrally-disposed bordering-wales extending throughout the bottom of the toe and foot, and throughout the shaped corner and rear of the heel and ankle.

14. A sock or stocking having a seamless tubular ankle and foot, a fashioned toe, a rectangular heel with fashioned corner, and unselvaged front edges secured to the lower portion of the foot, and centrally-disposed bordering-wales extending throughout the bottom of the toe and foot, and throughout the shaped corner and rear of the heel and ankle.

15. A stocking having a tubular seamless foot with fashioned toe, a tubular seamless ankle, calf and leg, a rectangular heel with shaped corner, and centrally-disposed bordering-wales extending throughout the bottom of the toe and foot, throughout the shaped corner and rear of the heel and throughout the rear of the ankle, calf and leg portion of the stocking.

16. A stocking having a tubular seamless foot with fashioned toe, a tubular seamless ankle, calf and leg, a rectangular heel with shaped corner, and unselvaged front edges secured to the lower portion of the foot, and centrally-disposed bordering-wales extending throughout the bottom of the toe and foot, throughout the shaped corner and rear of the heel and throughout the rear of the ankle, calf and leg portions of the stocking.

17. A sock or stocking having a rectangular heel with shaped corner, the rear portion of the heel and its shaped corner being seamless and provided with centrally-disposed bordering-wales.

18. A sock or stocking having a rectangular heel with shaped corner, the rear portion of the heel and its shaped corner being seamless and provided with centrally-disposed bordering-wales, and the front edges of the heel being unselvaged and secured to the lower portion of the foot.

19. A sock or stocking having a rectangular heel seamless throughout, and having a shaped corner, the rear portion of the heel and shaped corner being provided with centrally-disposed bordering-wales.

20. A sock or stocking having a rectangular heel seamless throughout, and having a shaped corner, the rear portion of the heel and its shaped corner being provided with centrally-disposed bordering-wales, and the front edges of the heel being unselvaged and secured to the lower portion of the foot.

21. The mode herein described of producing a sock or stocking, said mode consisting in knitting upon two sets of needles a seamless tubular foot-web, then throwing out of action, but permitting to retain their stitches, certain of the needles of each set, then knitting upon remaining needles of each set of a heel-web with seamless back, introducing successively additional needles to shape the corner of said web, then restoring to action the needles previously thrown out of action, and then knitting upon the same and upon the heeling-needles a seamless tubular ankle-web.

22. The mode herein described of producing a sock or stocking, said mode consisting in knitting upon two sets of needles a seamless tubular foot-web, then throwing out of action, but permitting to retain their stitches, certain of the needles of each set, then knitting a heel-web upon the remaining needles of each set by first forming a setting-up course upon certain of each set of needles, and then knitting upon these needles and upon successively-introduced needles beyond the same, a heel-web with shaped and seamless corner and seamless back, then restoring to action the needles previously thrown out of action, and knitting upon these needles and the heeling-needles a seamless tubular ankle-web.

23. The mode herein described of producing a sock or stocking, said mode consisting in first knitting upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, then throwing out of action, but permitting to retain their stitches, certain of said standing-wale needles of each set, then knitting upon remaining standing-wale needles and upon the bordering-wale needles a heel-web with seamless back, introducing successively additional standing-wale needles to shape the corner of said web, then restoring to action the standing-wale needles formerly thrown out of action, and knitting upon said standing-wale needles and upon the remaining standing-wale needles and bordering-wale needles a seamless tubular ankle-web.

24. The mode herein described of producing a sock or stocking, said mode consisting in first knitting upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, then throwing out of action certain of said standing-wale needles in each set, but permitting them to retain their stitches, then forming a setting-up course of stitches upon remaining standing-wale needles of each set and their cooperating bordering-wale needles, then knitting upon said standing-wale needles and bordering-wale needles a heel-web with seamless back, introducing successively additional standing-wale needles to shape the corner of said web, then restoring to action the standing-wale needles formerly thrown out of action, and then knitting upon the two sets of standing-wale needles and the cooperating bordering-wale needles a tubular seamless ankle-web.

25. The mode herein described of knitting a heel-web for a sock or stocking, said mode consisting in first forming a setting-up course by feeding the knitting-yarn for such course to opposite sets of standing-wale needles and cooperating bordering-wale needles, then knitting round and round upon said needles to produce a tubular heel-web, and introducing successively, additional standing-wale needles to shape the corner of said web, and then sev-

ering the stitches which unite the front portions of said heel-web.

26. The mode herein described of producing a sock or stocking, said mode consisting in first knitting upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, throwing out of action, certain standing-wale needles of each set, but permitting them to retain their stitches, then knitting round and round upon remaining standing-wale needles and the bordering-wale needles to form a tubular heel-web, introducing successively additional standing-wale needles to shape the corner of said web, then restoring to action the standing-wale needles before thrown out of action, and then knitting upon said standing-wale needles and upon the heeling-needles and cooperating bordering-wale needles a seamless tubular ankle-web, and then severing the heel-web at the front so as to form unselvaged front edges and then securing the latter to the bottom portion of the foot.

27. The mode herein described of producing a sock or stocking, said mode consisting in first forming upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, then throwing out of action, but permitting to retain their stitches, certain needles of each set of standing-wale needles, then forming a setting-up course upon remaining standing-wale needles of each set and the cooperating bordering-wale needles, then knitting round and round upon said needles to form a tubular heel-web, introducing successively additional standing-wale needles to shape the corner of said web, then restoring the standing-wale needles previously thrown out of action, then knitting round and round upon the said needles and upon the heeling-needles to produce a seamless tubular ankle-web, then severing the stitches at the front of the heel-web and then uniting said front edges to the bottom of the foot-web.

28. The mode herein described of producing a sock or stocking, said mode consisting in first knitting upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, then throwing out of action, but permitting to retain their stitches, certain of said standing-wale needles of each set, and also casting the stitches from certain of the standing-wale needles of each set adjoining the bordering-wale needles, causing said bordering-wale needles to cooperate with the remaining standing-wale needles to produce a heel-web with seamless back, introducing successively additional standing-wale needles to shape the corner of said web, then restoring to action the standing-wale needles which retained their stitches, and knitting upon the standing-wale needles and bordering-wale needles a seamless tubular ankle-web.

29. The mode herein described of producing a sock or stocking, said mode consisting in knitting upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, then throwing out of action, but permitting to retain their stitches, certain of the standing-wale needles of each set, casting the stitches from a number of standing-wale needles of each set adjoining the bordering-wale needles, causing said bordering-wale needles to cooperate with the remaining standing-wale needles, and forming a setting-up course of stitches by feeding the knitting-yarn for said course to all of the needles of both sets remaining in action, then knitting upon said needles a heel-web with seamless back, introducing successively additional standing-wale needles to shape the corner of said web, then restoring to action the standing-wale needles which retained their stitches, and then knitting upon the standing-wale needles and cooperating bordering-wale needles a tubular seamless ankle-web.

30. The mode herein described of producing a sock or stocking, said mode consisting in first knitting upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, then throwing out of action, but permitting to retain their stitches, certain of said standing-wale needles of each set, casting the stitches from certain of the standing-wale needles of each set adjoining the bordering-wale needles, causing said bordering-wale needles to cooperate with the remaining standing-wale needles, knitting round and round upon said needles remaining in action to form a tubular heel-web, introducing successively additional standing-wale needles to shape the corner of said web, then restoring to action the standing-wale needles which retained their stitches, and forming upon the standing-wale needles and cooperating bordering-wale needles a seamless tubular ankle-web, and then severing the front of the tubular heel-web so as to form unselvaged front edges thereon.

31. The mode herein described of producing a sock or stocking, said mode consisting in first knitting upon two sets of standing-wale needles and cooperating bordering-wale needles a seamless tubular foot-web, then throwing out of action certain of said standing-wale needles in each set, but permitting them to retain their stitches, casting stitches from certain of the standing-wale needles of each set which adjoin the bordering-wale needles, causing said bordering-wale needles to cooperate with the remaining standing-wale needles, forming a setting-up course of stitches by feeding the knitting-yarn for said course to all of the needles of both sets remaining in action, then knitting round and round upon said needles to produce a tubular seamless heel-web, introducing successively addi-

tional standing-wale needles to shape the corner of said web, then restoring to action the standing-wale needles which retained their stitches, then knitting upon the standing-wale needles and bordering-wale needles a tubular seamless ankle-web, and then severing the stitches at the front of the tubular heel-web to form unselvaged front edges thereon.

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.