

(No Model.)

R. W. SCOTT & L. N. D. WILLIAMS.
STOCKING.

No. 462,592.

Patented Nov. 3, 1891.

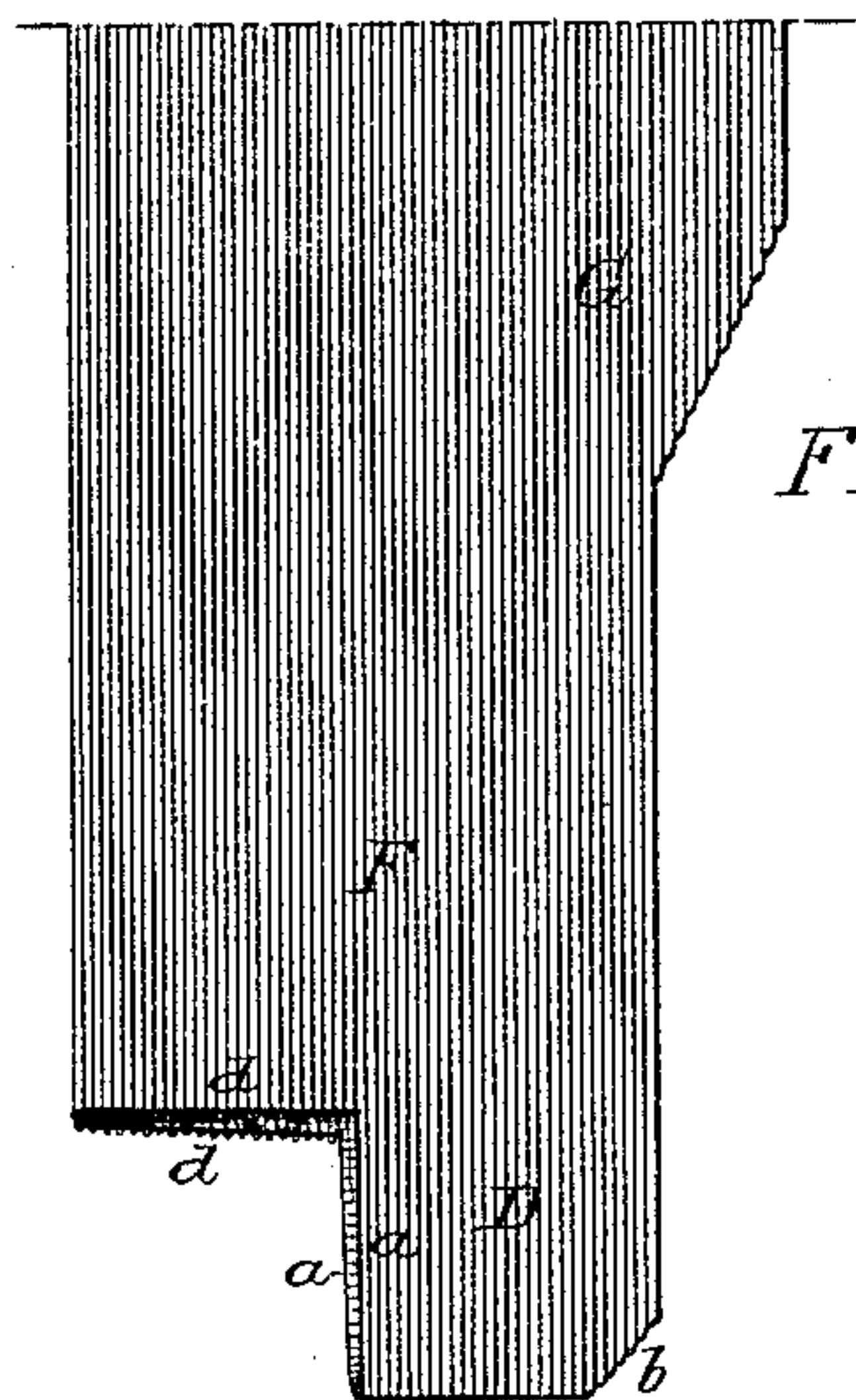


FIG. 1.

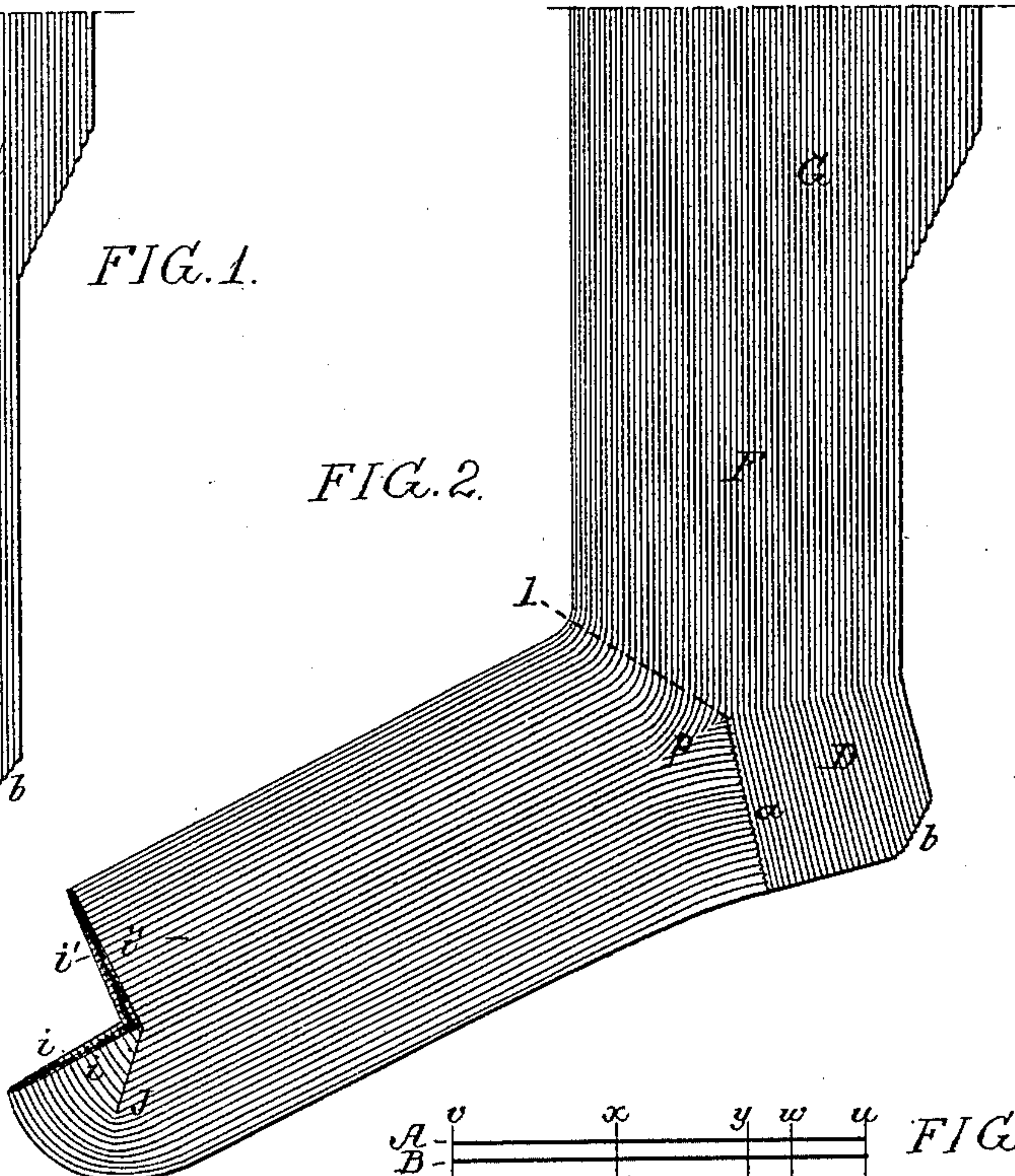


FIG. 2.

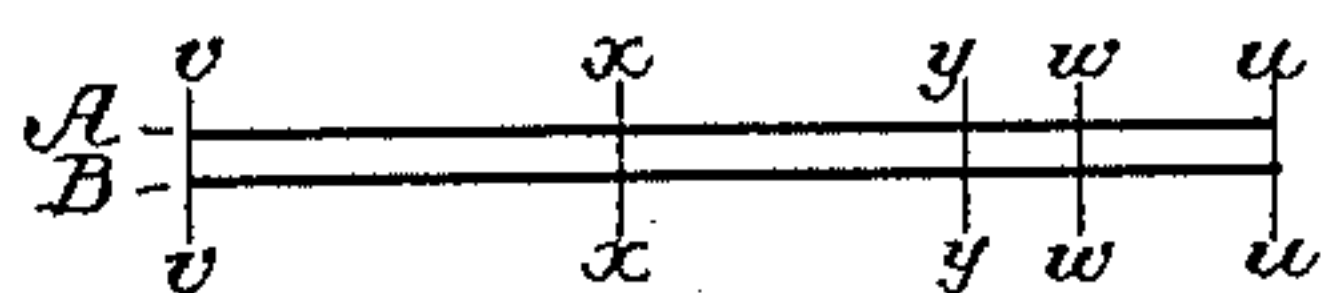


FIG. 3.

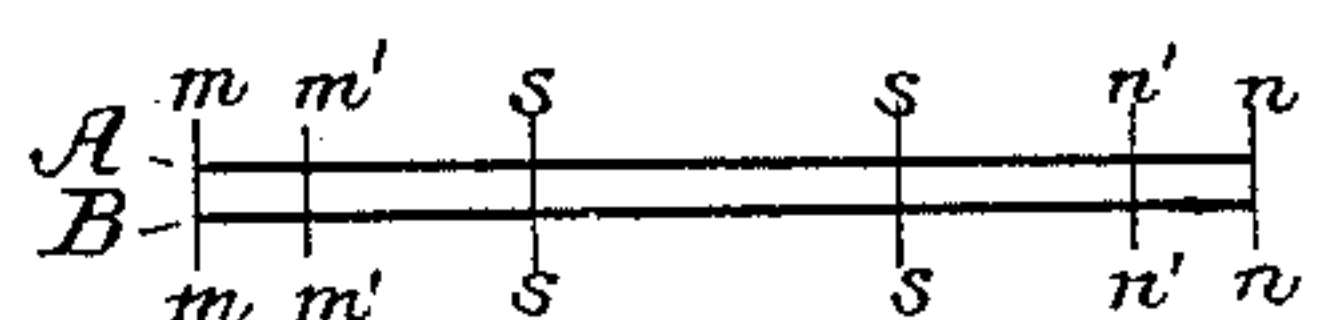


FIG. 4.

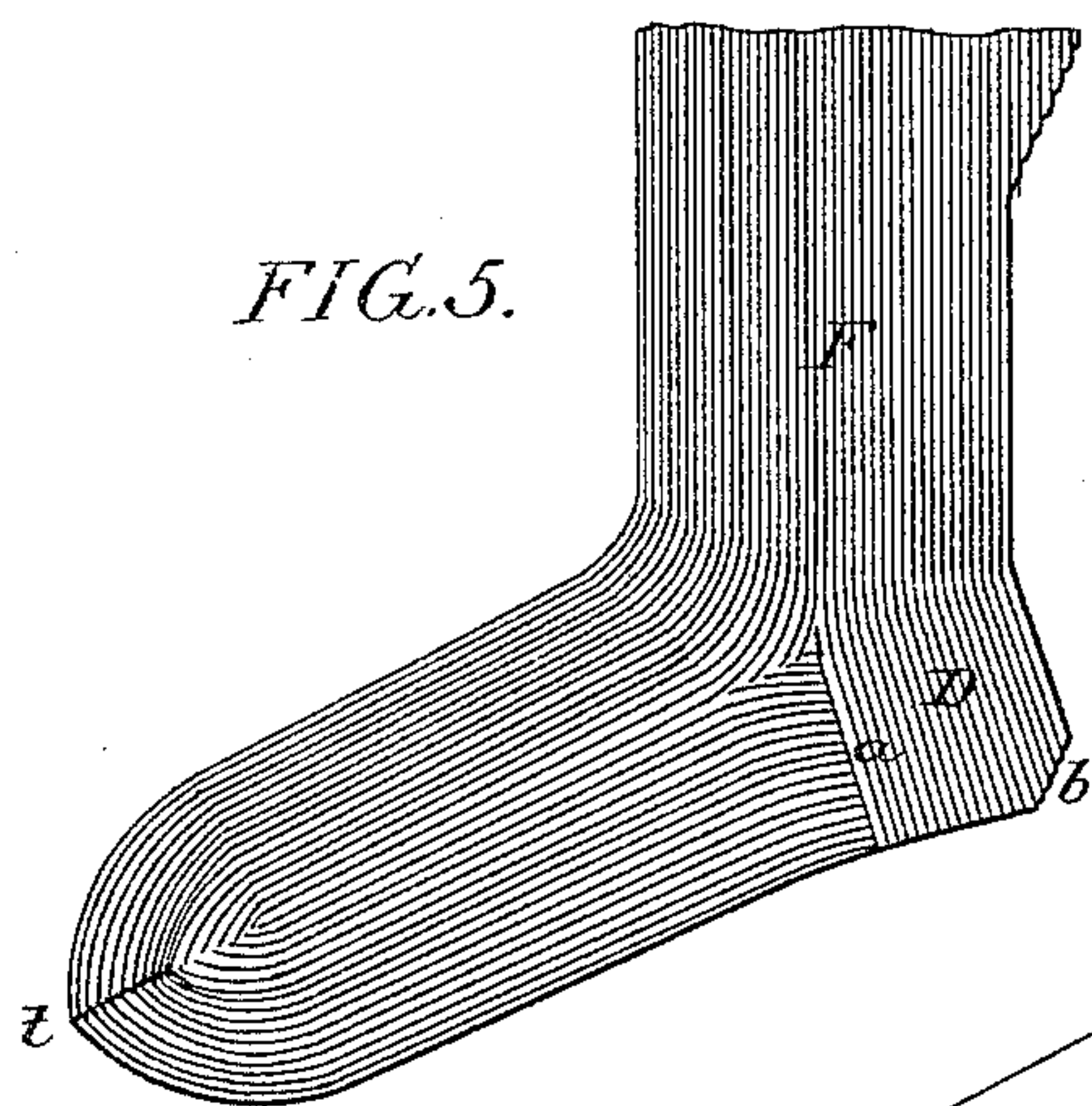
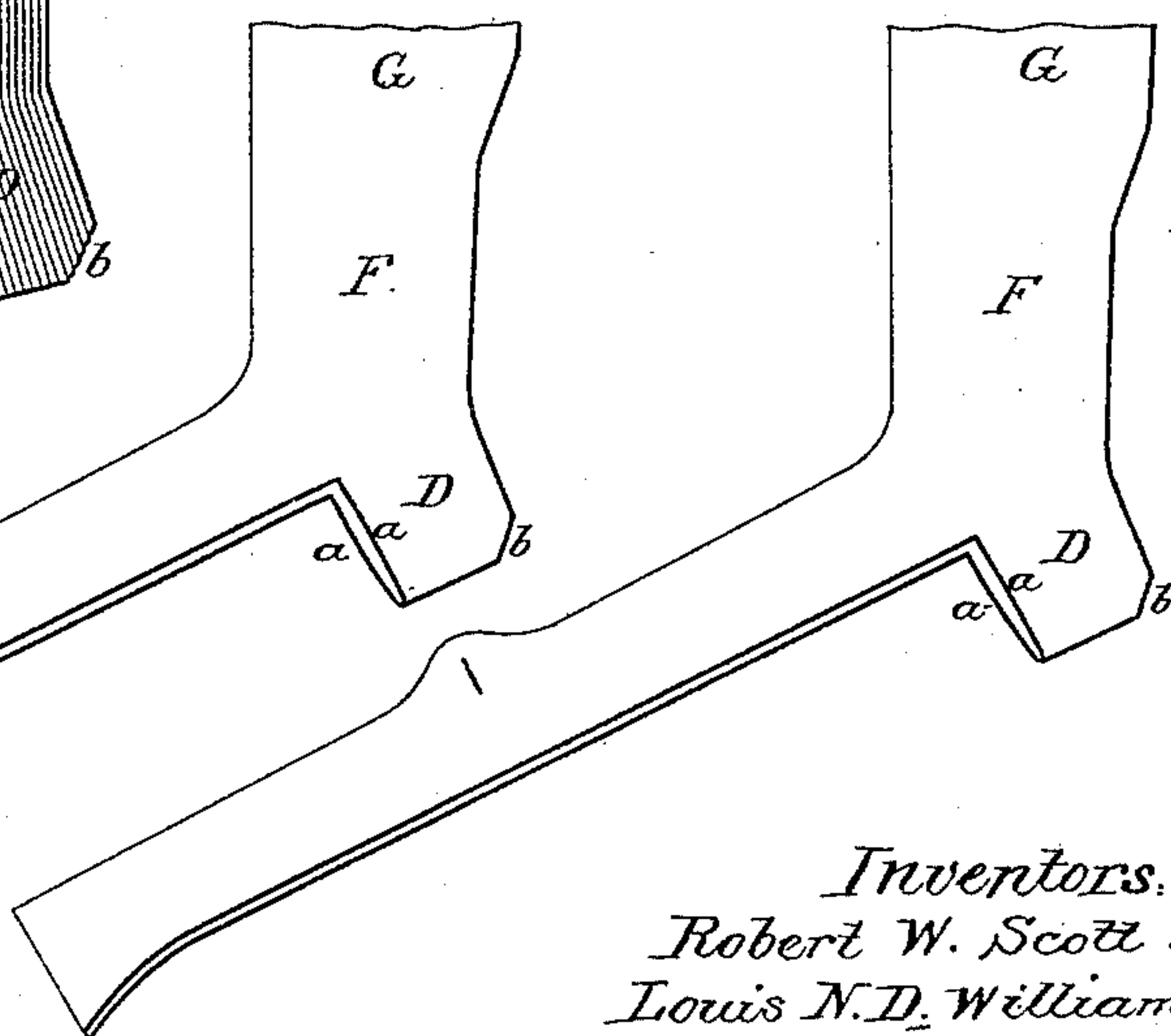
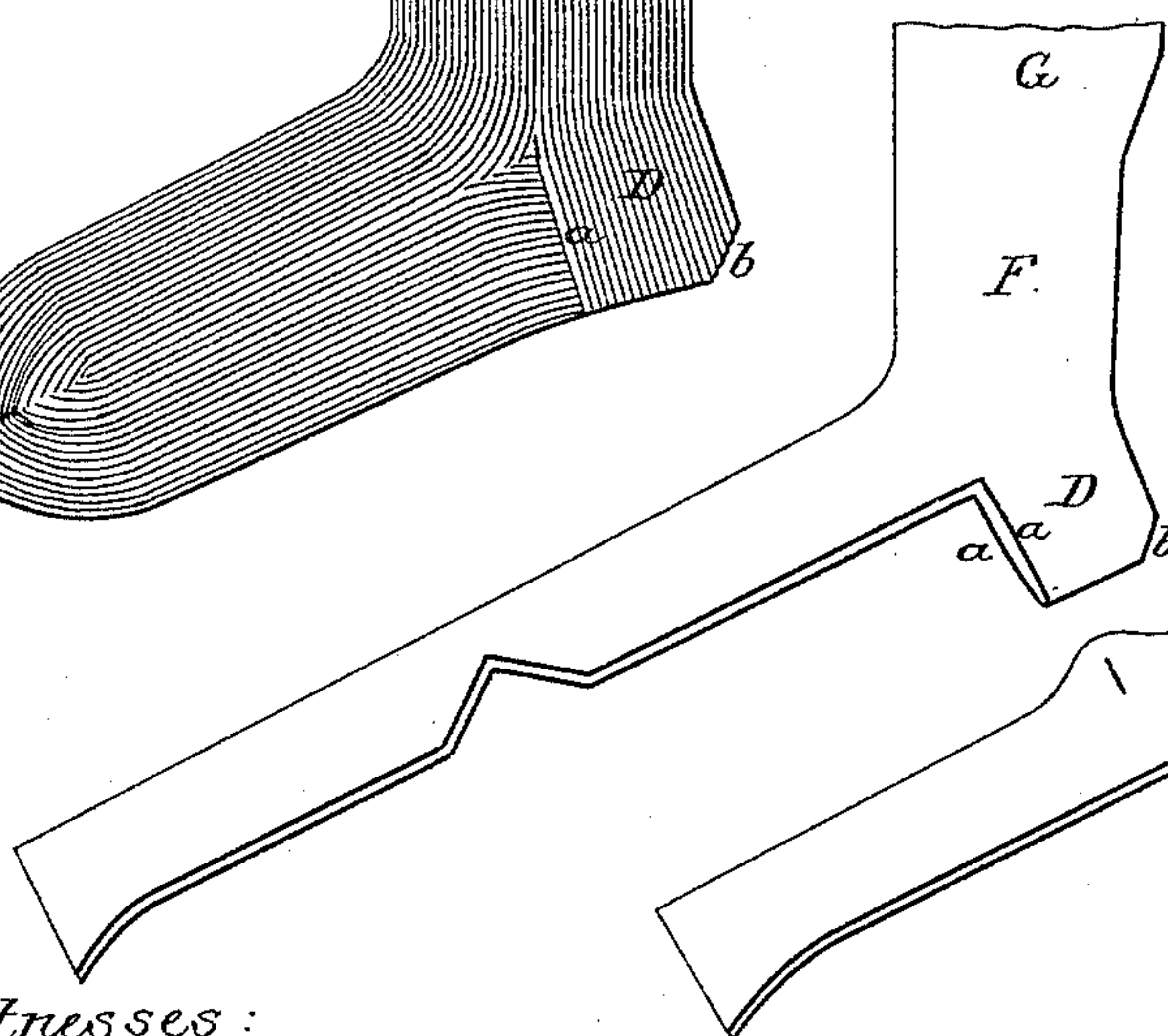


FIG. 5.

FIG. 6.

FIG. 7.



Witnesses:
Alex. Barkoff
Hamilton D. Turner

Inventors:
Robert W. Scott &
Louis N. D. Williams
by their Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

ROBERT W. SCOTT AND LOUIS N. D. WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA.

STOCKING.

SPECIFICATION forming part of Letters Patent No. 462,592, dated November 3, 1891.

Application filed June 29, 1889. Serial No. 316,077. (No model.)

To all whom it may concern:

Be it known that we, ROBERT W. SCOTT and LOUIS N. D. WILLIAMS, both citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Stockings, of which the following is a specification.

The object of our invention is to so knit a stocking that it will be full-fashioned—that is to say, properly shaped throughout—but can be more cheaply and readily produced than an ordinary full-fashioned stocking; and this object we attain in the manner herein-after set forth, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are diagrams showing successive stages in the production of a knitted stocking in accordance with our invention. Figs. 3 and 4 are diagrams serving to illustrate the method of producing the improved stocking, and Figs. 5 to 7 are diagrams illustrating modified forms of stocking in accordance with our invention.

In the drawings the wales of stitches are represented by plain lines, the views being on too small a scale to warrant the illustration of the stitches of which the wales are composed.

In carrying out our invention for the production of the stocking shown in Figs. 1 and 2, we, by preference, first form the leg portion of the stocking with properly-shaped heel thereon, and then knit to this leg portion a foot portion in the manner which we will now proceed to describe. In making the leg we use by preference a machine having opposite rows of needles A and B, as represented by the parallel lines in Fig. 3, and we preferably start the leg at the bottom of the heel by forming an initial course in rib-stitch upon the needles of both rows throughout the length desired for the bottom of the heel, the thread being applied first to a needle of the head A and then to a needle of the opposite head B. During the knitting the thread is then traversed or carried from the needle at the point *x* on the row A to the needle at the point *y* of the same, thence across to the needle at the point *y* of the row B, thence to the needle at the point *x* of the same, thence back to the needle at the point *y*, thence

across to the needle at the point *y* of the row A, and thence to the needle at the point *x* of the same, and so on until the desired length of fabric for the heel is produced, additional needles being thrown into action successively adjacent to the points *y* on both heads at the beginning of the operation, so as to gradually widen the web, say, to about the point *w*, Fig. 3, after which the knitting is continued upon the needles then in action until the desired length of heel has been produced. The effect of this operation is to produce a bag or pocket D with seamless bottom, selvaged front edges *a a*, and tapered or rounded lower corner *b*, as shown in Fig. 1. The needles in each row from *x* to *y* are now thrown into action and continuous courses of stitches are produced, first upon the needles of one row and then upon the needles of the other row, these webs being connected at the ends and being of a width equal to the distance from *v* to *w* in Fig. 3—that is to say, of a width necessary for the ankle portion F of the stocking to be produced.

A rib course is by preference produced upon the needles of both rows in commencing to knit the ankle portion of the stocking, say, at the line 1, Fig. 2, so as to insure the proper formation of stitches in the first ankle course, this rib course being removed prior to applying the ankle stitches to another machine for forming the foot, as hereinafter set forth.

After the desired length of tubular seamless ankle portion has been knitted, the needles of each row beyond the needles *w* are successively thrown into action, so as to gradually widen the knitted tube and form the calf portion G of the stocking, this widening being continued until the needles, say, up to the point *u*, are in action and the tube is of the proper size for the calf portion of the leg, the tube being knitted of this size up to the top of the leg. The leg being removed from the machine which it was produced, the loops around the edges *d d* of the front half of the ankle portion of the leg-tube are applied to the needles of one-half of a separate machine—for instance, to the needles on the bed A of the machine shown in Fig. 4—the selvaged edges *a a* of the heel-pocket being applied to the needles

of the opposite head B of the machine and occupying the needles, say, from *m* to *n* of the machine; or the loops and selvages may be applied to the needles of the circular machine, the latter being preferred in some cases. The production of the tube for the body of the foot of the stocking is then proceeded with upon this second machine, the upper half or instep portion of the tube being thus united by a seamless union to the lower edge of the front half of the ankle portion of the leg-tube, while the under half of the tube constituting the body of the foot is knitted onto the selvaged edges of the heel-pocket D.

Upon commencing to form the foot-tube, the latter is preferably narrowed by dropping a number of wales at each end of the machine—say from *m* to *m'* and *n* to *n'*, Fig. 4—thus forming narrowings on each side of the foot, as at *p*, Fig. 2, so that the foot portion of the stocking is widest at the commencement or instep portion of the same, and is gradually narrowed until it is of the proper diameter for the body of the foot.

The tube for the foot is knitted to the desired length for the body of the foot, and a toe-pocket is then formed upon the foot by throwing out of action the needles of the row A, said needles being allowed to retain their stitches, and forming a web upon the needles of the row B by reciprocating the thread-guide and cams back and forth across the same, end needles being thrown out of action after each course, first at one end of the set and then at the other end, these end needles retaining their stitches, and the narrowing being continued until the desired point has been reached, say up to the points *s*, Fig. 4, whereupon the end needles are successively brought into action again, and the web is widened until the original needles—say out to the points *m' n'*—are again in action. The result of this operation is to form upon the bottom of the foot-tube, at the front end of the same, a toe-pocket or bulge J, so that the toe can be completed by simply looping together the upper edges *i i* of this toe-pocket and the front edges *i' i'* of the upper half of the foot-tube.

The foot of the stocking may be commenced at the toe by first forming the toe-pocket or bulge, by successively narrowing and widening the web in the manner above set forth, and then proceeding with the formation of the tubular seamless body of the foot, and widening the latter by introducing extra wales as it approaches the instep portion, the loops around the instep portion of the body-tube being then applied to the needles of a separate machine, upon a portion of which a heel-pocket has already been produced, as heretofore described, preparatory to proceeding with the formation of the seamless tube for the leg of the stocking, the rear edge of the sole portion of the foot being subsequently secured to the selvage front edges of the heel-pocket; or the foot may be formed by first starting a rib course upon a number of

needles wide enough for the tip of the toe and then proceeding to form tubular fabric for the foot, widening at the commencement of the operation to shape the toe, and at the finish to form the instep-gusset, as shown, for instance, in Fig. 5, the rear end of the foot-tube being united to the ankle portion of the stocking and selvage edges of the heel-pocket in the manner last described, or the foot may be made in a way the reverse of this by first making the leg-tube and heel-pocket in the manner first described herein, then starting the foot-tube at the instep and narrowing the tubular web by dropping wales therefrom at the instep portion and at the toe, the contracted opening at the toe end of the tube being looped together by a seam *t* extending across the toe, as set forth in a separate application filed by us, Serial No. 314,988. The foot of the stocking need not, however, necessarily be in the form of a seamless tube, as a flat web may be formed upon the needles carrying the front half of the leg-tube, this flat web being shaped midway of its length by first narrowing it and then widening it, as shown in Fig. 6, for instance, or provided with a bulge at that point, as shown in Fig. 7, and in the manner hereinbefore referred to in describing the formation of pockets or bulges, so that when the web is folded it will form a properly-shaped toe, the folded strip being seamed along the sides to form the foot-tube, and the outer ends of the strip being widened, as shown, so as to form the desired widening-gussets at the instep portion of the stocking, and being secured to the selvaged front edges of the heel; or either single or double flat webs, narrowed at the toe and instep, as shown in Fig. 5, and seamed along the meeting edges and to the selvaged front edges of the heel, may be employed in the formation of the foot, a single web meaning one of double the length of the foot projecting from the instep portion of the stocking, as shown in Fig. 6, and a double web meaning two webs, each of the length of the foot, one projecting from the instep portion of the stocking and the other from the front edges of the heel-pocket. Neither is it necessary to our invention that the loops at the instep portion of the leg shall be applied to the needles of the footing-machine, as the loops at the instep ends of the independently-produced leg and foot tubes may be united by means of a sewing or looping machine of such character as to form a practically seamless union of the two parts, the lower portion of the foot-tube being united to the selvaged front edges of the heel, or in some cases the heel portion may be first knitted in the form of a tube and then slitted vertically in front, so as to form edges for being united to the rear edges of the lower half of the foot-tube by sewing or knitting, as before set forth.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. A stocking having a seamless tubular leg

and a seamless heel-pocket integral therewith and shaped at the rear corner by reason of the varying length of the courses of stitches at and near the bottom of the heel and having
5 selvaged front edges, and a foot the body of which is united to the instep portion of the ankle and to the selvaged front edges of the heel-pocket, substantially as specified.

2. A stocking having a seamless heel shaped
10 at the rear corner by reason of the varying length of the courses of stitches at and near the bottom of the heel, a leg-tube integral with said heel, and a foot the body of which is united to the instep portion of the leg-tube
15 and to the front edges of the heel, substantially as specified.

3. A stocking having a seamless heel with selvaged front edges, a leg-tube integral with said heel, and a foot the body of which is
20 united to the instep portion of the leg-tube and to the selvaged front edges of the heel, substantially as specified.

4. A stocking having a seamless heel shaped at the lower corner by reason of the varying
25 length of the courses of stitches at and near the bottom of the heel and having selvaged front edges, a leg-tube integral with said heel, and a foot the body of which is united to the instep portion of the leg and to the selvaged
30 front edges of the heel, substantially as specified.

5. A stocking having a seamless tubular leg,

a seamless heel integral therewith and having selvaged front edges, and a foot the body of which consists of a seamless tube united to
35 the instep portion of the leg and to the selvaged front edges of the heel-pocket, substantially as specified.

6. A stocking having a seamless tubular leg, a seamless heel-pocket with shaped rear cor-
40 ner by reason of the varying length of the courses of stitches at and near the bottom of the heel, and a foot the body of which consists of a seamless tube united to the instep portion of the leg and to the front edges of
45 the heel-pocket, substantially as specified.

7. A stocking having a seamless heel with selvaged front edges and shaped rear corner by reason of the varying length of the courses
50 of stitches at and near the bottom of the heel, a leg-tube integral with said heel, and a foot the body of which is shaped to form the toe and is united at the inner end to the instep portion of the leg of the stocking and to the selvaged front edges of the heel, substantially
55 as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ROBERT W. SCOTT.

LOUIS N. D. WILLIAMS.

Witnesses:

WILLIAM D. CONNER,
HARRY SMITH.