

(Model.)

W. ESTY.

ART OF KNITTING STOCKINGS.

No. 302,388.

Patented July 22, 1884.

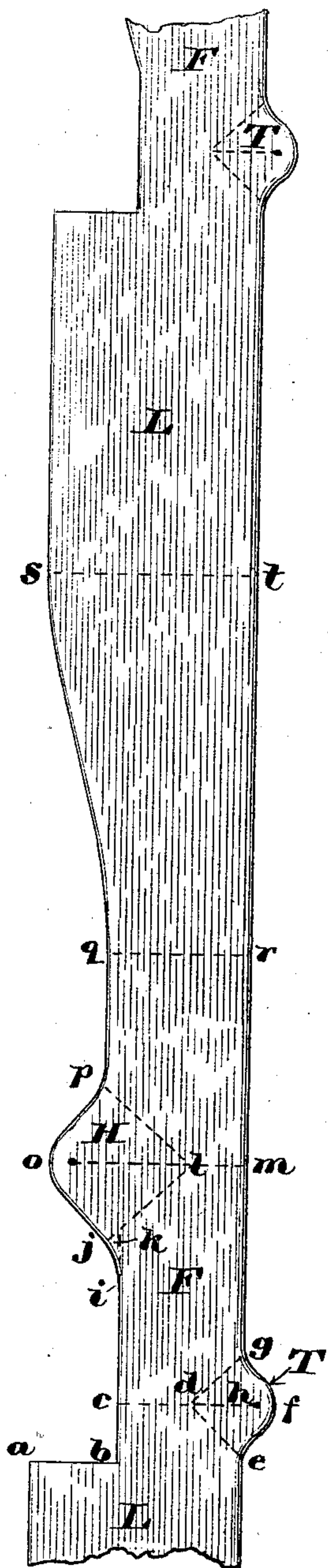


Fig. 1.

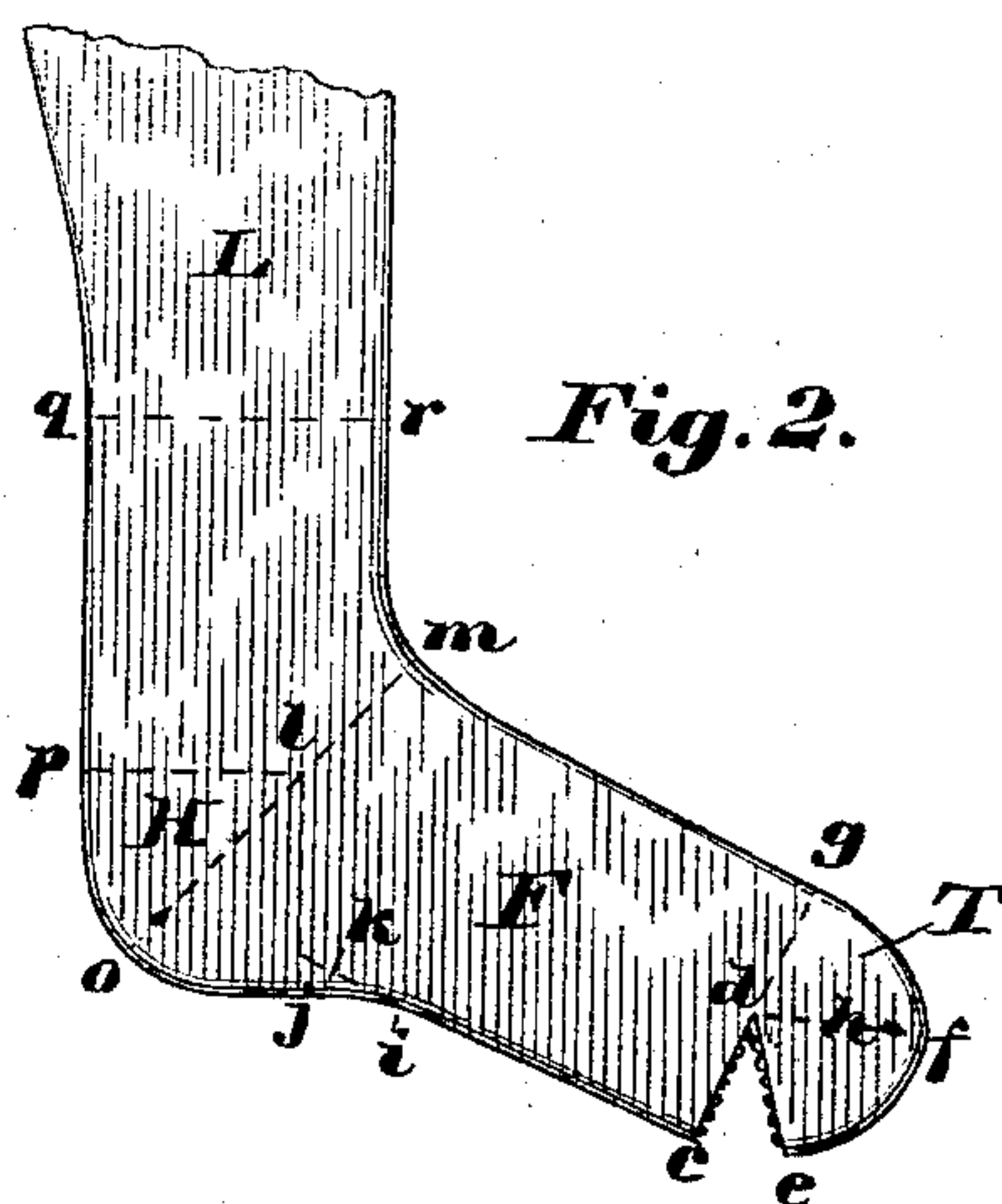


Fig. 2.

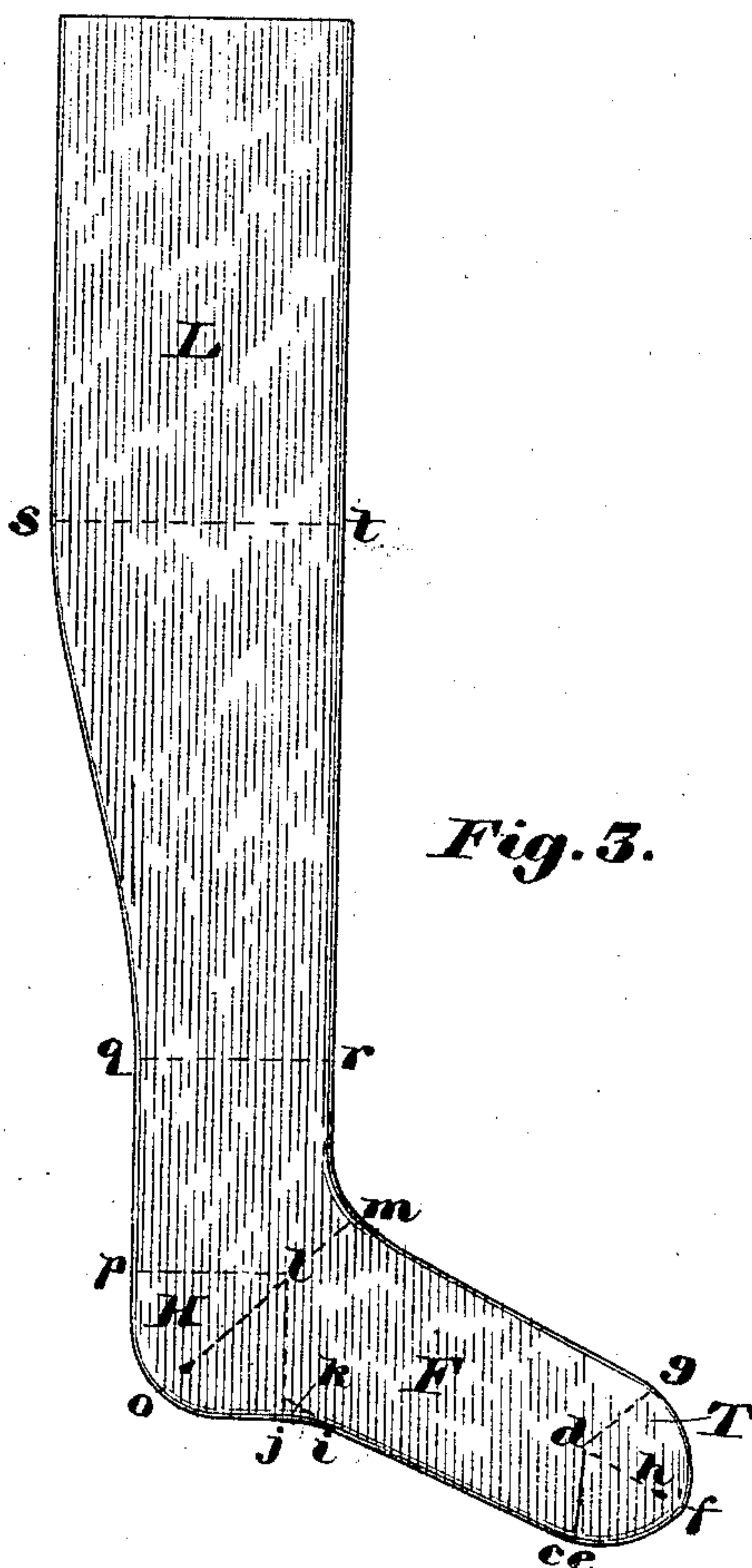


Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

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ART OF KNITTING STOCKINGS.

SPECIFICATION forming part of Letters Patent No. 302,388, dated July 22, 1884.

Application filed July 27, 1883. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM ESTY, of Laconia, in the county of Belknap and State of New Hampshire, have invented a new and useful Improvement in the Art of Knitting Stockings, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to the art of knitting stockings by machinery; and it consists in an improved process of knitting and completing full-fashioned stockings, which will be best understood by reference to the description of the drawings, and to the claim to be hereinafter given.

Figure 1 of the drawings is an elevation of a portion of a web of tubular stocking-blanks illustrating my invention. Fig. 2 is a partial elevation of the stocking-blank knit in accordance with my mode, after it has been separated from the continuous tube; and Fig. 3 is an elevation of the finished stocking.

L represents the leg, F the foot, T the toe, and H the heel, of a stocking made by my improved process. This method of knitting stockings may be carried out upon a machine adapted for making tubular work. A portion of the tube having been knit of a width equal to the widest or upper portion of the leg L, I first throw out of action the needles containing the stitches from *a* to *b*, Fig. 1, and cast off the stitches therefrom. Two or three courses may then be knit with the remaining needles, to afford a convenient space for cutting the stockings apart. I then throw out of action one-half of the remaining needles, or those carrying the stitches from *c* to *d*, and with the needles containing the stitches on the line *d e* knit the toe-bulge T, narrowing from *e* to *f*, and then widening again from *f* to *g*, and at the same time uniting the narrowed and widened edges along the line *d h*. The needles carrying the stitches on the line *c d* are then brought into action, and a tube is knit to form the foot F, said tube being knit of an even width until the point *i* is reached, when the tube is gradually widened by bringing into action some of the needles which were first thrown out, the widening being continued from *i* to *j*, thus forming in the center, widthwise of the bottom of the foot, the gusset *k*, for the purpose of increasing the width of the stocking at the heel and mak-

ing it conform more nearly in shape to the foot of the wearer. The knitting has now progressed as far as the line *j l m*. The needles which carry the stitches on the line *l m* are now thrown out of action, and the needles which carry the stitches on the line *j l* continue their operation and knit the heel-bulge H, which is formed in the same manner as the toe-bulge T, the narrowing taking place from *j* to *o*, and the widening from *o* to *p*. The needles carrying the stitches on the line *l m* are then brought into action again, and a straight tube of even width is knit to form the ankle portion until the line *q r* is reached, when the widening of the leg is begun and continued gradually by bringing into action the needles which carried the stitches on the line *a b*, and were first thrown out, until the full width of the tube forming the leg L is attained at the line *s t*, and the remaining or upper portion of the leg is then completed, being made of an even width and carried to the desired length. The needles carrying the stitches along the line *a b* are then again thrown out of action and the operation repeated.

In knitting the stocking-blanks as above described, I prefer to use two threads or yarns, which are fed to the needles in opposite directions around the circumference of the tube or stocking being knit in the manner set forth in a previous application which I filed in the United States Patent Office on the 5th day of December, 1882, and numbered 78,452. These two yarns may be of different colors, in which case the courses which form the leg L and foot F will be of alternate colors, thus producing a series of fine transverse stripes, the yarns crossing each other at the front and back of the leg and at the top and bottom of the foot.

In knitting the toe-bulge T the yarns are fed from the narrowed edge *d h* upon one side around the edge *e f* to the corresponding narrowed edge upon the opposite side of the toe, and then back again, the courses of the narrowed portion running parallel to the line *d e*, and the two yarns starting simultaneously from the opposite narrowed edges *d h*, and crossing each other upon the line *e f*. The other half or widened portion is knit in a similar manner, the two yarns being fed in opposite directions back and forth between the widened edges *d h*, upon opposite sides of the toe T, crossing each

other upon the line *f g*. It will thus be seen that each yarn will be knit into two consecutive courses upon either side of the toe T, and if the two yarns are of different colors the stripes thus produced will consist of two courses each, instead of a single course, as is the case with the leg L and foot F.

By my improved method of knitting stockings I am enabled to produce stockings "full-fashioned" or shaped in the process of knitting so as to conform to the foot and leg of the wearer, and to have but one seam, which extends around the lower half of the foot portion at the toe, in a continuous tube or series, by a continuous operation of the machine, without once severing the yarn, and thus a more rapid production is effected.

By the use of the two yarns, as above described, the knitting can be performed twice as fast as when a single yarn is used, and if the two yarns are of different colors an ornamental appearance is given to the stocking.

What I claim as new, and desire to secure by Letters Patent of the United States, is as follows:

The process of forming full-fashioned stockings, which consists in taking up the full number of stitches required to form the top of the leg, knitting a few courses, dropping a portion of the stitches, knitting a few circular courses upon the remaining needles, then throwing out of action one-half of the remaining needles, knitting a toe-bulge by knitting a given number of courses back and forth and narrowing,

and then a corresponding number of like courses and widening, at the same time uniting the widened portion to the narrowed portion, then throwing into action the needles last thrown out of action, then knitting a sufficient number of circular courses to form the greater portion of the foot, then widening for several courses upon that side of the tube opposite to the toe-bulge to form a gusset or gore in the bottom of the foot, then knitting the heel-bulge in the same manner as the toe-bulge, but upon the opposite side of the tube, then knitting a series of circular courses to form the ankle, then widening upon the side of the tube opposite to the toe-bulge till all the needles first thrown out of action are again in operation, then knitting a series of circular courses, using the whole number of needles to complete the desired length of the leg, then throwing out of action and dropping the stitches from the same needles that were first thrown out, repeating the foregoing operations as many times as there are stockings required, and then severing the sections and uniting by seaming the disconnected side of the toe-bulge to the foot portion, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 25th day of July, A. D. 1883.

WILLIAM ESTY.

Witnesses:

E. A. HEMMENWAY,
WALTER E. LOMBARD.