

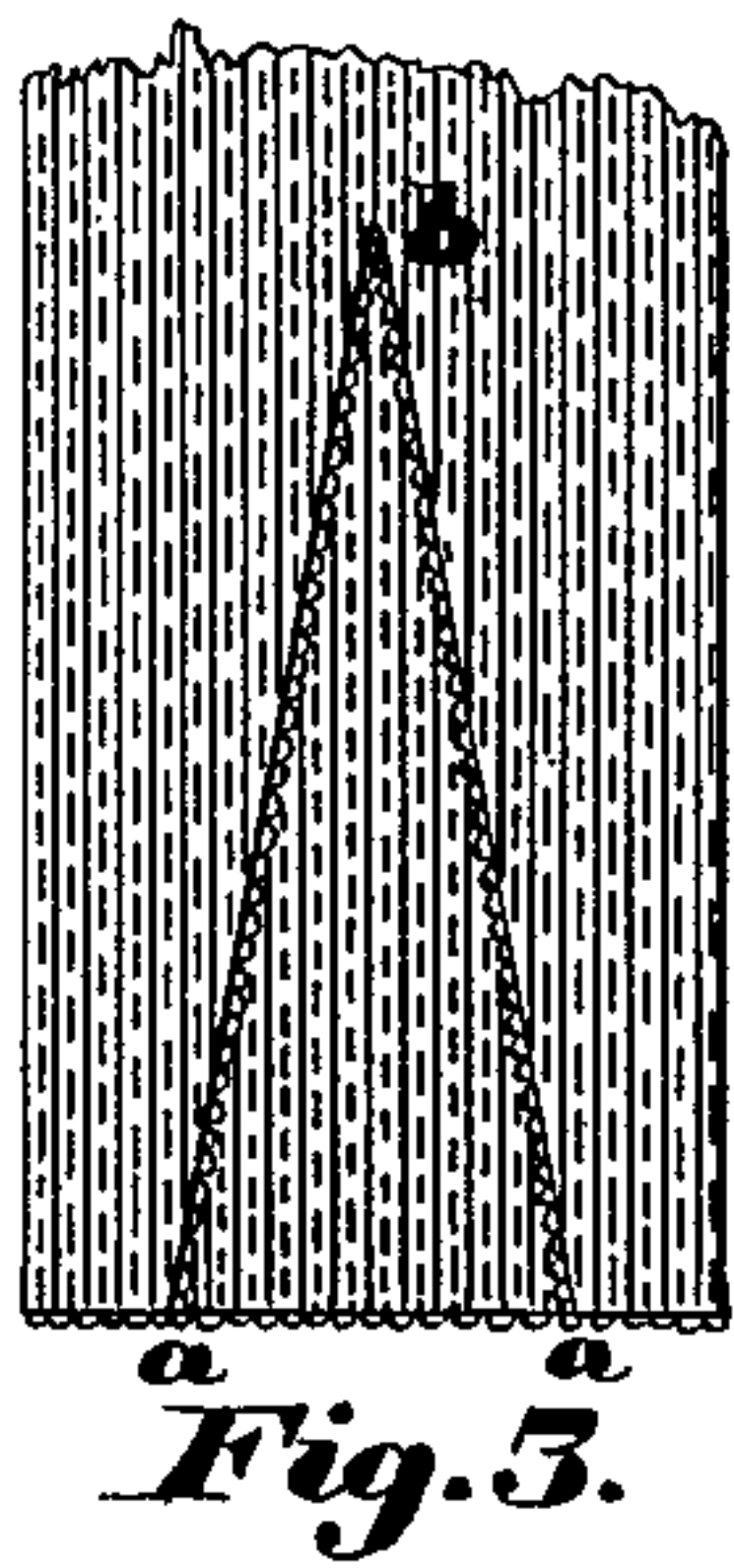
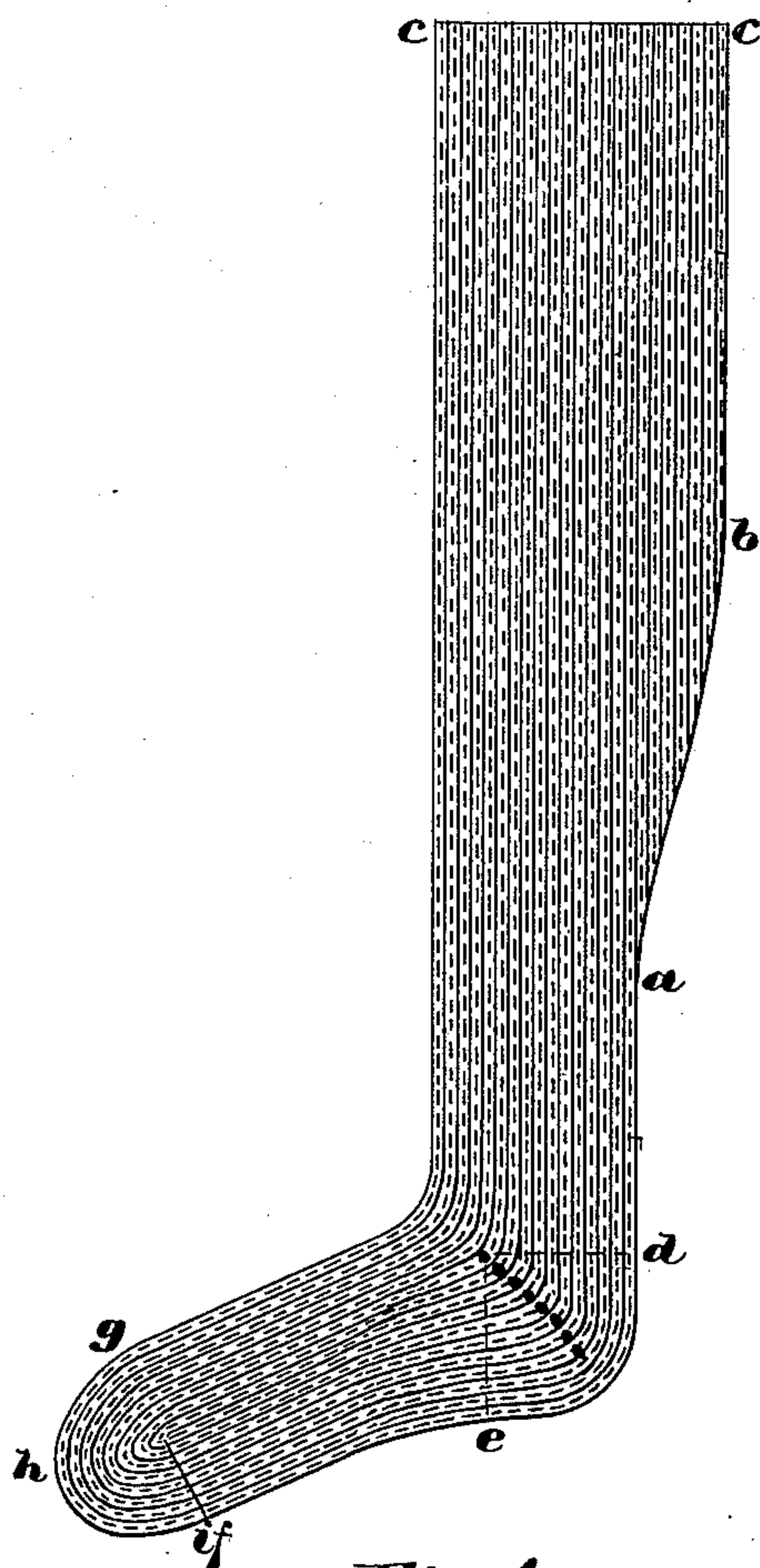
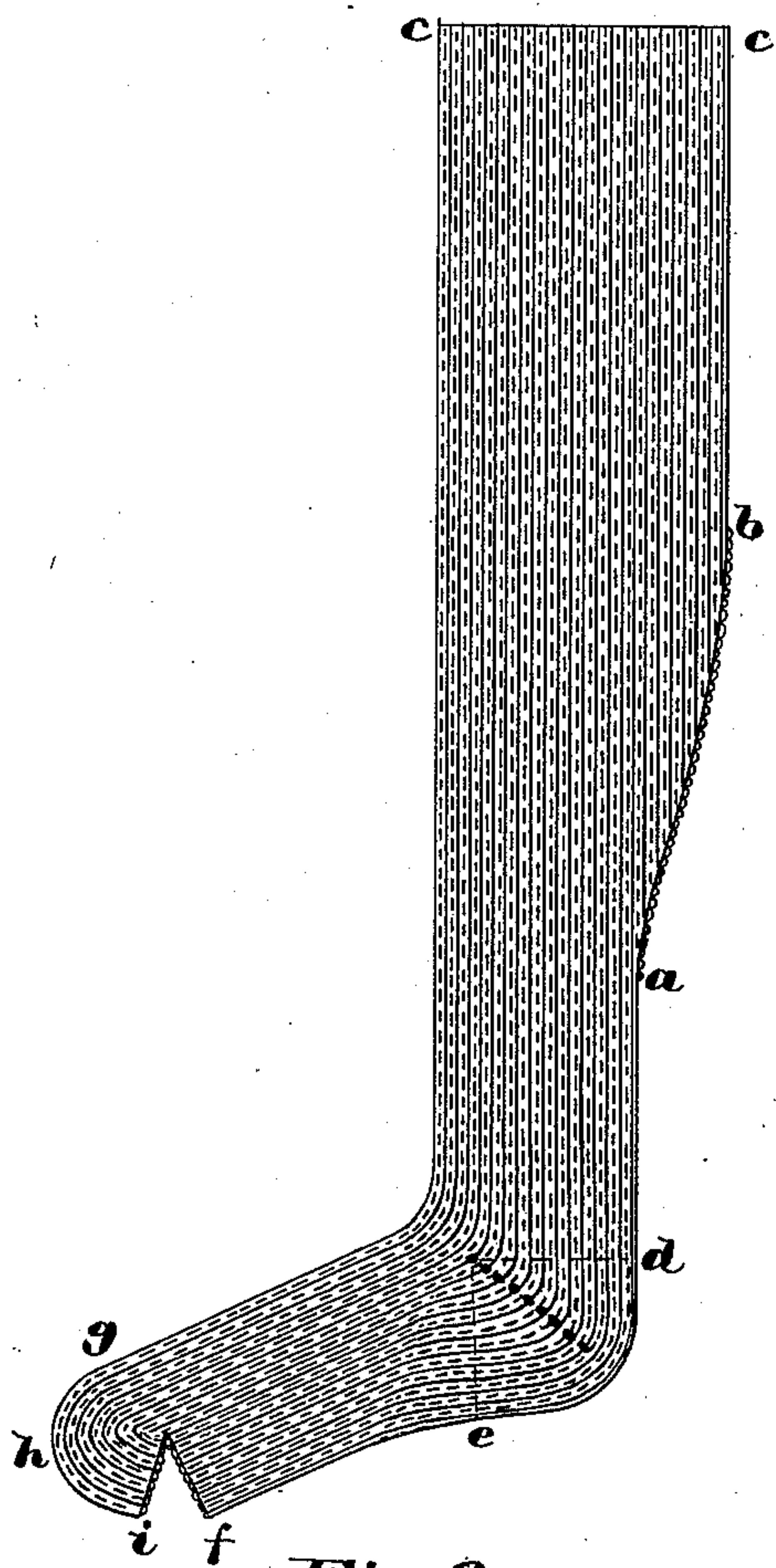
(No Model.)

W. ESTY.

ART OF KNITTING STOCKINGS.

No. 362,434.

Patented May 3, 1887.



Witnesses:
Walter E. Lombard.
William A. Perry.

Inventor:
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Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM ESTY, OF LACONIA, NEW HAMPSHIRE.

ART OF KNITTING STOCKINGS.

SPECIFICATION forming part of Letters Patent No. 362,434, dated May 3, 1887.

Application filed October 4, 1884. Renewed October 22, 1885. Again renewed April 29, 1886. Serial No. 200,625. (No 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 Manufacturing Stockings, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to the art of manufacturing full-fashioned stockings by machinery; and it consists in the process of forming such stockings upon circular-knitting machines by first taking up the required number of stitches to form the ankle upon a circular machine having as many needles as are required to knit the top of the leg, knitting a series of back-and-forth courses and widening at each end of the course as often as desired till all of the needles are thrown into action, then knitting a sufficient number of circular courses to complete the top of the leg, then removing the leg from the machine and taking up the stitches upon the narrow end of the flat portion of the leg upon a circular machine having the number of needles corresponding to the number of stitches in said narrow end, knitting a sufficient number of circular courses to form the ankle, throwing out of action a portion of the needles, knitting a series of back-and-forth courses, narrowing at the end of each course, and then a similar number of like courses, widening at the end of each course, and connecting the widened course with a previously-narrowed course to form the heel, then bringing into action the needles previously thrown out of action, knitting a series of circular courses to form the foot, then knitting the toe-bulge by throwing out of action one-half of the needles, knitting a series of back-and-forth courses and narrowing, and a like number of like courses and widening, and connecting to the narrowed courses, removing the stocking from the remaining needles, and seaming the disconnected portion of the toe-bulge to the foot and seaming up the slit in the calf of the leg.

Figure 1 of the drawings is a side elevation of a completed stocking, showing the manner of practicing my invention. Fig. 2 is a similar elevation of the same stocking before the toe and calf slits are seamed up, and Fig. 3 is a rear elevation of that portion of the leg which is

knit upon the first or larger machine by reciprocating the needle cylinder before the web is run onto the smaller machine.

In carrying out my new process I use two circular-knitting machines of different diameters, the larger one having, say, two hundred needles and the smaller one, say, one hundred and twenty needles. I then take up one hundred and twenty stitches on the larger machine and knit a series of back-and-forth courses from *a* to *b*, throwing into action a new needle at each end of a course as often as may be necessary to give the required taper to the leg, continuing this until all of the needles are brought into action, and then knit a sufficient number of circular courses to complete the top of the leg, as from *b* to *c*. The work is then removed from the large machine, and the one hundred and twenty stitches at the end thereof, which is in the form of a flat web, are run upon the one hundred and twenty needles of the smaller machine, and a series of circular courses are knit from *a* to *d* to form the ankle. A portion of the needles are then thrown out of action and the heel from *d* to *e* is formed by knitting a series of back-and-forth courses and narrowing, and the same number of like courses and widening, and at the same time connecting the widened courses to the corresponding narrowed ones. Then the needles previously thrown out of action are again thrown into action and a series of circular courses are knit from *e* to *f* to form the body of the foot, when one-half of the needles are again thrown out of action and the toe-bulge *g h i* is formed by knitting a series of back-and-forth courses and narrowing, and the same number of like courses and widening, and at the same time connecting the widened courses to the previously-narrowed ones, when the stocking will be in the condition shown in Fig. 2, with the opening *f i* at the toe and a slit from *a* to *b* in the back of the leg. The opening *f i* and the slit *a b* are then seamed up, and the stocking is completed in the form shown in Fig. 1.

The opening *f i* may be upon the under side of the foot, as shown, or upon the upper side, as may be desired, without affecting the principles of my invention.

What I claim as new is—

The art of knitting full-fashioned stockings,

which consists in taking up the required number of stitches to give the required diameter to the ankle of the stocking upon a circular-knitting machine having as many needles as
5 there are required stitches to give the desired diameter to the top of the leg, knitting a series of back-and-forth courses and widening by throwing into action an additional needle at each end of a course as often as desired
10 until all the needles are brought into action, knitting a sufficient number of circular courses to complete the desired length of leg, removing the work from the machine, taking up the stitches at the narrow end of the flat portion
15 of the fabric upon a circular machine having as many needles as there are stitches upon said narrow end, knitting a series of circular courses to form the ankle, throwing out of action a portion of the needles forming the heel-
20 bulge by knitting a series of back-and-forth courses and narrowing, and the same number

of like courses and widening, at the same time connecting the widened courses to the narrowed ones, throwing into action the needles previously thrown out of action, knitting a
25 series of circular courses to form the body of the foot, throwing out of action one-half of the needles, forming the toe-bulge in the same manner as the heel-bulge, removing the work from the machine, and seaming the disconnected
30 portion of the toe-bulge to the foot and the edges of the slit in the rear of the leg together, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 30th day of Sep-
35 tember, A. D. 1884.

WILLIAM ESTY.

Witnesses:

N. C. LOMBARD,

WALTER E. LOMBARD.