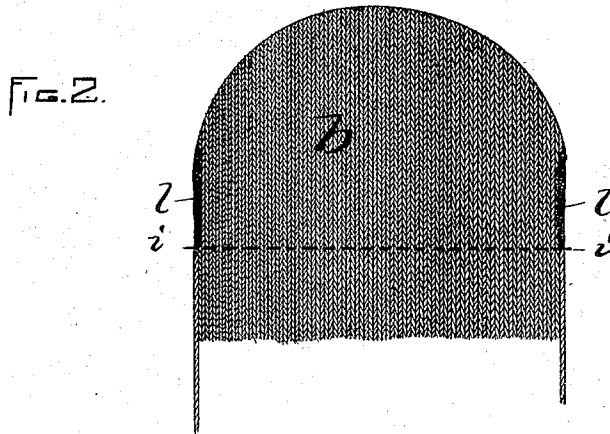
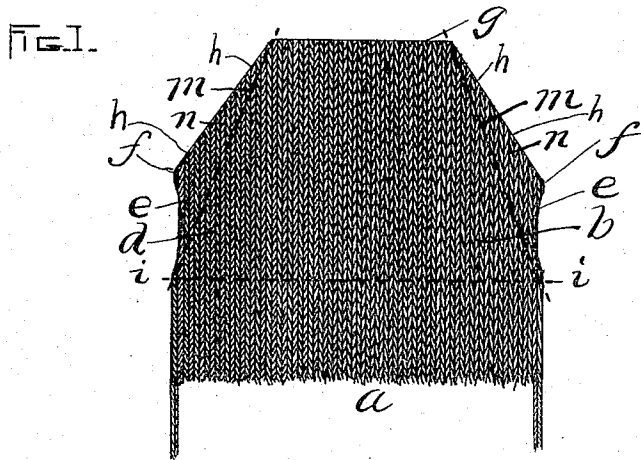


(No Model.)

W. H. HOWARD.
STOCKING TOE AND ART OF PRODUCING SAME.

No. 535,950.

Patented Mar. 19, 1895.



WITNESSES:

J. N. Jones,
C. C. Flecher

INVENTOR:

Wm. H. Howard,
By Andrew Fosley,
Att'y

UNITED STATES PATENT OFFICE.

WILLIAM H. HOWARD, OF LOWELL, MASSACHUSETTS.

STOCKING-TOE AND ART OF PRODUCING SAME.

SPECIFICATION forming part of Letters Patent No. 535,950, dated March 19, 1895.

Application filed July 2, 1894. Serial No. 516,291. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HOWARD, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Stocking-Toes and in the Art of Producing the Same, of which the following is a specification.

This invention has relation to seamless hosiery; and it has as its object to provide a toe for seamless hose and half hose which shall be more roomy and comfortable to the wearer, be more convenient in use, and more durable than stockings as now commonly manufactured.

In the manufacture of seamless stockings and half hose on circular knitting machines, it has been common heretofore, after completing the heel to knit the foot as a circular seamless web; then throw out of action substantially one half of the needles in the circle; then with the remaining half of the needles in operation, by a reciprocation of the cam cylinder and a gradual retiring of the needles, narrow toward a point; then to gradually bring the retired needles into operation and widen back to the line of beginning when the web may be cast off and the loops from the needles last in operation united with those from the needles thrown out of action at the beginning of the knitting of the toe. In order to give what has been thought to be a symmetrical shape to the toe of the stocking after boarding, and in order to bring the seaming or uniting line of the cast-off loops back of the toes of the wearer or along a line where it may not prove uncomfortable when the stocking is in use, the toe has been made quite long and narrow, so that the toes in the stocking are uncomfortably pinched and crowded.

By my improvements I overcome all of the objections mentioned, and at the same time secure a stocking with a full, roomy toe.

In the attainment of the before mentioned ends, my invention consists in the improved stocking toe and the method or process of knitting the same, which I will now proceed to describe and claim.

Reference is to be had to the annexed drawings and to the letters marked thereon forming a part of this specification, the same let-

ters designating the same parts or features as the case may be, wherever they occur.

Of the drawings—Figure 1 is a diagram showing the structural character of my improved stocking toe and the process of knitting the same, and also contrasting the structure with stocking toes as now most commonly formed. Fig. 2 shows the shape that may be given to my improved stocking toe after boarding the same.

In carrying out my invention I may employ any knitting machine that may be organized so as to knit a seamless stocking and form heel-and-toe work by throwing out of action a part of the needles and narrowing and widening on the remaining needles.

With the means mentioned I may knit the leg, heel, and foot portion of the stocking in any suitable way. When the end of the foot portion *a* is reached, which foot portion it is assumed will be knit as a seamless tubular web, and it is desired to begin the knitting of the toe portion *b* at the line *i i*, one half of the needles in the circle will be thrown out of action and with the remaining needles, a flat web *d*, of uniform width and with selvage edges *e e* will be knit, extending from the line *i i* to the point of line *f*, after which needles will be gradually retired, still holding their stitches to narrow to the line or point *g*, when the retired needles will be gradually brought back into action to the point *f*, producing a closed toe-end abruptly narrowed on each side along the lines *h h*. After widening back to the point *f* another flat web with selvage edges will be knit, corresponding in length to the web *d*, when the work will be cast off, and the loops last upon the needles will be connected by crocheting or seaming along the line *i*, and the selvage edges *e e* will be seamed together or otherwise connected, as at *l l*, Fig. 2, completing the stocking. In this way I am enabled to secure a broad roomy toe part for a stocking which may be worn upon either foot, and with the cross seam or crochet line back of the toes so that it may cause no discomfort to the wearer.

In Fig. 1, I have shown by the dotted lines *m m* the lines along which the narrowing is accomplished by the old process, the fabric *n* outside of the lines *m m* being the gain by

my invention in the amount of room secured for the toes.

I do not, of course, limit myself to the mode of procedure which would confine me to begin the knitting of a stocking at the top of the leg and finish the same with my improved toe, since the latter may first be knit and the foot, heel, and leg be subsequently produced, as will be understood by those skilled in the art without further description.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. The improvement in the art of knitting a toe for a stocking having a circular seamless foot portion which consists in throwing out of action substantially one half of the needles, knitting a short flat web with selvage

edges on the remaining needles in operation, then narrowing and widening abruptly on both sides to knit a closed toe-point, then knitting another flat web with corresponding selvage edges, casting off the work, uniting the loops last upon the needles, and seaming together the adjacent selvage edges of the flat webs, as set forth.

2. A stocking toe abruptly narrowed without seam at opposite sides of its point, the body of the toe to the rear of the point being composed of two flat webs of equal width united at their edges, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 26th day of June, A. D. 1894.

WM. H. HOWARD.

Witnesses:

ARTHUR W. CROSSLEY,
C. C. STECHER.