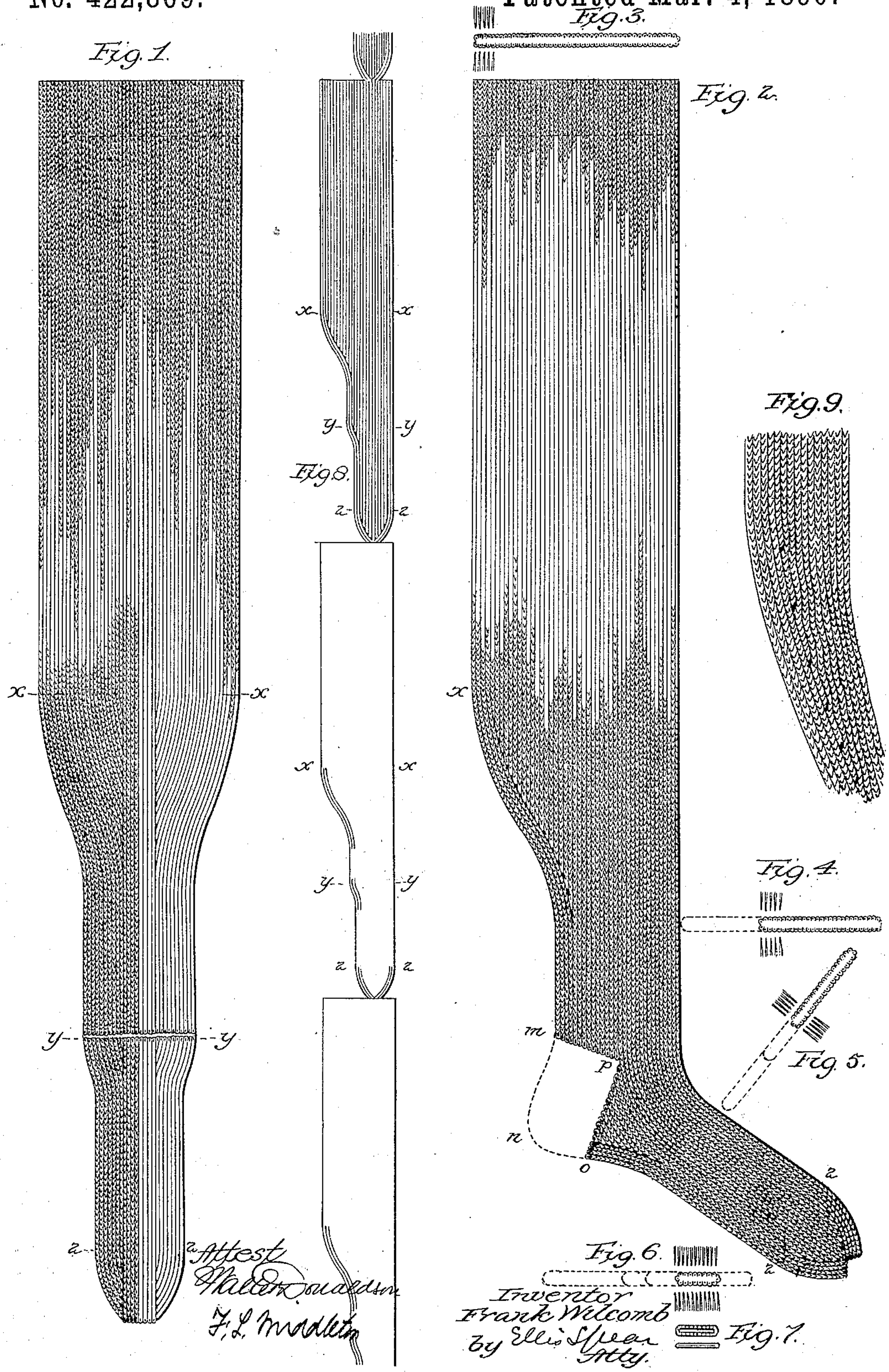
(Specimens.)

F. WILCOMB.

METHOD OF KNITTING STOCKINGS.

No. 422,869. Patented Mar. 4, 1890.



UNITED STATES PATENT OFFICE.

FRANK WILCOMB, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE WILCOMB KNITTING MACHINE COMPANY, OF JERSEY CITY, NEW JERSEY.

METHOD OF KNITTING STOCKINGS.

SPECIFICATION forming part of Letters Patent No. 422,869, dated March 4, 1890.

Application filed August 28, 1888. Serial No. 283,971. (Specimens.)

To all whom it may concern:

Be it known that I, FRANK WILCOMB, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in the Method of Knitting Stockings; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention which is the subject of the following specification relates to the manufacture of tubular-knit stockings, and in this invention I have sought to improve the article and also to facilitate the manufacture of the article. The knitting is performed on a straight tubular-knitting machine provided with transfer-points—such a machine, for example, as that shown in Letters Patent of the United States granted to me on the 12th day of October, 1886, No. 350,795. In the method hereinafter described I use eleven transfer-points on each side of the machine at one end in the narrowing of the leg and foot, and the same number of points on each side at both ends in the narrowing of the toe; and I have described the stocking as made of a definite number of stitches for convenience in illustration; but the number of points and number of stitches is a matter, of course, which is not material to the invention.

In order that the invention may be fully understood, I have particularly shown the detached stocking in the accompanying drawings, as well as the series of stockings connected to each other as made.

In the drawings, Figure 1 represents a rear view of the detached stocking with the foot extended. Fig. 2 represents a stocking in side elevation. Figs. 3, 4, and 5 show cross-sections of the stocking. Fig. 6 shows the end of the tube, the successive steps in the direction thereof being indicated in dotted lines. Fig. 7 also shows the end of the tube, representing it as open in one part of the figure and closed in the other part. Fig. 8 represents in side elevation a series of the stockings as they come from the machine before they are separated. Fig. 9 is a view showing in detail the standing wales at the point of junction with the series of continuous wales at the rear of the stocking-leg.

The stocking is begun at the top of the leg with one hundred and ninety-two stitches, and is knit continuously in tubular form down to the line x, where the narrowing begins for the ankle. At this line the stocking is narrowed by one stitch for each narrowing at desired intervals, and the narrowing is continued until there have been thirty-two narrowings in each row, and until the stocking in the section shown in Fig. 4 is one hundred and twenty-eight stitches in circumference, this being the narrowest part of the ankle. It will be observed that the narrowing for the ankle is only on one end of the two rows of stitches at what constitutes the back of the stocking-leg. At the line $y\ y$ is the beginning of the heel. At this point are dropped stitches from a sufficient number of needles on one side of the machine, which makes a break from the back to about the middle of the stocking-leg, the stitches on the front of the stocking being left on the needles. After dropping the loops from the needles the work is immediately set up again, and this leaves the stocking at this line half severed from the back.

Instead of dropping the stitches from the needles, as above described, the knitting may be continued and the heel-opening may be formed by cutting on the same line and with the same depth as that of the gap formed by the dropping of the stitches above described.

If the knitting is continuous, or when the work is set up again on the needles, a few rounds are knit straight and then the transfer-points are again brought into action, eleven on each side of the machine at one end, as before, and the stocking at this point is narrowed six times on each side, which reduces it by twelve stitches. This forms the gusset, and the wales between the narrowings are still at the back and in a central line, and the narrowing-stitches are on each side, on the bottom of the foot when the foot is turned up to its proper position, as shown in Fig. 2. The foot is then knit in the form of a tube to the line 2 2 without narrowing. As twelve

stitches are taken out, this tubular part which forms the foot is one hundred and sixteen stitches in circumference. At the line 2 2 the narrowing for the toe commences. This narrowing is on both bottom and top of the foot at the toe, and has wales alike between the narrowings formed by the use of eleven transfer-points on each side of the machine and at each end of the needle-rows. The foot is narrowed eighteen times on as many rounds of knitting at each end of the rows of needles. This reduces the circumference of the foot to forty-four stitches, this being the number of the transfer-points, and at this point the knitting ceases. Immediately all the needles originally used are brought into work again, and the machine commences the knitting of the second stocking, which is continued in precisely the same manner as described above, and so on throughout the whole series as long as may be convenient.

In the method described transfer-points are used on each side of the machine at one end for the narrowing of the leg and gusset and at both ends of the machine at each side for the narrowing of the toe, and a series of wales or lines of stitches with the narrowings on each side thereof will thereby be formed in the narrowed portions at the back of the stocking, which extend as a continuation of a corresponding number of wales or stitches in the part of the stocking above the narrowed portion down to the toe and for a short distance up the front side, a break occurring between the end of the ankle portion and the under part of the foot portion, where the heel is inserted, and also at the toe-opening, where the parts are brought together and stitched. When, however, the heel-opening is formed by cutting into the seamless blank, the break referred to will not occur during the knitting operation.

When a series of stockings are thus knit in a continuous piece and by continuous operation, they may be severed at the point between the toe of one and the top of the leg of another, and the opening at the toe of each stocking stitched in any convenient manner. A portion of the upper edge of the stocking, including the severed part, is turned in and stitched to form a hem.

The heel-piece, bounded by the lines *m n o* and *o p*, is knit separately and may be connected by the selvages to the stocking proper on the line of the heel-opening or in any manner well-known to those skilled in the art.

I do not claim in this application the finished stocking, as this constitutes the subject-matter of an application filed by me in the United States Patent Office of even date herewith and serially numbered 283,970.

I claim as my invention—

1. The hereinbefore-described method of knitting stockings, consisting in first knitting a straight tubular leg, then narrowing on each side of the needle-rows at one end to fashion the leg, then knitting straight upon the ankle, then narrowing on each side of the needle-rows at one end to form the gusset, again knitting straight to form the foot, then narrowing on each side of the needle-rows at both ends to form the toe, and finally closing the opening at the toe and inserting the heel, as set forth.

2. The hereinbefore-described method of knitting stockings, consisting in knitting a straight tubular leg, then narrowing by transferring a number of stitches on each side of one end of the rows of needles, forming wales on the back of the stocking, then knitting straight upon the ankle, again narrowing, as before, to form gussets by transferring stitches, as before, and at the same end of the rows of needles, again knitting straight to form the foot, then narrowing at both ends of the rows of needles to form the toe, bringing the original number of needles into work again to form another stocking, and repeating the same order of operations, as desired, then severing the stocking-blanks from each other, and finally completing the stockings by inserting the heel and closing the opening at the toe of each.

3. The hereinbefore-described method of knitting stockings, consisting of knitting a plurality of stockings from the leg to the toe, fashioning the stocking by the transfer of stitches in the operation of knitting, bringing into action the original number of needles without dropping the stitches from the toe of the first stocking, then knitting the second stocking in like manner, then severing the stocking so knitted on the line where the toe of one and the leg of the next following join, closing the opening in the toe by stitching, hemming the cut top, and inserting the heel in an opening between the end of the ankle portion and the under part of the foot portion, substantially as described.

4. The hereinbefore-described method of knitting a plurality of stockings, consisting in knitting the first stocking from the top to the toe and shaping by the transfer of stitches, then bringing into operation the original number of needles without dropping the stitches from the toe of the first stocking, to form the leg of the next stocking, then knitting the second stocking in like manner and repeating the same order of operation as desired, whereby a plurality of stockings are produced connected lengthwise, then severing the series, and finally completing each stocking by inserting a heel and closing the opening at the toe thereof, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK WILCOMB.

Witnesses:
WALTER DONALDSON,
GEO. R. WILSON.