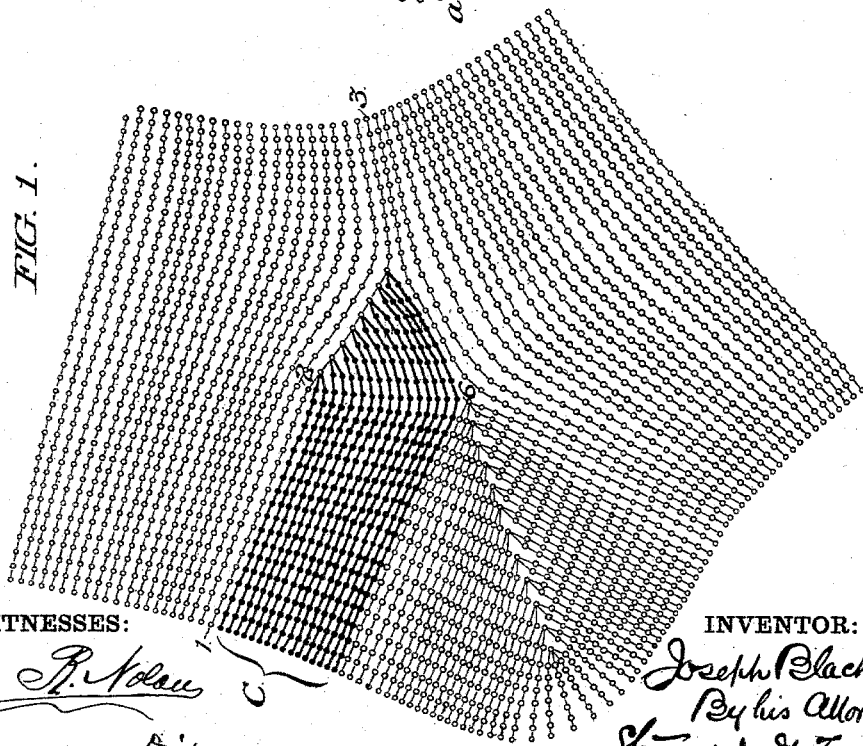
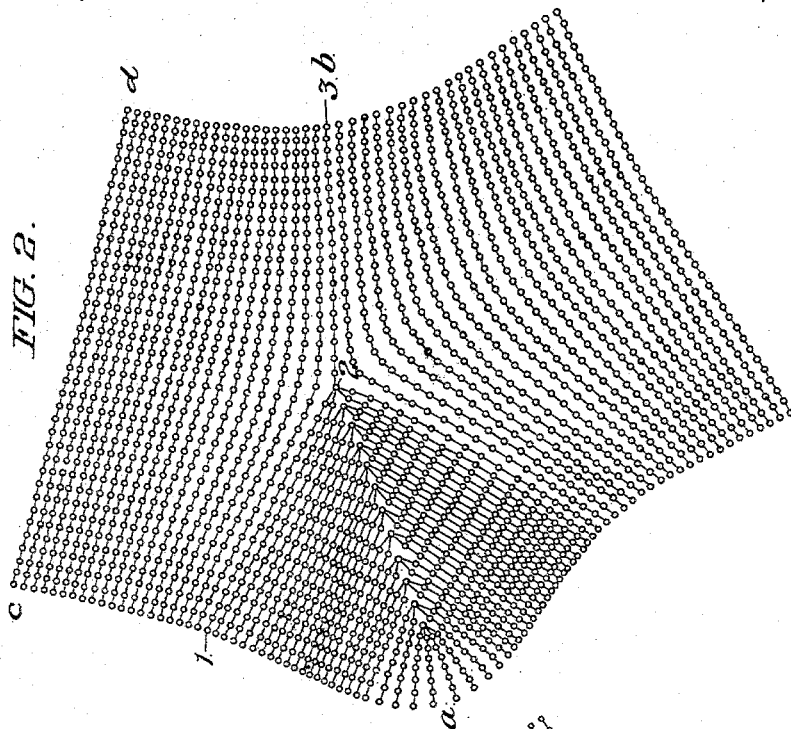


(No Specimens.)

J. BLACK, Jr.
HOSIERY.

No. 490,241.

Patented Jan. 17, 1893.



WITNESSES:

John P. Nolan
J. Norman Dixon

INVENTOR:

Joseph Black Jr.
 By his Attorneys
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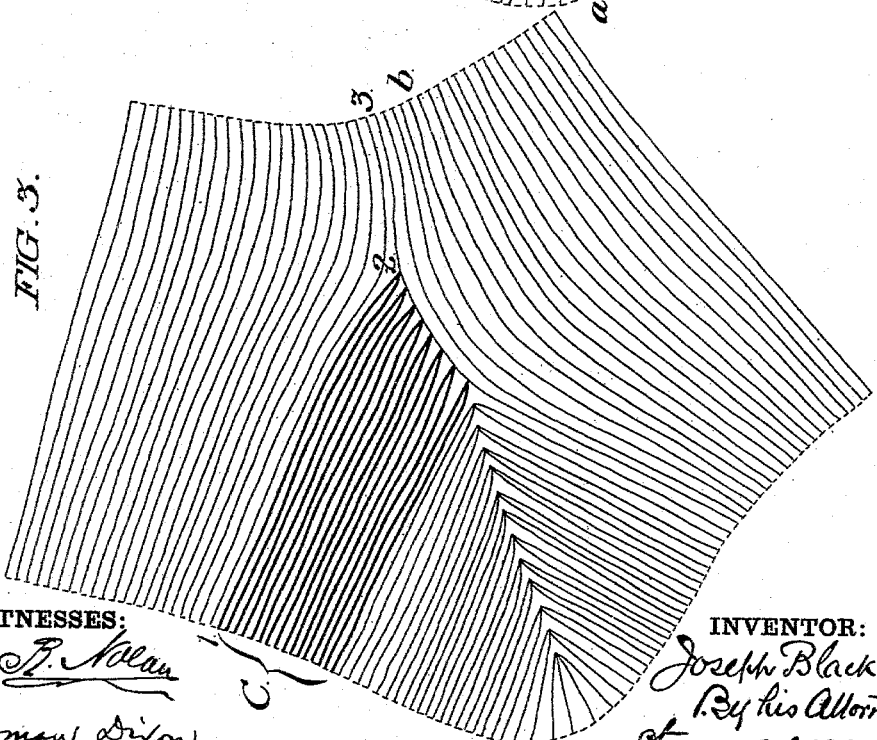
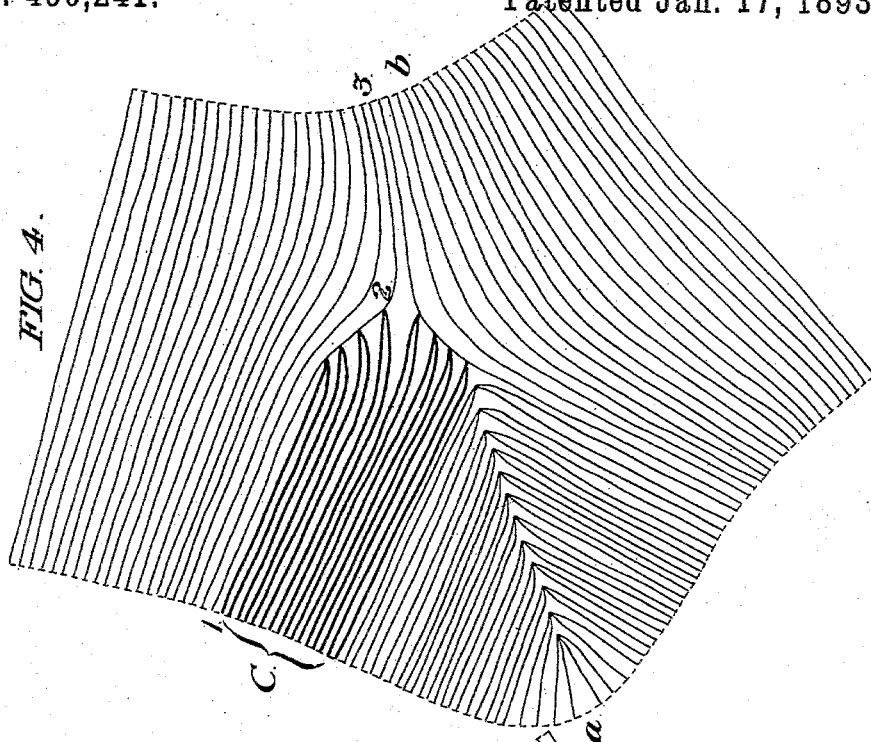
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

JOSEPH BLACK, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
JOSEPH BLACK & SONS, OF SAME PLACE.

HOSIERY.

SPECIFICATION forming part of Letters Patent No. 490,241, dated January 17, 1893.

Application filed January 15, 1892. Serial No. 418,177. (No specimens.)

To all whom it may concern:

Be it known that I, JOSEPH BLACK, Jr., a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Hosiery, of which the following is a specification.

In the manufacture of hosiery as heretofore carried on, it has been found difficult in practice to so fashion the heel as to impart to it the bulge or extension required to adapt it to naturally and easily fit upon the heel of the wearer without undue strain upon the yarn.

In the ordinary method of knitting stockings, when the leg tube is knitted to the point at which the operation of forming the heel begins, one-half of the whole number of needles, occupying the front portion of the needle cylinder, (and hereinafter termed the "front half of the needles") and still engaged with the stitches of the end of the tube, are temporarily thrown out of operation, and a line of stitches is knitted upon the semi-circular row of needles remaining in operation; next an additional needle at one end of the row is thrown out and another line of stitches is knitted upon the remaining needles; next a needle at the opposite end of the row is thrown out and another line of stitches is knitted upon the remaining needles, and so the operation is continued until only a small number of needles remains in service. Thereupon, and after a line of stitches has been knitted on said remaining needles, an additional needle is put into service and a line of stitches is knitted on the row of needles then in operation, next an additional needle at the opposite end of the line, is put up into service, and another line of stitches is knitted, and so the operation is continued until the heel has been completed. The front half of the needles are then all brought back into service and the knitting of a tubular web is continued to produce the foot of the stocking. A stocking, the heel of which is formed in this well known manner, is represented in Fig. 2 of the accompanying drawings. This stocking however is unsatisfactory for the reason that the distance between the points

$a-b$ is not as much in excess of the distance between the points $c-d$ as the anatomical configuration of the ordinary wearer's foot requires; it results therefore that when the stocking is worn the yarn between, and in the vicinity of, the points $a-b$ is unduly strained and destruction of the stocking thereby hastened.

In the formation of the type of stocking illustrated in Fig. 2 in the manner described it is found to be impracticable to increase the distance between the points $a-b$ and at the same time preserve the proper proportions of the stocking, for the reason that in the construction of the heel, in the ordinary method of its formation, when additional short rows of stitches are employed, the resulting enlargement extends above and below the heel proper and produces bagginess and shapelessness.

The object of my invention is the construction of an improved stocking in which the heel is by the means hereinafter fully set forth extended or bulged diagonally away from the ankle to such an extent as to avoid undue strain upon the heel yarn in the wearing of the same.

Briefly stated, my invention comprehends the introduction or knitting into the rear portion of the body of a stocking, at a point just above its heel portion, of a gore or gusset the lines of stitches forming which all extend as to their extremities beyond the front edge of the heel portion of the stocking in the direction of the instep, so that a portion of the body of said gore or gusset increases by its presence the distance from the rear point of the heel to the front of the instep of the stocking, said gore or gusset being, as to a part of its lower edge, secured to or enmeshed with the first row of stitches of the heel proper, and, as to such part of its body as extends beyond the heel proper, enmeshed with the stitches of the foot,—and the preferred embodiment of my invention comprehends an arrangement of the rows of stitches of said gore or gusset in which they are, from the upper edge of the gusset to the edge adjacent to the heel, of successively increasing length, and in which each end is completed by hav-

ing its terminal stitches enmeshed or connected with the last row of stitches of the leg of the stocking.

The accompanying drawings consist of diagrammatic illustrations of the heel and ankle portions of stockings,—Figure 1 illustrating the preferred embodiment of my invention,—Fig. 2 illustrating an ordinary form of stocking, and Figs. 3 and 4 illustrating modified 10 embodiments of my invention.

In the particular embodiment of my invention shown in Fig. 1, I knit the stocking tube continuously in the ordinary way until the line 1, 2, 3, is reached; then I throw the front 15 half of the needles out of operation and knit a line of stitches on the row of needles remaining in operation; next I put an additional needle, at one end of the line, in operation, and knit another row of stitches; next I put an additional needle, at the other end 20 of the line, in operation, and knit another row of stitches; next I put another needle, at the first named end of the line, in operation, and knit another row of stitches, and so on, 25 until the desired number of short rows of stitches, for example 16, as shown in Fig. 1, are knitted. Each of said rows as it is completed, terminates adjacent to and is enmeshed, as formed, with a stitch of an adjacent 30 or complete line of stitches. After these short rows designated C, have been formed and enmeshed as described, the operation of forming the heel is continued in the usual manner. After the heel is formed, and all the 35 needles are thrown again into service, the next succeeding row of stitches will be enmeshed, for part of its length, with the last short row of stitches made in forming the heel, and for another part of the length with 40 so much of the last row of stitches C as extends forward past the center of the stocking tube, and for the remainder of its length with so much of the last complete row of stitches formed in making the tubular body of the 45 stocking as may be left uncovered by the short rows described.

In Fig. 1 I illustrate a portion of a stocking embodying a good embodiment of my invention, which stocking is precisely similar to the 50 stocking shown in Fig. 2 except that it embodies a series of short rows of stitches, drawn in black lines, and designated C, inserted in the rear portion of said stocking just above the heel.

In Fig. 1 the rows of stitches C are shown as arranged with the longest row nearest the heel, and this is the preferred construction, but in the arrangement shown in Fig. 3, this 55 order is reversed and the shortest row is nearest the heel.

In forming the stocking of Fig. 3, I knit the stocking tube continuously in the ordinary way until the line 1, 2, 3, is reached; then I throw a portion or block of the front 55 needles out of operation (in forming the stocking under discussion less than half the whole number of needles) and knit a line of stitches

on the row of needles remaining in operation, then throw out of operation a needle at the end of the line, then knit a row of stitches 70 on the row of needles remaining in operation, then throw out of operation a needle at the end of the line, and so on, until the required number of lines of stitches is knitted. Then I proceed to form the heel in the usual 75 manner. After the heel is formed and all the needles are thrown again into service, the next succeeding row of stitches will be enmeshed, for part of its length, with the last short row of stitches made in forming 80 the heel, and for another part of its length with all the end stitches of the series of short rows of stitches C, and for the remainder of its length with so much of the last complete 85 row of stitches, formed in making the tubular body of the stocking, as may be left uncovered by the short rows described. The construction shown in Fig. 3, therefore differs from that of Fig. 1, in that in the latter, 90 as each short row of stitches is completed its end stitch is enmeshed with the stitches of a previously formed complete row of stitches, while in the former the short rows of stitches are first knit and a subsequently knitted complete row of stitches enmeshed with the end 95 stitches of said rows.

The construction shown in Fig. 4 combines the arrangements shown in Figs. 1 and 3.

In producing the stocking of Fig. 4, when the point 1, 2, 3 is reached I throw the front 100 half of the needles out of operation and knit a line of stitches on the row of needles remaining in operation; next I put an additional needle, at one end of the line, in operation, and knit another row of stitches: and 105 so on as already described in connection with Fig. 1 until say, half the whole number of short rows of stitches are formed; next I continue alternately knitting a row of stitches and throwing a needle at the end of the line 110 out of operation, as already described in connection with Fig. 3, until the remaining portion of the desired number of short rows of stitches is formed. Thereupon, I proceed to form the heel in the usual manner. After 115 the heel is formed, and all the needles are thrown again into service, the next succeeding row of stitches will be enmeshed, for part of its length, with the last short row of stitches made in forming the heel, for another part of 120 its length with all the end stitches of the second half of the series of short rows of stitches C, and for the remainder of its length with so much of the last complete row of stitches formed in making the tubular body of the 125 stocking, as may be left uncovered by the short rows described.

I have stated that the preferred embodiment of my invention is that illustrated in Fig. 1, and this is for the reason that in the construction there exhibited each of the short rows of 130 stitches (and which rows are of successively increasing length) is at each end enmeshed with the stitches of the last complete row of

stitches, and, inasmuch as said last complete row tends constantly to assume its normal position in a plane perpendicular to the axis of the stocking leg, said row of stitches consequently tends to draw the rows of short stitches toward the front of the stocking and occasion such drawing in of the stocking in the region immediately above the heel proper as causes it to the better and more snugly fit the corresponding portion of the foot of the wearer.

Having thus described my invention, I claim and desire to secure by Letters Patent:

1. As an article of manufacture, a stocking which embodies a gore or gusset composed of a series of short rows of stitches, adjacent rows of which stitches are of unequal length, the ends of each row of stitches of the said gore or gusset extending toward the instep beyond the front edge of the heel portion of the stocking, in order to increase the distance from the bulge or rear part of the heel to the front of the instep, said gore or gusset being, at its upper edge, bounded by and enmeshed with the last complete row of stitches of the stocking leg, and being at its lower edge bounded by and enmeshed with, first, the first row of heel stitches, and, second, for the remainder of its length, the necessary num-

ber of stitches of the first row of stitches of the body of the foot, substantially as set forth.

2. As an article of manufacture, a stocking which embodies a gore or gusset composed of a series of short rows of stitches, adjacent rows of which stitches are of unequal and from the upper edge of the gusset to the edge adjoining the heel of successively increasing lengths, each row of stitches of the said gore or gusset extending toward the instep beyond the front edge of the heel portion of the stocking, in order to increase the distance from the bulge or rear part of the heel to the front of the instep, each row being at its respective extremities enmeshed with the last row of stitches of the stocking leg, said gore or gusset being, at its upper edge, bounded by said last row of stitches of the stocking leg, and being at its lower edge bounded by and enmeshed with, first, the first row of heel stitches, and, second, the first row of stitches of the body of the foot, substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 17th day of December, A. D. 1891.

JOSEPH BLACK, JUNR.

In presence of:—

J. BONSALE TAYLOR,
F. NORMAN DIXON.