

Aug. 30, 1960

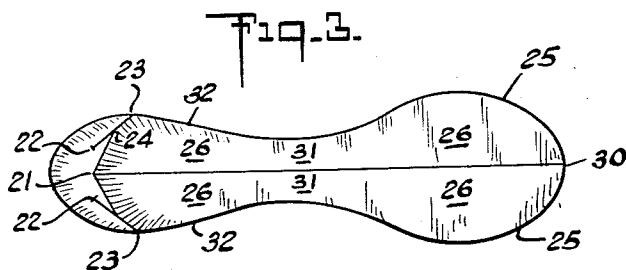
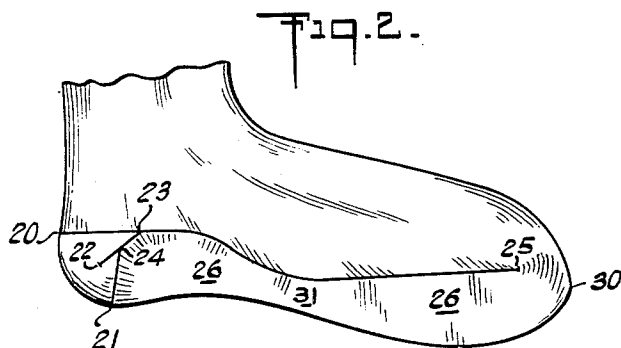
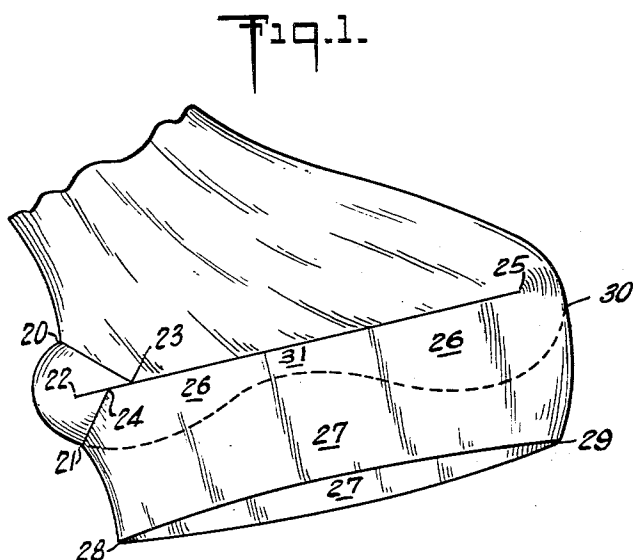
J. L. GETAZ

2,950,611

CIRCULAR KNIT HOSIERY AND METHOD OF CLOSING THE FOOT OF SAME

Filed Dec. 23, 1955

2 Sheets-Sheet 1



INVENTOR:
JAMES L. GETAZ
BY
Curtis, Morris & Safford
ATTORNEYS:

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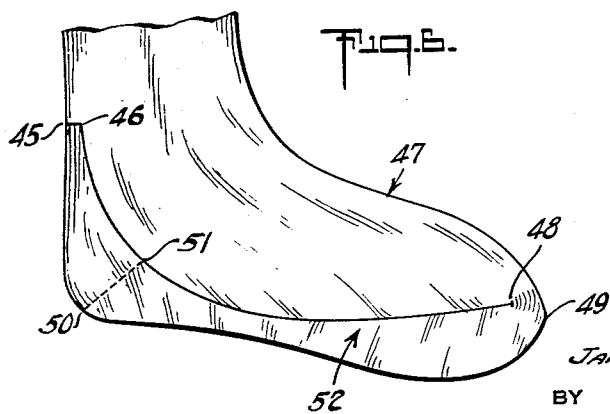
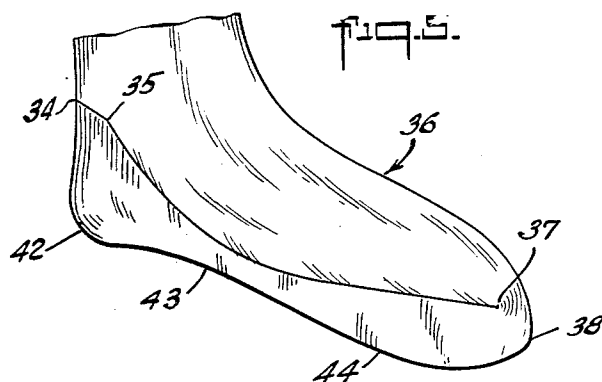
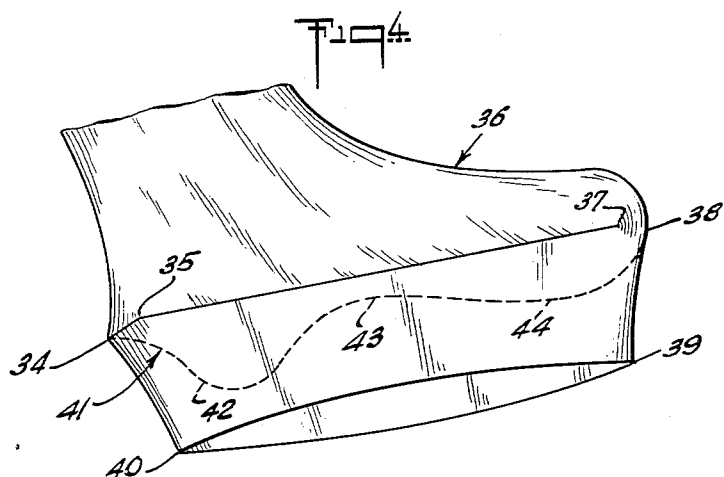
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2 Sheets-Sheet 2



INVENTOR:
JAMES L. GETAZ

BY

Curtis, Morris & Cafford
ATTORNEYS

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2,950,611

CIRCULAR KNIT HOSIERY AND METHOD OF
CLOSING THE FOOT OF SAME

James L. Getaz, New York, N.Y., assignor of seventy-five percent to United States Trust Co., New York, N.Y.

Filed Dec. 23, 1955, Ser. No. 555,167

23 Claims. (Cl. 66—186)

This invention is related to knitted hosiery and particularly to a novel hosiery construction and to a method of closing the foot of hose knitted on a circular knitting machine.

As is well known, the manufacture of hosiery is divided into two basic methods, i.e., full fashioned and circular knit. In the former the hose is knitted flat and after the knitting is completed, the two sides of the hose are folded together and the edges are sewn, with a seam which runs lengthwise of the foot and which extends to the end of the toe. This seam is located on the bottom of the foot where it is not visible when the hose is worn, and, although it is not a flat seam, has been found not to cause any discomfort to the wearer. It provides a quick and inexpensive method of closing the toe and is currently used for making most ladies' hose.

In the manufacture of circular knit hose, the closing of the toe, according to the method which is now in use, is more difficult. The seam instead of running lengthwise of the foot, is across the foot near the toes and is at a right angle to the length of the foot. This seam also extends halfway around the sides of the foot, and, because of its location, must be a flat seam in order to be comfortable to the wearer and acceptable to the trade. To make this seam in a satisfactory manner it is necessary for the operator to place by hand each loop at the end of the toe portion of the hose on one of the points of the dial of a looping machine. The loops of the instep portion are likewise individually placed on the same points as the loops of the foot portion and these pairs of loops are sewn together to close the toe.

This operation of putting the loops on the points of a looper dial is tedious and requires a long period of training on the part of the operator before sufficient skill can be obtained. In fact, this looping of circular knit hosiery is generally agreed to be the most difficult manual operation presently involved in the commercial manufacture of hosiery.

In my copending application Serial No. 472,440 filed December 1, 1954 (now Patent No. 2,740,279, issued April 3, 1956), I have disclosed a novel circular knitted hose construction wherein the toe is closed by a seam which, instead of running transversely of the foot, extends lengthwise of the foot along the bottom thereof. The seam is thus placed in such a position that it need not be a flat seam to be comfortable to the wearer and acceptable to the trade, and it may be made without the tedious manual operation of putting the loops individually on the points of a looper dial.

The specific method disclosed in said copending application is applicable to all types of circular knit hosiery including ladies' fine gauge nylon hosiery, although, for reasons which will appear hereinafter, it is not as well adapted for ladies' hosiery as for men's. The present invention provides a modified method of closing the foot of circular knit hosiery which is particularly adapted

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for ladies' fine-gauge nylon hosiery, although it is also applicable to other types.

On account of the very fine yarn which is used in ladies' hose, it is desirable to strengthen those portions of the foot which are subject to the greatest wear by knitting such portions of heavier yarns than are used in the leg and upper portion of the foot. It is also important that these portions which contain the heavier yarn do not extend up the sides of the foot where their appearance is not desirable. It has been customary to knit the heel and toe of heavier yarn, but the sole portion between the heel and toe has been left without being strengthened because it is not practicable to use a splicing yarn in this kind of fabric, and no other method has heretofore been found for reinforcing this portion of the foot. It is one purpose of this invention to construct the entire sole portion of heavier yarn without interfering with the fine yarn which is used on the sides and upper portion of the foot.

While it is a simple matter to knit the heel portion of a heavier yarn, the heavy yarn which is used shows on the sides of the heel and detracts from the appearance of the hose. It is also a purpose of this invention to so construct the heel portion that a heavy yarn is used on the bottom and/or the back of the heel and the fine yarn which is used in the leg is used on the sides of the heel.

In the accompanying drawings:

Figure 1 is a side view of the foot portion of one form of hose constructed in accordance with my invention as it comes from the knitting machine.

Figure 2 is a side view of the foot portion of the hose shown in Figure 1, after the hose has been finished.

Figure 3 shows the sole portion of the hose as it appears on the bottom of the foot of the wearer.

Figure 4 is a side view of an alternative hose construction embodying features of my invention, as the hose comes from the knitting machine.

Figure 5 is a side view of the hose shown in Figure 4 after the hose has been finished.

Figure 6 is a side view of a completed hose made in accordance with a third alternative method within the scope of my invention.

A distinguishing feature of the hose construction shown in Figures 1-3 is that after the knitting of the heel portion the knitting of the instep and toe portions is begun immediately without knitting a foot portion by continuous rotation. The steps of knitting are as follows:

The knitting of the leg continues to 20 in the usual manner. Then the instep needles are raised out of action and the heel portion is knitted of heavy yarn to 21 with the gore 22-23. The lowering of the needles into action as the knitting of the heel is being completed is shown as stopped at 21, making the last course of the heel along the line 21-24. This is not essential, but it avoids a sharp angle at 23 in the knitting of the first courses of the sole portion 26.

At the completion of the knitting of the heel, all of the needles which were used in knitting the heel are raised out of action and all of the instep needles are lowered into position for knitting, and a long gore is knitted from 23 to 25 on each side of the fabric as needles are raised with the reciprocation of the cylinder. The length of this gore is made possible by the large number of needles in a fine gauge machine and also by a special arrangement for raising the needles as the cylinder is reciprocated. Instead of raising a needle with each movement of the cylinder, the raising of a needle is omitted on every third reciprocation on both sides in both gores. The different sizes of the length of the foot are obtained by varying that portion of the length of the gore in which the raising of needles on certain movements of the cylinder are omitted.

After the completion of the gore 23—25, all needles are put into action and the remaining portion of the hose is knitted with heavier yarn, including the sole portion 26 and the marginal fabric 27 to the opening 28—29. The hose is then cast from the knitting machine; the two sides of the fabric are brought together in alignment with each other, and the seam 30—21 is sewn, the marginal fabric 27 being cut away during the sewing operation.

The hose is then preboarded to the shape which is shown in Figure 2. In shaping the hose, advantage is taken of the property of nylon which permits the fabric to be stretched and set in its stretched position by preboarding at a high temperature. The sole portion 26 is knitted with a loose stitch in the heavier yarn so that this portion of the fabric may be stretched from 30 to 21. The narrow portion 31 of the sole portion is brought into the position shown in Figure 2 in preboarding, which causes the gore 23—25 to be curved as shown. By combining the portion 26 from 21—24—23—32 (Figure 3) with the heel a long low heel is obtained which is made of heavy yarn which does not extend on the sides of the heel when the hose is on the foot of the wearer.

The hosiery construction shown in Figures 4 and 5 is generally similar except that after knitting of the leg, instead of knitting the heel, as is customary, first the instep and then the toe are knitted with the heel pocket ultimately being formed by shaping of the sole fabric. The knitting of the leg portion of the hose proceeds by continuous rotation of the needle cylinder until the point 34 is reached. Thereupon the needles between the points 34 and 35 are raised out of action and the instep portion 36 of the hose is knitted out of the same relatively fine yarn as the leg portion by reciprocation of the cylinder, with an extended gore 35—37 being formed along either side of the foot by raising out of action one needle at each side of the instep group on two out of each three reciprocations of the cylinder.

When knitting to the points 37—38 has been completed, all the needles are again placed into position for knitting and the additional fabric 38—39—40—34—35—37 is knitted by continuous rotation of the cylinder employing a yarn which is relatively heavier than that used for knitting the leg and instep portions. The hose is then cast from the needles, leaving the opening 39—40.

This opening is then closed by sewing an irregular seam of stitches 41 along the additional fabric, for example from the point 34 to the point 38. This seam is contoured so as to provide a heel pocket 42, a narrow arch portion 43 and a wider ball-and-toe portion 44. The additional fabric beyond this seam 41 is cut away, preferably, but not necessarily, at the time the seam is sewn.

The hose is then preboarded to the shape shown in Figure 5, and set in this shape by subjection to a high temperature.

Figure 6 illustrates a third embodiment of my invention, which is similar to that shown in Figures 4 and 5 except that the fabric at the back portion of the heel is knit by reciprocation of the cylinder. In knitting the hose of Figure 6, the leg portion of the hose is knitted on continuous rotation until the point 45 is reached. Then the needles between the points 45 and 46 are raised out of action and the instep portion 47 is knitted out of the same relatively fine yarn as the leg portion by reciprocation of the cylinder, with an extended gore 46—48 being formed along each side of the foot by raising out of action one needle at each side of the instep group on some, but not all, of the reciprocations of the cylinder.

When knitting to the points 48—49 has been completed, the needles between these points are raised out of action, and the needles between the points 45—46 are again placed in knitting position. The fabric in the area 45—46—51—50 at the back of the heel is then knitted by reciprocation of the cylinder employing a yarn which is relatively heavier than that used for knitting the leg and instep portions, with additional needles being placed

into action at either side of the heel group on successive reciprocations of the cylinder to cause this fabric to adjoin the portion 46—51 of the gore.

Then all of the needles are placed back into action, and the additional fabric 52 is knitted out of the relatively heavier yarn by continuous rotation of the cylinder. The hose is then cast from the machine, and a longitudinal seam of stitches is sewn in the additional fabric from 49 to 50 to close the foot of the hose, with the fabric beyond this seam being cut away.

The embodiment of Figure 6 is somewhat more difficult to make than that of Figures 4 and 5, but it has the advantage that the sole fabric knitted on continuous rotation extends only from 49 to 50 and need not be stretched to cover the back of the heel also. This construction also eliminates the seam at the back of the heel.

In using machines which have not been designed for this construction, it is more convenient to change from knitting the instep portion to knitting the heel portion as follows: After the knitting to the end of gore 46—48 is reached, all needles are pulled down to knitting position and a few courses, preferably four, are knitted by continuous rotation of the cylinder while the clutching of the cylinder is being changed, and then all needles except those between points 45 and 46 are raised out of action and the knitting of the heel portion is begun by reciprocation.

In each of the constructions which are shown in this application the length of the narrowing gores which are formed in knitting the instep are much longer than would be formed in the customary method by raising a needle with each reciprocation of the cylinder, and, as mentioned above, these gores may be lengthened for a given number of needles by omitting the raising of a needle at certain reciprocations. But when a needle is raised at the end of a reciprocating stroke, the yarn is wrapped around it, and this forms a tighter stitch than if the raising of a needle were omitted. In order to make this tighter stitch throughout the length of these gores and to obtain the additional length of these gores which is required, the following method of knitting the gores is preferred:

If it is desired to make a narrowing gore, or a certain portion of it, twice as long as it would normally be, that is, knit twice as many courses as would normally be knitted by raising a given number of needles, a needle is raised out of action at every reciprocation, and at every fourth reciprocation two needles are pulled down into knitting position. Thus, in four reciprocations, four needles have been raised and two have been pulled down, with the result that only two additional needles have been raised out of action. The proportion of the extension of the length of the gore may be varied by continuing to raise one needle with each stroke and varying the frequency with which two needles are pulled down into knitting position. Similarly, if it is desired to double the length of a widening gore, this may be done by raising one needle at each reciprocation and by repeatedly pulling down two needles at each of three successive reciprocations and not pulling down any needles at the fourth one, and the length of the widening gore may be varied by varying the frequency with which the pulling down of two needles is omitted.

This means of varying the pulling down of needles in making these gores is useful in two ways. First it permits the shaping of the curve which separates the heavier portions of fabric which form the sole and heel from the lighter fabric which forms the instep and upper portion of the toe. At the beginning of the gore the width of the lighter fabric is decreased slowly, as shown in Figure 6, for example, by raising a needle out of action on each reciprocating stroke of the cylinder and pulling down two needles on every third stroke of the cylinder and omitting this pulling down on two succeeding strokes and this is repeated until the wider portion of the heel is reached and to form this wider portion, the two needles are pulled

down less frequently, such as every fourth stroke or every fifth, or if it were desired to widen the heel portion more sharply, a number of courses might be knitted without pulling down any needles. Similarly as the knitting of the gore proceeds through the center of the foot where the sole portion is narrow, it may be desirable to pull down needles every third stroke, but as the gore approaches the end of the foot, needles may be pulled down less frequently to give the curve of the gore a more oblique angle with the sides of the foot. These variations in pulling down needles are controlled by lugs on the links of the chain of the machine and are applied to a widening gore in the same manner.

The other way in which this changing of the gore is useful is in changing the size of the foot. As the gore starts at the heel portion and extends to near the end of the toe, it is necessary to change the length of this gore with every change in size, and this is accomplished as described above.

From the foregoing description it will be understood that the present invention provides a hosiery construction wherein the entire sole of the foot is formed of relatively heavy yarn which does not extend far up the sides or across the top of the foot. The foot of the hose may be closed by a seam of stitches extending longitudinally of the foot and along the bottom thereof. It will thus be appreciated that the aforementioned and other desirable objectives of the invention have been achieved. However, it should be emphasized that the particular embodiments of the invention described hereinabove and shown in the accompanying drawing are intended as merely illustrative rather than as restrictive of the invention, and that various modifications may be made therein without departing from the scope of the invention as defined by the appended claims.

I claim:

1. The method of forming the foot portion of circular knit hose which comprises knitting gores which extend generally along the sides of the foot, knitting additional fabric adjoining said gores, said additional fabric being at least of sufficient length to complete the sole portion of the foot, bringing the two sides of said additional fabric together in alignment with each other, and sewing the two sides of said additional fabric together with a seam of stitches extending longitudinally of the foot and along the sole portion thereof.

2. The method of forming the foot portion of circular knit hose which comprises knitting the instep portion of the foot of a body yarn, with gore portions at either side of said instep portion extending generally along the sides of the foot, forming said gore portions into gores by knitting adjoining the same additional fabric of a yarn of a relatively heavier weight than said body yarn, said additional fabric being of sufficient length to complete the sole portion of the foot, bringing the two sides of said additional fabric together in alignment with each other, and sewing the two sides of said additional fabric together with a seam of stitches extending longitudinally of the foot and along the sole portion thereof.

3. The method of knitting the foot portion of hose knit in a knitting machine having needles in a circular cylinder, which comprises raising out of action a first group of needles on the instep side of said cylinder, knitting the heel of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, raising said remaining needles out of action and placing said first group of needles in position for knitting, knitting the instep portion of said hose on said first group of needles by reciprocation of said cylinder, raising some of said first group of needles out of action on successive reciprocations of said cylinder to form at either side of said instep portion gore portions extending along the sides of the foot, placing all of said needles in position for knitting, and knitting additional fabric adjoining said heel and said gore portions by continuous rotation of

said cylinder, said additional fabric being of sufficient length to complete the sole portion of the foot.

4. The method of knitting the foot portion of hose knit in a knitting machine having needles in a circular cylinder, which comprises raising out of action a first group of needles on the instep side of said cylinder, knitting the heel of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, raising said remaining needles out of action and placing said first group of needles in position for knitting, knitting the instep portion of said hose on said first group of needles by reciprocation of said cylinder, raising out of action one needle at each side of said first group on some but not all of the reciprocations of said cylinder to form extended gore portions along the sides of the foot, placing all of said needles in position for knitting, and knitting additional fabric adjoining said heel and said gore portions by continuous rotation of said cylinder, said additional fabric being of sufficient length to complete the sole portion of the foot.

5. The method of knitting the foot portion of hose knit in a knitting machine having needles in a circular cylinder, which comprises raising out of action a first group of needles on the instep side of said cylinder, knitting the heel of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, immediately thereafter and without knitting any intervening courses of loops by continuous rotation of said cylinder, raising said remaining needles out of action and placing said first group of needles in position for knitting, knitting the instep portion of said hose on said first group of needles in said cylinder by reciprocation of said cylinder, raising some of said first group of needles out of action on successive reciprocations of said cylinder to form at either side of said instep portion gore portions extending along the sides of the foot, placing all of said needles in position for knitting, and knitting additional fabric adjoining said heel and said gore portions by continuous rotation of said cylinder, said additional fabric being of sufficient length to complete the sole portion of the foot.

6. The method of forming the foot portion of hose using a circular knitting machine, which comprises raising out of action a first group of needles on the instep side of said cylinder, knitting the heel of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, knitting the instep portion of said hose on said first group of needles by reciprocation of said cylinder, raising some of said first group of needles out of action on successive reciprocations of said cylinder to form at either side of said instep portion gore portions extending along the sides of the foot, placing all of said needles in position for knitting, knitting additional fabric adjoining said heel and said gore portions, by continuous rotation of said cylinder, said additional fabric being of sufficient length to complete the sole portion of the foot, casting said fabric from said needles, bringing the two sides of said additional fabric together in alignment with each other, and sewing the two sides of said additional fabric together with a seam of stitches extending longitudinally of the foot and along the sole portion thereof.

7. The method of knitting the foot portion of hose knit in a knitting machine having needles in a circular cylinder, which comprises raising out of action a first group of needles on the instep side of said cylinder, knitting the heel portion of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, raising said needles out of action on successive reciprocations of said cylinder, and then placing some but not all of said first group of needles back into action on successive reciprocations of said cylinder, knitting the instep portion of said hose on said first group of needles by reciprocation of said cylinder, raising some of said first group of needles out of action on successive reciprocations of said cylinder to form at either side of said instep

portion gore portions extending along the sides of the foot, placing all of said needles in position for knitting, and forming said gore portions into gores by knitting additional fabric adjoining said heel and the said gore portions by continuous rotation of said cylinder, said additional fabric being of sufficient length to complete the sole portion of the foot.

8. The method of forming the foot portion of circular knit hose which comprises knitting the instep portion of a body yarn, forming gore portions which extend generally along the sides of the foot, forming said gore portions into gores by knitting additional fabric adjoining the same, said additional fabric being of a relatively heavier yarn than said body yarn and being at least of sufficient length to complete the sole portion of the foot, bringing the two sides of said fabric together with an irregular seam of stitches extending from the heel to the toe of said foot and providing a heel pocket, cutting off the additional fabric beyond said seam, and boarding said hose to cause said additional fabric to extend at least partially up the back of the heel of said foot and place said heel pocket at the heel of said foot.

9. The method of knitting the foot portion of hose knit in a knitting machine having needles in a circular cylinder, which comprises raising out of action a first group of needles on the heel side of said cylinder, knitting the instep and toe portion of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, raising some of said remaining needles out of action on successive reciprocations of said cylinder to form at either side of said instep and toe portions, gore portions extending generally along the sides of the foot, placing all of said needles in position for knitting and forming said gore portions into gores by knitting additional fabric adjoining the same by continuous rotation of said cylinder, said additional fabric being at least of sufficient length to complete the heel and sole portions of said foot.

10. The method of knitting the foot portion of hose in a knitting machine having needles in a circular cylinder, which comprises raising out of action a first group of needles on the heel side of said cylinder, knitting the instep and toe portions of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, raising some of said remaining needles out of action on successive reciprocations of said cylinder to form at either side of said instep and toe portions gore portions extending generally along the sides of the foot from the heel to the toe, raising the rest of said remaining needles out of action and placing said first group of needles back into position for knitting, knitting the back of the heel of said hose by reciprocation of said cylinder, placing some of said remaining needles back into action on successive reciprocations of said cylinder to cause the back of the heel to adjoin a first part of said gore portions, placing all of the needles back into position, and forming the remaining part of said gore portions into gores by knitting additional fabric adjoining the back of the heel, said gore portions and said toe by continuous rotation of said cylinder, said additional fabric being of sufficient length to complete the sole portion of said foot.

11. The method of knitting the foot portion of hose knit in a machine having needles in a circular cylinder, which comprises raising out of action a group of needles at the heel side of said cylinder, knitting the instep portion of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, forming elongated narrowing gore portions at either side of said instep portion by raising needles out of action on successive reciprocations of said cylinder and placing some of said needles back into action on some but not all of said reciprocations, eventually placing all of said needles back into knitting position, and knitting adjoining said gore portions by continuous rotation of said cylinder sufficient additional fabric to complete the sole portion of the foot.

12. The method of knitting the foot portion of hose knit in a machine having needles in a circular cylinder, which comprises raising out of action a group of needles at the heel side of said cylinder, knitting the instep portion of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, forming at either side of said instep portion elongated narrowing gore portions which extend from the heel to the toe of the foot by raising needles out of action on successive reciprocations of said cylinder and placing pairs of said needles back into action on non-consecutive reciprocations of said cylinder separated by a number of intervening reciprocations dependent on the desired length of the foot, eventually placing all of said needles back into knitting position, and knitting adjoining said gore portions by continuous rotation of said cylinder sufficient additional fabric to complete the sole portion of the foot.

13. The method of knitting the foot portion of hose knit in a machine having needles in a circular cylinder, which comprises raising out of action a group of needles at the heel side of said cylinder, knitting the instep portion of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, forming at either side of said instep portion elongated, narrowing, irregularly shaped gore portions by raising needles out of action on successive reciprocations of said cylinder and placing pairs of said needles back into action on non-consecutive reciprocations of said cylinder with varying numbers of intervening reciprocations in accordance with the variations in the angle of said gore portions at different points along their length, eventually placing all of said needles back into knitting position, and forming said gore portions into gores by knitting adjoining the same by continuous rotation of said cylinder sufficient additional fabric to complete the sole portion of the foot.

14. The method of knitting the foot portion of hose in a knitting machine having needles in a circular cylinder, which comprises raising out of action a first group of needles on the heel side of said cylinder, knitting the instep and toe portions of said hose on the remaining needles in said cylinder by reciprocation of said cylinder, raising some of said remaining needles out of action on successive reciprocations of said cylinder to form at either side of said instep and toe portions gore portions extending generally along the sides of the foot from the heel to the toe, placing all of said needles back into position for knitting, knitting a few additional courses by continuous rotation of said cylinder, raising out of action said remaining needles, knitting the back of the heel of said hose by reciprocation of said cylinder, placing some of said remaining needles back into action on successive reciprocations of said cylinder to form widening gore portions adjoining said additional courses, placing all of the needles back into knitting position, and by continuous rotation of said cylinder knitting sufficient additional fabric to complete the sole portion of said foot.

15. In circular knit hose, a foot portion formed of courses of loops of yarn, gores extending along the sides of the foot from points adjacent the heel to points adjacent the toe, the courses on the upper side of said gores extending obliquely to said gores and the courses on the lower side of said gores extending parallel to said gores, and a seam of stitches extending longitudinally of said foot along the bottom thereof to close the same.

16. In circular knit hose, a foot portion containing a heel, gores extending along either side of said foot portion from said heel to points adjacent the toe of said foot, a sole portion formed of continuous circular courses of loops adjoining said gores at either side and extending from said heel to said toe, and a seam of stitches extending longitudinally of said sole portion to close the same.

17. In circular knit hose, a foot portion having gores extending along the sides of said foot portion from points

adjacent the heel to points adjacent the toe, instep fabric on the upper side of said gores formed of a body yarn, sole fabric on the lower side of said gores formed of a yarn which is relatively heavier than said body yarn, and a seam of stitches extending longitudinally of said foot portion and along said sole fabric to close said foot portion.

18. In circular knit hose, a foot portion having gores extending along the sides of said portion from points adjacent the heel to points adjacent the toe, instep fabric on the upper side of said gores formed of a body yarn, sole and heel fabric on the lower side of said gores formed of a yarn which is relatively heavier than said body yarn, and a seam of stitches extending from the toe of said hose, along the bottom of the sole portion and up the back of the heel to close said foot portion.

19. In circular knit hose, a foot portion having gores extending from the sides of the heel near the angle, obliquely downwardly and forwardly along the sides of the heel to the sides of the foot, thence along the sides of the foot to the toe, the courses on the instep side of said gores and on the back of the heel extending obliquely to said gores, and the courses at the sole of the foot extending at least partly parallel to said gores, and a seam of stitches extending along said sole from the bottom of the heel to the bottom of the toe to close the foot.

20. In circular knit hose, a leg portion formed of continuous circular courses of loops, a gore commencing at said leg portion and extending along the foot of said

hose for substantially the full length of the foot, an instep portion which is joined to one side of said gore, and a heel portion which is joined to the opposite side of said gore.

21. In circular knit hose, an instep portion and a heel portion, a first gore which forms the edge of said instep portion, a second gore which is parallel to said first gore and which forms the edge of said heel portion, and one or more continuous circular courses of loops interposed between said two gores.

22. In circular knit hose, an instep portion, a heel portion and a sole portion, the first course in said sole portion being joined with courses in said instep portion which extend obliquely to said first course, and which is joined with a course in said heel portion which extends parallel to said first course.

23. In circular knit hose having a leg portion formed of continuous circular courses of loops, gores extending from the heel to the toe of said hose, an instep portion and a sole portion, on opposite sides of said gore, the courses in said sole portion extending obliquely to the courses of said instep portion and parallel to the courses in said leg portion.

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