June 3, 1941. A. R. BELL 2,244,604

STOCKING

Filed May 2, 1940

Fig. 1.

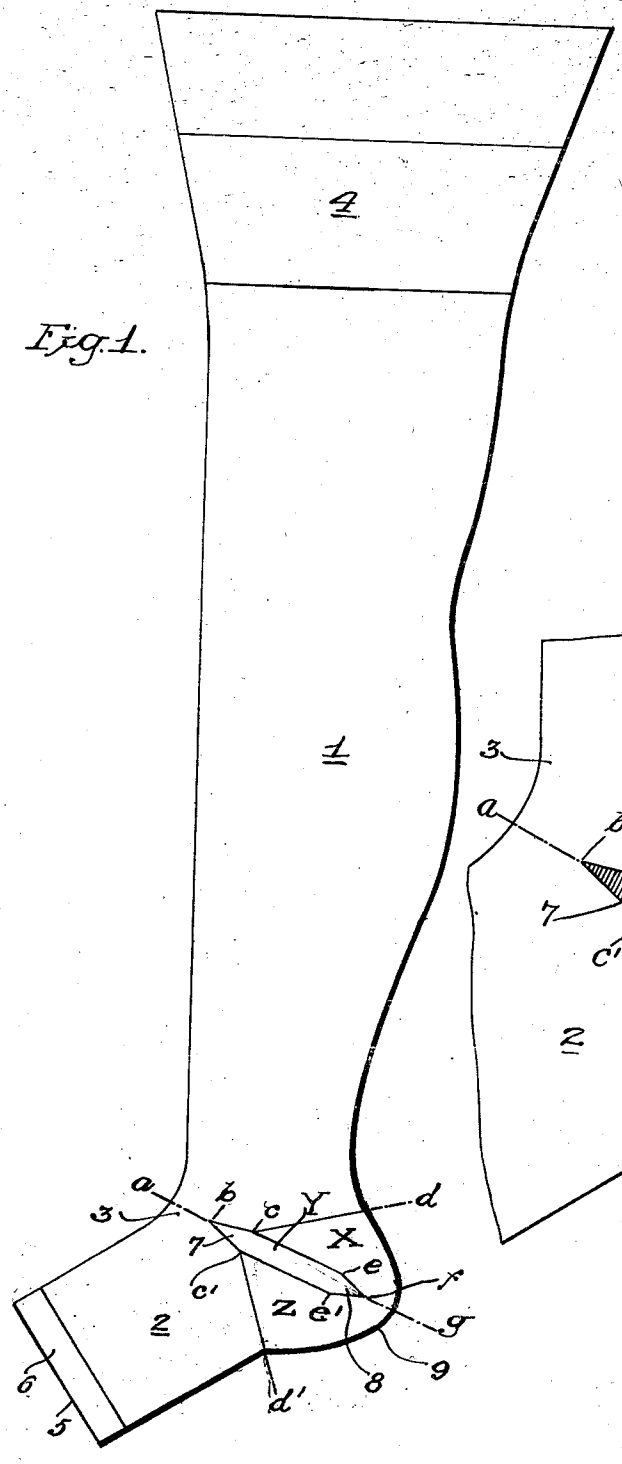
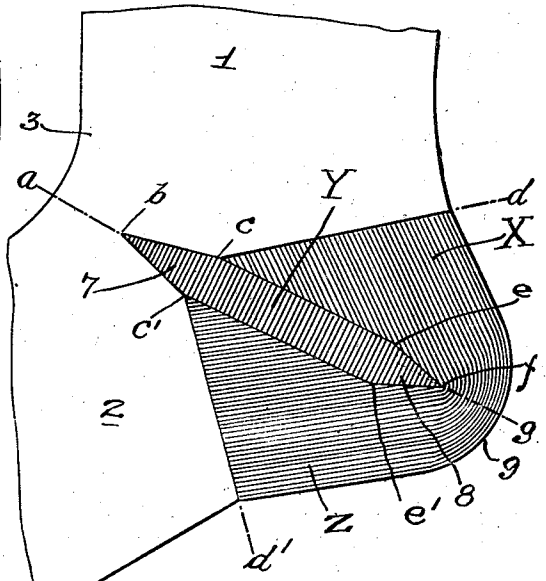


Fig. 2.



Inventor
Arthur R. Bell.
by his Attorneys
Howson & Howson

Patented June 3, 1941 2,244,604

UNITED STATES PATENT OFFICE

2,244,604

STOCKING

Arthur R. Bell, Philadelphia, Pa., assignor of one-fourth to Walter J. Horn and one-fourth to Franklin S. Horn, both of Philadelphia, Pa., and one-fourth to Albert J. Miller, Bala Cynwyd, Pa.

Application May 2, 1940, Serial No. 333,053

5 Claims. (Cl. 66—187)

This invention relates to elastic surgical hosiery of the seamless tubular type, wherein the garments are formed of successively interknit courses of stitches composed of elastic bearing yarn, i. e. a yarn having a fine gage rubber core wrapped spirally with a so called inelastic thread of silk, cotton, etc. as distinguished from the type of surgical hosiery which is knit of inelastic yarn and includes a strand of bare or covered rubber laid in each of the courses of stitches of the inelastic thread of which the garment is composed.

The present invention is particularly directed to that type of elastic surgical hosiery which includes a soft heel pocket, i. e. a heel pocket devoid of rubber, and wherein the elastic leg and foot embracing portions of the garment merge at the front of the hose opposite the heel.

Heretofore heel pockets in seamless hosiery have been made by reciprocating knitting wherein needles are successively rendered inoperative at each end of each knitting stroke by being picked out of action or by reducing the travel of the thread guide until a comparatively small number of needles remain in action; and then reversing the operation by bringing the needles successively into action until all the needles are again knitting. This produces a line at each side of the heel which is commonly called the "heel gore." This gore line extends from a point adjacent the terminus of the heel to a point where the round and round knitting of the leg by the elastic yarn stopped and the round and round knitting of the foot by the elastic yarn began. This condition creates a considerable strain on the inelastic yarn of which the heel pocket is formed at the common point where the heel gore and the round and round knitting courses of the leg and foot portions meet, and also at various points along the gore.

The object of the present invention is to relieve the heel pocket of the above noted strains and to distribute such strains in a manner to reduce the strain to substantially zero at any given point.

In the accompanying drawing:

Fig. 1 diagrammatically illustrates a surgical garment made in accordance with the principles of the present invention; and

Fig. 2 is a diagrammatic enlarged view of the heel and adjacent portions of the garment.

As shown in Fig. 1, the surgical appliance includes a leg portion 1 knit course by course, in continuous round and round knitting, of an elastic bearing thread, such as a cut or extruded rubber strand spirally covered with a so called inelastic thread composed of silk, cotton, etc.

The round and round knitting with the elastic yarn is stopped at the line *a—b—c—d* and the knitting yarn is changed to a so called inelastic yarn composed of silk, cotton, wool, etc. and reciprocating knitting is started from the point *c* on one side of the stocking to the point *d* and around the back of the heel to a corresponding point *c* at the opposite side of the stocking.

The reciprocating knitting continues throughout the area X and needles of the knitting machine are rendered inactive during the knitting of the successively formed part courses until the area X is completed to the line *c—e—f—g*.

A second inelastic yarn is then brought into action and one of these yarns is knit into one side of the heel pocket while the second is knit into the opposite side of the heel pocket. A complement of needles on each side of the heel, corresponding to the line *b—c—e—f*, is then rendered active and the two inelastic yarns are respectively fed thereto, one on one side of the heel and the other on the opposite side of the heel.

Reciprocating knitting on each side of the heel is started along and confined to the limits of the line *b—c—e—f*. At the terminal end of each knitting stroke, needles at the opposite ends respectively of the above noted complements are rendered inactive as subsequent successive part courses are formed to produce a gore area Y, down to the line *c1—e1* on each side of the heel.

The second inelastic knitting yarn is then thrown out of action and reciprocating knitting with the one inelastic yarn is begun on the needles which have been holding the stitches constituting the line *f—g* on the one side of the heel and around the back of the heel to a corresponding point *f* on the opposite side of the heel.

The strokes of reciprocating knitting are lengthened as each succeeding part course is formed, by picking up needles until the line *f—e1* is completed and thereafter until the lower area Z is completed to the line *c1—d1*.

The knitting yarn is then changed from the inelastic to the elastic yarn and continuous round and round knitting is started on the line *a—b—c1—d1* to complete the foot portion 2 of the stocking which is integrally formed with the leg portion 1 through the front elastic area 3.

The above procedure produces a soft heel pocket defined by the top heel line *b—c—d* and the front heel line *b—c1—d1* with relatively

spaced heel turning points *b*, *c*, *c*1 in each side of the stocking.

If desired, a soft welt **4** may be knit onto the top of the elastic leg **1** and a soft toe (not shown) may also be knit to the terminal edge **5** of the foot **2** which is otherwise provided with a turned hem **6**.

From the above it will be clear that, instead of the strain being concentrated at one heel turning point and along one gore line on each of the opposite sides of the stocking, as in garments of the prior art, the strain in the stocking of the present invention is distributed among the three heel turning points *b*, *c*, and *c*1 and along two gore lines *c*—*e*—*f* and *c*1—*e*1—*f*, on each side of the stocking of the present invention, as a result of forming the gore inserts Y, Y on the opposite sides respectively of the heel pocket, with the pointed sections **7** and **8** extending forwardly between the leg and foot and rearwardly toward and terminating short of the convex **9** of the heel.

The stocking of the present invention is of the seamless fashioned type as produced on the flat double needle bank type of machine commonly known as a "Burson," although it may be produced on any suitable circular machine capable of being operated in the manner above noted to form the gore insert or areas Y, Y in the opposite sides respectively of the stocking.

Obviously, the gore insert at each side of the heel may be empoyed in types of seamless hosiery other than elastic surgical hose without departing from the spirit of the invention.

I claim:

1. A seamless stocking comprising a leg, and a foot composed of elastic yarn and a heel composed of relatively inelastic yarn integrally knit with a gore insert also composed of inelastic yarn in each side of the heel and projecting forwardly thereof between the leg and the foot.

2. A seamless stocking comprising a leg, and a foot composed of elastic yarn and a heel composed of relatively inelastic yarn integrally knit with a gore insert also composed of inelastic yarn in each side of the heel and including a pointed section projecting forwardly thereof into the elastic portion of the stocking between the leg and the foot.

3. A seamless stocking comprising a leg, and a foot composed of elastic yarn and a heel composed of relatively inelastic yarn integrally knit with a gore insert also composed of inelastic yarn in each side of the heel and including a pointed section projecting forwardly thereof into the elastic portion of the stocking between the leg and the foot, and a second pointed section projecting rearwardly toward the convex of the heel.

4. A seamless stocking comprising a leg, and a foot composed of elastic yarn and a heel composed of relatively inelastic yarn integrally knit with a gore area also composed of inelastic yarn in each side of the heel formed between two laterally spaced gore lines extending diagonally across the heel and converging to a common point located forwardly of the heel in the elastic portion of the stocking between the leg and foot.

5. A seamless stocking comprising a leg, and a foot composed of elastic yarn and a heel composed of relatively inelastic yarn integrally knit with a gore area also composed of inelastic yarn in each side of the heel formed between two laterally spaced gore lines extending diagonally across the heel and converging to a common point located forwardly of the heel in the elastic portion of the stocking between the leg and foot, said gore lines being respectively intersected by the top and front lines of the heel rearwardly from said common point to provide three relatively spaced heel turning points in each side of the stocking.

ARTHUR R. BELL.