Dec. 3, 1940. E. J. BERGER 2,224,029

METHOD OF STOCKING PRODUCTION

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FIG. I.

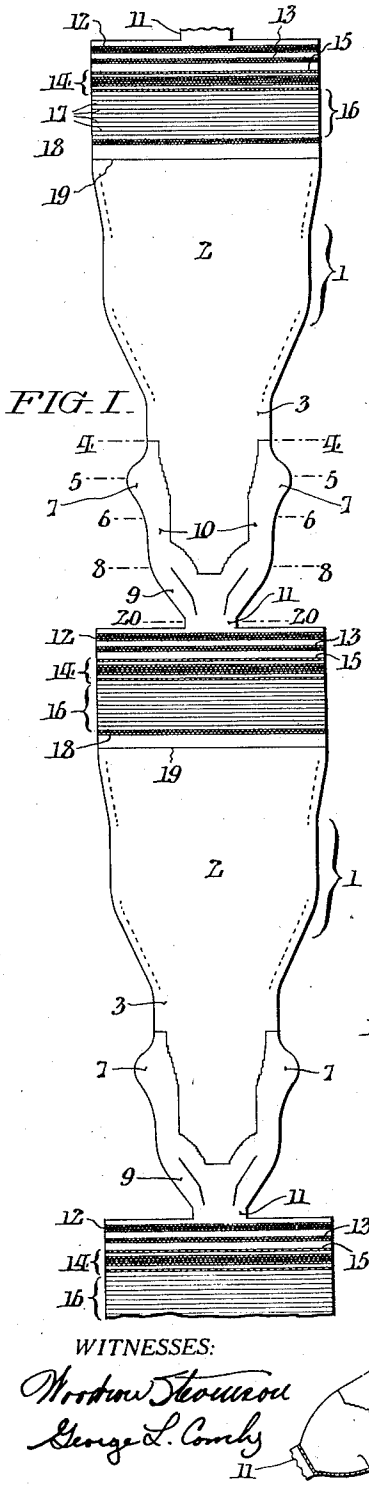


FIG. II.

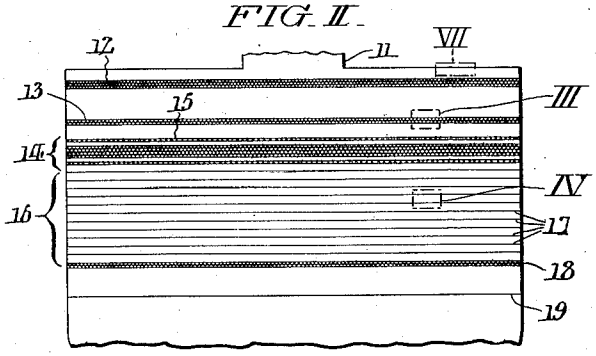


FIG. III.

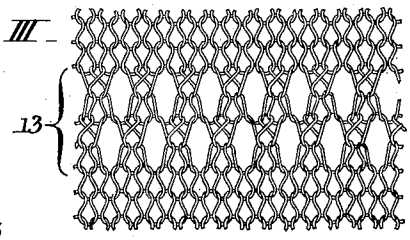


FIG. V.

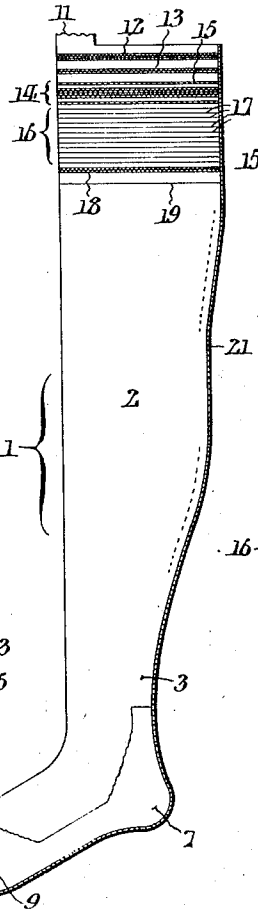


FIG. VI.

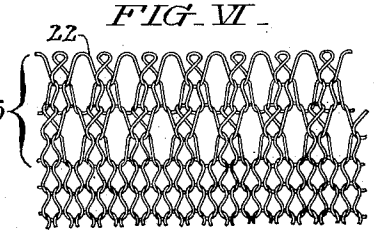
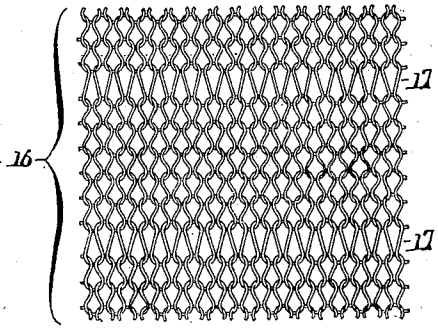


FIG. IV.



WITNESSES:

Woodson Stowers

George L. Comby

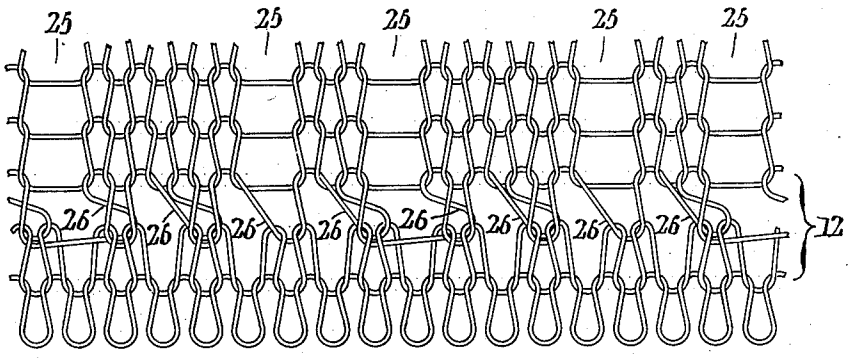
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FIG. VII.



WITNESSES:

Woodrow Stevenson

John C. Bergner

BY

INVENTOR:

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ATTORNEYS.

Patented Dec. 3, 1940

2,224,029

UNITED STATES PATENT OFFICE

2,224,029

METHOD OF STOCKING PRODUCTION

Emil J. Berger, Hatfield, Pa., assignor to Dexdale Hosiery Mills, Lansdale, Pa., a corporation of Pennsylvania

Application July 8, 1939, Serial No. 283,409

2 Claims. (Cl. 66—178)

This invention relates to improved methods of producing stockings, especially shaped flat knitted stockings ordinarily known as full fashioned hosiery.

The chief aim of my invention is to make it possible to produce stockings of the kind referred to more expeditiously and economically than heretofore without sacrifice of quality, and at the same time secure an improved fit particularly in the region of the heels.

The foregoing and other attendant objects and advantages readily realized in practice will appear from the following detailed description of the attached drawings, wherein

Fig. I is a diagrammatic view showing how the blanks for fashioned stockings are formed in accordance with my new method.

Fig. II is a fragmentary diagrammatic view of the upper portion of one of the stocking blanks drawn to a larger scale.

Figs. III and IV are fragmentary views showing the fabric texture respectively within the confines of the dot and dash rectangles at III and IV in Fig. II.

Fig. V shows one of the blanks after having been seamed and pressed.

Fig. VI is a fragmentary detail view showing the top edge of a finished stocking; and

Fig. VII is a fragmentary view of the raw edge portion of the fabric within the confines of the rectangle VII in Fig. II.

In carrying out my invention, I knit on a suitable flat or straight knitting machine of the "Cotton" type, a succession of profiled stocking blanks such as indicated at 1, 1 in Fig. I, in continuous string formation. In knitting the lower portion of the leg 2 of each blank 1, the traverse of the main yarn carrier of the knitting machine is gradually decreased for mergence in smooth curves into the ankle portion 3. Beyond the line 4—4, the throw of the yarn carrier is gradually increased for a time to the line 5—5 and then again gradually decreased to the line 6—6 with incidental formation of lateral heel projections 7, 7. Beyond the line 6—6, the width of the web is maintained constant for a time for the formation of the middle portion of the foot down to the line 8—8, after which the throw of the carrier is again gradually reduced to form the toe tip 9. The foot of the stocking may be reinforced as conventionally indicated at 10, 10 by use of additional yarns in the knitting in a well known way. After the knitting of each blank 1, a short connecting portion 11 is formed in prolongation of the toe tip 9, whereupon a new blank is begun by increasing the traverse of the main yarn feed of the machine suddenly so that its yarn is fed to the full complement of needles, whereupon the operation is repeated as before to complete another blank. This cycle is repeated time after time with resultant production of a series of the blanks 1 in a continuous string as shown in Fig. I.

Immediately upon starting of each blank, a band of picot loops is formed across the full width of the blank as at 12, whereupon a short length of plain fabric is produced, then another band 13 of picot loops, which is succeeded by another short length of plain fabric, and then an ornamental band 14 beginning with a non-ravel course 15 of picot loops. The knitting from the terminus of the toe tip 9 to the course 15 is subsequently removed as will be explained later, and is therefore preferably produced from cheap yarn. Due to lack of control of the yarn at the commencement of a new stocking blank, skips will invariably occur in the portions of the fabric started on the bare needles of the knitting machine at opposite sides of the group holding the narrow toe portion 11 of the previous blank with consequent creation of "ladders" as instanced at 25 in Fig. VII. In order to obviate this difficulty, I employ the picot bar of the knitting machine (which bar has transfer points corresponding to alternate needles) to form the picot bands 12 and 13. Transfer or spreading of loops by the points of the bar onto the needles which failed to function, will, as shown at 26 in Fig. VII, insure formation in the next course, of normal fabric loops.

After the knitting of the band 14, a substantial length 16 of plain fabric is knitted with incidental formation at intervals, of courses 17 of enlarged loops, to provide a welt for the stocking, the texture of the fabric of the welt being clearly shown in Fig. III. At completion of the welt 16 another band 18 of anti-ravel courses is formed to prevent runs which may originate in the welt from continuing down through the leg of the stocking. When an expensive yarn such as silk or rayon is used for the leg and foot portions of the stockings, I may, for the sake of economy, produce the top of the stocking down to a line 19 from silk or rayon. Upon formation of a string of successive stocking blanks in the manner described, I separate the individual blanks by cutting the string crosswise of the narrow connecting portions 11 along lines 20, Fig. I. Each separate blank 1 is thereupon folded longitudinally to bring its selvages into superimposition, and then sewed up the back as at 21 in Fig. V by the use of a suitable over-edge sewing machine. The toe

tip 9 is, however, preferably closed as ordinarily by a looping operation. With the immediate foregoing accomplished, the stocking is boarded and pressed to shape.

Finally the excess ravel fabric at the top of the blank is removed down to the course 15, which provides a finish edging as shown at 22 in Fig. V for the top of the completed stocking; and the small projecting portion 11 at the toe raveled back to looping line which closes the toe tip.

By forming the heel portions of the blank as hereinbefore described, a better fitting heel is obviously had in the finished stocking.

From the foregoing, it will be seen that I have provided an improved method whereby full fashioned stockings may be more expeditiously and economically produced in quantity than with the usual conventional methods usually employed where the leg of each stocking is knitted on one machine and the foot completed on another or where transfers must be effected by hand incident to heel formation. As will be readily understood by those familiar with the art, my new method may be practiced on the usual types of full fashioned stocking knitting machines embodying multiple knitting sections, as well as upon single unit machines such as disclosed for example, in U. S. Patent #1,982,991 granted to Kenneth Howie and Charles C. Kridele on December 4, 1934.

Having thus described my invention, I claim:

1. The method of knitting, as a flat web of indefinite length, a continuous succession of fashioned stocking blanks complete with feet, without transfer and without stopping the producing machine, by repetition of a cycle which consists in starting at the top of the stocking with a non-ravel band; then knitting a welt and a leg; then, as the knitting proceeds, forming lateral heel projections by first widening the web by progressive addition of end loops at the selvage, and afterwards progressively narrowing for a time to the width of the instep; then continuing with the knitting of a foot with a narrowed toe; then knitting a number of ravel courses corresponding in width to the toe tip; thereupon causing the yarn to be immediately fed to the entire set of needles necessary to produce the top of the next stocking blank, with incidental formation occasionally of picot loop bands to insure formation of loops on all the needles; separating the individual blanks by severing the web crosswise of the narrow ravel portions connecting them; and after forming each blank into a completed stocking by sewing, looping and pressing operations, removing the excess fabric respectively at the top and bottom of each blank back to the non-ravel band and back to the seam closing the toe tip.

2. The method of knitting according to claim 1 including the further step of occasionally forming in large looping courses during the knitting of the welt and finishing said welt with a picot course.

EMIL J. BERGER.