No. 682,904. Patented Sept. 17, 1901.

J. H. BLAETZ.

HOSIERY.

(Application filed May 6, 1901.)

(No Model.)

Fig. 2.

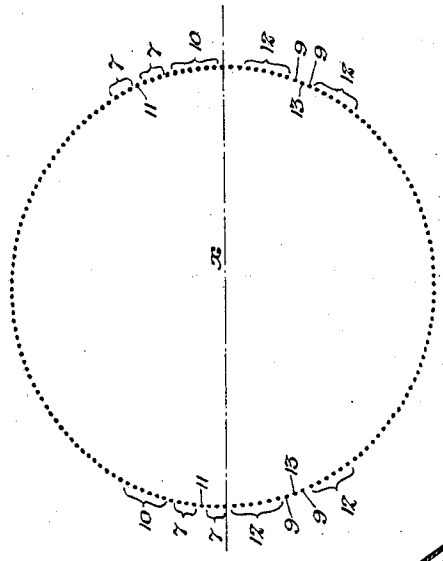


Fig. 1.

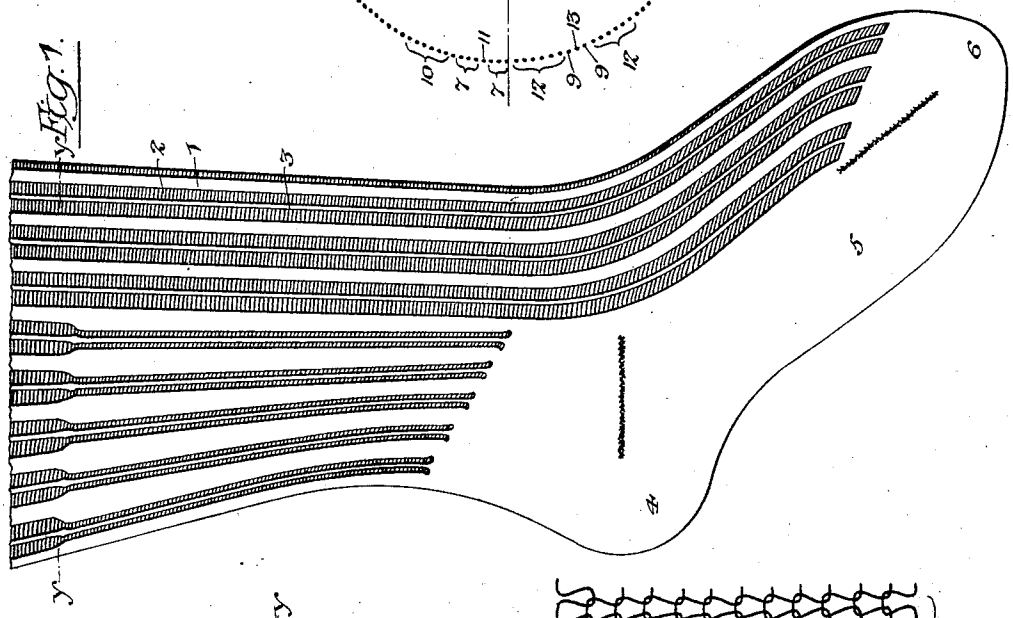


Fig. 3.

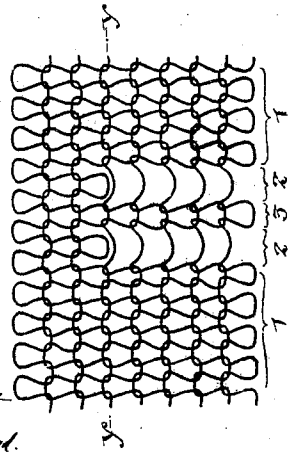
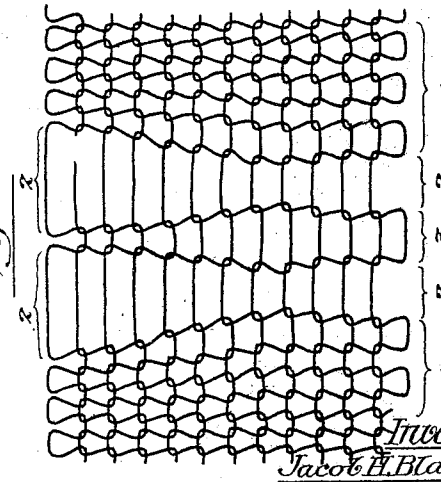


Fig. 4.



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UNITED STATES PATENT OFFICE.

JACOB H. BLAETZ, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ROBERT PILLING AND RICHARD MADELEY, OF SAME PLACE.

HOSIERY.

SPECIFICATION forming part of Letters Patent No. 682,904, dated September 17, 1901.

Application filed May 6, 1901. Serial No. 58,964. (No model.)

To all whom it may concern:

Be it known that I, JACOB H. BLAETZ, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Hosiery, of which the following is a specification.

The object of my invention is to produce stockings or half-hose having a novel open-work effect in the leg or leg and foot and at the same time in the case of stockings to shape or fashion the calf and ankle, an object which I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 represents a view of the foot and the lower portion of the leg of a stocking made in accordance with my invention, and Figs. 2, 3, and 4 are views illustrative of the method of producing the same.

The stocking is of the type known as "seamless" stockings—that is to say, the leg and foot tubes are formed of continuous circular courses of stitches knitted with a single thread, the heel consists of a pocket formed by to-and-fro knitting and a narrowing and widening operation upon the needles of one-half of the head, and the toe consists of a similarly-formed pocket having its edge stitches subsequently united to those around the end of the upper half of the foot-tube.

With the exception of the heel, sole, and toe the stocking is composed of closely-knitted vertical stripes 1, alternating with open-work stripes 2, each of the closely-knitted stripes comprising a series of adjoining wales and the open-work stripes being composed of laterally-extending threads running from one closely-knitted stripe to the other and by preference forming a closely-knitted wale 3 at the center of each open-work stripe, although the presence of this central wale is not essential to the proper carrying out of my invention. The open-work stripes are of two different widths—namely, wide stripes in the leg, the front of the ankle, the instep, and the top of the foot and narrow stripes in the rear of the ankle, this change in the character of the open-work stripes having the effect of fashioning or shaping the stocking at the calf as well as changing the appearance of the ankle portion of the stocking when compared with the appearance of the upper or leg portion of the same.

The heel 4, sole 5, and toe 6 of the stocking are composed of closely-knitted fabric, since open-work effects in these portions of the stocking would be objectionable not only in the use of the stocking, but because the heel and toe are produced by the operation known as "seamless knitting," whereby pockets are formed by successively dropping out of action and then successively bringing into action again needles at the opposite ends of a set upon which to-and-fro knitting is performed, the needles which are successively dropped out of action retaining their stitches until brought into action again. The production of open-work stripes necessitates the removal of certain needles or the dropping of said needles out of action, and if this was resorted in that set of needles upon which the heel and toe pockets are produced it would interfere with the orderly operation of the mechanism, whereby the needles are actuated to produce such pockets.

If desired, the wide open-work stripes in the front of the leg may terminate at the same point as the wide open-work stripes in the back of the leg and the upper portion of the foot may be knitted closely, the same as the sole portion.

The method of knitting the stocking will be understood on reference to Figs. 2, 3, and 4. In Fig. 2 the circle of dots represents the needles of a circular-knitting machine, those needles above the central line x representing the needles which produce the front half of the knitted tube and those needles below said central line representing the needles which produce the rear half of said tube. Certain needles of the upper section are either removed from the machine or permanently dropped out of action, so as to form the open-work stripes 2 of the desired width between the solid stripes in that portion of the tube knitted upon said upper section of the needles. Certain of the needles of the lower section are, however, capable of being moved into and out of action, and in knitting the leg portion of the stocking all of the needles of the lower section remain in action so as to produce a closely-knitted web, but when the

ankle portion of the stocking is reached these controllable needles are permitted to cast their stitches and then remain out of action, the number of needles thus dropped out of action in the lower section, however, being less than the number permitted to remain out of action in the upper section. For instance, in producing a stocking of the character shown in Fig. 1 the upper section of needles would present groups 10 for producing the closely-knitted stripes, single needles 11 for producing the central wales of the open-work stripes, and groups 7 of three inactive needles or spaces representing a like number of removed needles between each single needle 11 and group 10. The lower section of the needles, however, would have groups 12 of needles for producing the closely-knitted stripes separated by groups of three needles each, the central needle 13 of each of these groups being active, and the needles 9, which flank said central needle, being operative or inoperative, as required. At the point where the needles 9 of the lower section are moved out of action, therefore, the fabric produced will resemble that shown in Fig. 3, the wales of stitches corresponding with the needles 9 of said lower section being dropped at the line *y*, which represents the top of the ankle portion of the stocking. After the ankle portion has been knitted with these dropped stitches the needles 9 of the lower section are restored to action again, so as to provide for the making of solid web for the heel, sole, and toe portions of the stocking. When the closely-knitted rear portion of the leg of the stocking is stretched, the drop-stitch wales will "run"—that is to say, their stitches will slip through each other, and the knitting-yarn will be drawn straight across from one closely-knitted wale to another, as shown in Fig. 4, so as to produce open-work stripes of the same width as those in the front portion of the leg. Hence I am enabled to produce the desired uniform open-work effect throughout the leg of the stocking, make a foot with seamless heel and toe, and shape the calf and ankle portion of the stocking, the latter feature overcoming an objection to ordinary seamless stockings, in which the leg-tube as knitted is of uniform diameter throughout, and in which the shape of the stocking is due to stretching it over a press-board, and is hence not a permanent fashioning, such as that of the ordinary "full-fashioned" or one made in accordance with my invention.

Although I have shown my invention as applied to a stocking, it will be evident that it is applicable as well to half-hose.

Any ordinary means may be employed for moving the needles 9 into and out of operation. By preference said needles are provided with longer bits than the other needles, so that they can be controlled by a special adjustable cam independently of the knitting-cams, whereby they may be caused to cast their stitches and then pass out of control of the knitting-cams until their use is again required, and the needles 7 may be likewise controlled in cases where it is desired to knit a close top in the foot of the stocking or a close front in the ankle.

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

1. Hosiery having a leg portion in which closely-knitted stripes alternate with wide open-work stripes, and an ankle portion in which closely-knitted stripes alternate with open-work stripes narrower than those in the leg portion.

2. Hosiery having leg and ankle portions composed of closely-kitted stripes alternating with open-work stripes, the open-work stripes in the rear portion of the ankle being narrower than those in the front portion of the ankle and in the leg.

3. Hosiery having closely-knitted stripes alternating with open-work stripes in the leg, ankle and top of the foot, the open-work stripes in the rear portion of the ankle being narrower than the others.

4. Hosiery having closely-knitted seamless heel and toe portions and leg and ankle portions comprising closely-knitted stripes alternating with open-work stripes, the open-work stripes in the rear portion of the ankle being narrower than the others and extending down to the top of the heel.

5. Hosiery having closely-knitted seamless heel and toe portions and leg and ankle portions comprising closely-knitted stripes alternating with open-work stripes, the open-work stripes in the rear portion of the ankle being narrower than the others.

6. Hosiery having closely-knitted seamless heel, sole and toe portions, and leg, foot and ankle portions comprising closely-knitted stripes alternating with open-work stripes, the open-work stripes in the rear portion of the ankle being narrower than the others.

7. Hosiery having closely-knitted seamless heel, sole and toe portions and leg, foot and ankle portions comprising closely-knitted stripes alternating with open-work stripes, the open-work stripes in the rear portion of the ankle being narrower than the others and extending down to the top of the heel.

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

JACOB H. BLAETZ.

Witnesses:
F. E. BECHTOLD,
JOS. H. KLEIN.