M. MARSHALL.

MANUFACTURE OF STOCKINGS.

No. 185,561. Patented Dec. 19, 1876.

Fig. 1.

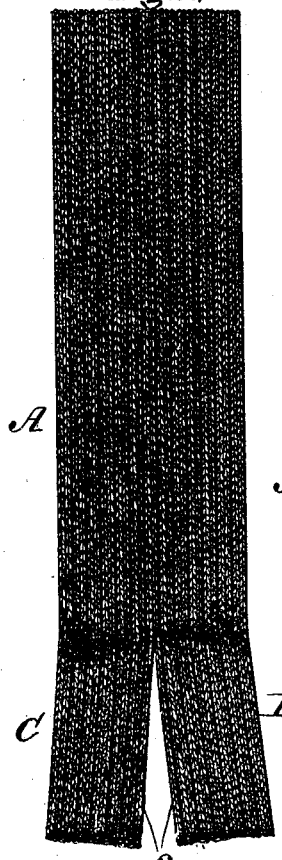


Fig. 2.

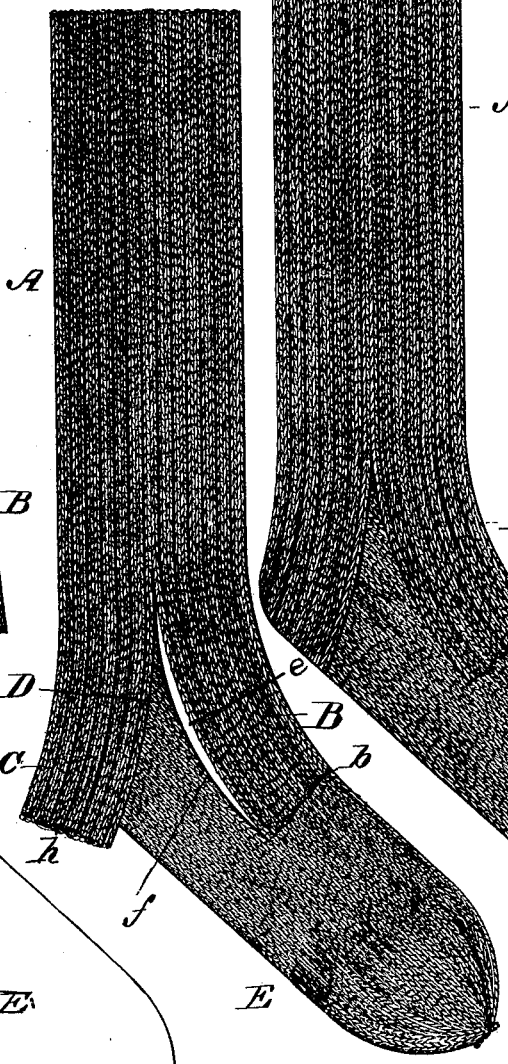


Fig. 3.

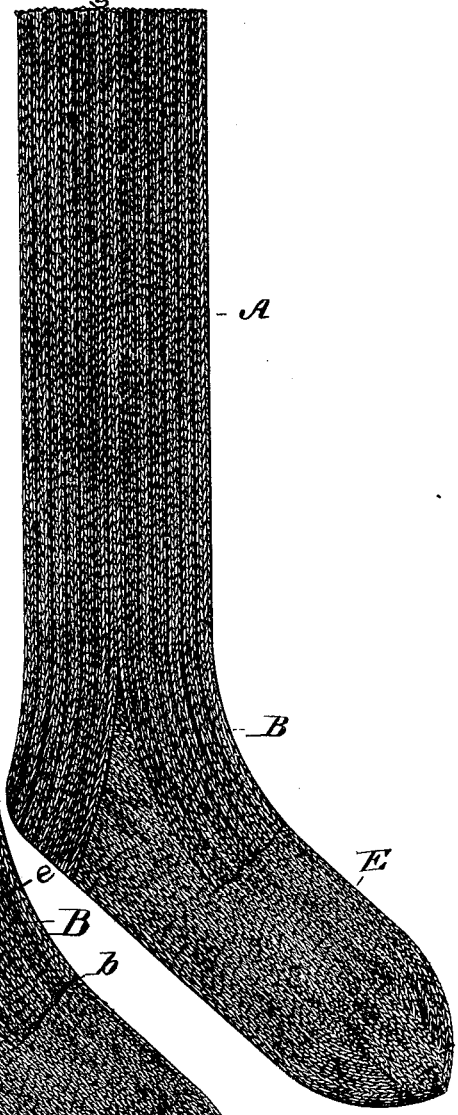
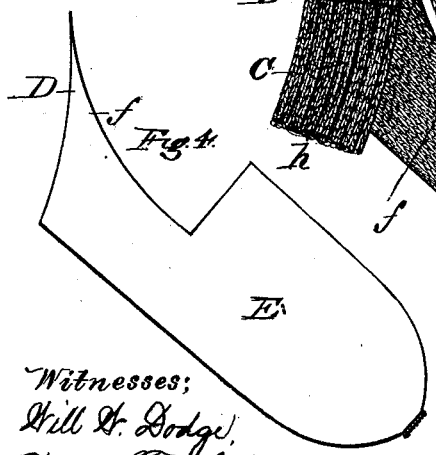


Fig. 4.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MANUFACTURE OF STOCKINGS.

Specification forming part of Letters Patent No. **185,561**, dated December 19, 1876; application filed January 25, 1876.

To all whom it may concern:

Be it known that I, MOSES MARSHALL, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in the Manufacture of Stockings, of which the following is a specification:

This invention consists of a stocking having its leg knit on a machine in the form of a tube, with its lower end slitted or knit in two separate parts, to form the heel and instep, each part having selvage-edges, and then, by means of another machine, having the foot knit on complete at one operation, with or without a gore at the sides of the instep, as hereinafter more fully described.

Figure 1 represents the tubular portion completed, ready for receiving the foot. Fig. 2 shows the same with the foot knit on, and Fig. 3 represents the stocking complete, and Fig. 4 represents the foot detached.

Heretofore, in the manufacture of stockings or socks, it has been customary to knit on circular machines the tubular web from which the legs are formed in long pieces, many yards in length, and then, after cutting them into pieces of the requisite length for a stocking-leg, to cut a slit in them on one side, in which a heel was knit by hand or otherwise. By cutting this slit the edges thereof were left "raw," as it is termed—that is to say, the stitches, or the yarn composing them, are cut, thereby leaving the edges loose and free to ravel, and necessitating the forming of a seam at those parts, when they are ultimately sewed to the part forming the foot, which seam is objectionable. Another objection to these stockings, as ordinarily made, when the foot is formed in whole or in part by machinery, is that the portion of the foot which is knit onto the heel is made of uniform width, thus making the stocking no wider across the instep than it is on the ankle above, thereby rendering it liable to break loose at the upper end of the slit, where the foot is joined to it, and also causing it to draw across the heel in such a manner as to strain it, rendering it liable to give way at that point, and also making it disagreeable to wear.

It is to remedy these objections, and at the same time enable the stocking to be made by machinery in a better, cheaper, and more rapid manner than has heretofore been done, that my present invention is designed. To accomplish this, I first knit the leg A on a tubular machine of peculiar construction, which is so made as to knit the tubular part either ribbed or plain, by a continuous circular motion, in the usual way, until the leg has been formed to the point where the slit begins, after which the machine is adjusted so as to knit the two separate flaps B C by a reciprocating motion, whereby the edges *e* of these flaps are formed with a selvage on each. This machine will form the subject of a separate application, and therefore need not be further described herein. After having thus formed the leg A with the selvage-edged flaps B C, it is taken from the machine and transferred to what is known as the Lamb knitting-machine. Here the first operation is to take up on the needles the stitches of the two inside or selvage edges of the back flap C, when the lower part of the foot E is knit on of a length equal to that of the front flap B, when the stitches at the end of the latter are taken up on needles of the machine, and the foot knit on in a tubular form, and finally narrowed off to complete the toe, the stocking at this stage being left in the condition represented in Fig. 2. The lower portion of the foot, which is first formed, as above described, is also knit with selvage-edges *f*, these coming opposite the selvage-edges *e* of the front flap B, as represented in Fig. 2. These selvage-edges are then united by being sewed together, the stitches along each edge being united by a thread and needle by hand, thereby leaving a perfectly plain or flat surface, without any projecting seam whatever. As the lower portion of the foot is knit it is narrowed more or less as it proceeds from the point where it joins onto the rear flap C, thereby forming a gore, D, as shown in Figs. 2 and 3, on each side of the instep, thus making the stocking larger around the instep and heel, and obviating the strain and liability to break loose where the parts are united, and also making it more easy and pleasant to the foot of the wearer. After the edges of the lower part of the foot have been united to the front flap B, as above described, it only remains to close the bottom end *h* of the heel-flap C, which is

preferably done with a crotchet-needle, and fasten the stitches at the point of the toe, when the stocking is rendered complete, as represented in Fig. 3.

The machines are both so constructed that they can be made to form either ribbed or plain work when knitting in a circle, or, when reciprocating, can knit one part ribbed and the other plain at the will of the operator, and therefore it will be seen that the leg may be either ribbed or plain, the former being preferred, and that, whether the leg be ribbed or plain, either of the flaps may, in like manner, be ribbed or plain, and so of the foot. Thus, while the leg and rear flap or heel are ribbed the front flap and heel may be plain, or the front flap may be ribbed and the foot plain, or the rear part of the foot may be ribbed and the rest of it made plain, as preferred, these all being varied at the will of the operator, or the desire of the manufacturer.

It is obvious that this style of leg may be used with a foot made by hand, or in a manner different from that above described, and also that the foot may be made separate from the leg, and then be attached to it, or be used with legs made in the usual manner, it only being necessary to set up the stitches at the rear end of the foot-piece or part E, where the latter is joined to the front edge of the rear flap C, and then knit it complete. In that case the foot E would have a finished edge at all points where it is to be joined to the leg-piece, to which it can be attached with a crotchet-needle in such a manner as to present a smooth even surface without any projecting seam or ridge, as is well understood by those skilled in the art, the foot being made with the gore D and the selvage-edges *f*, the same as when knit on the leg, as hereinbefore described, and as represented in Fig. 4.

By this method of making the article much hand-labor is saved, and a better, more durable, and superior stocking is produced.

Having thus described my invention, what I claim is—

1. The leg A for a stocking, having the flaps B C, with selvage-edges *e* knit thereon, substantially as shown and described.

2. The foot E, having the selvage-edge *f*, and made with the gore D, substantially as shown and described.

3. The herein-described method of forming a stocking, by first knitting the leg A with the selvage-edged flaps B C, and then knitting thereon the foot E, with the selvage-edged gores D, and uniting the selvage-edges, substantially as shown and described.

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