

No. 675,339.

Patented May 28, 1901.

J. G. POWELL.

KNIT FABRIC.

(Application filed Apr. 21, 1899.)

(No Model.)

UNITED STATES PATENT OFFICE.

JOHN G. POWELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO EDWARD POWELL, OF SAME PLACE.

KNIT FABRIC.

SPECIFICATION forming part of Letters Patent No. 675,339, dated May 28, 1901.

Application filed April 21, 1899. Serial No. 713,891. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN G. POWELL, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Knit Stockings, whereof the following is a specification, reference being had to the accompanying drawings.

The features of improvement relate particularly to that class of knit stockings in which one portion of the foot is made of different yarn from the other portion of the foot and the remainder of the leg. Such articles are sometimes termed "split-foot" stockings, and ordinarily the toe, bottom of the foot, and heel portions are formed of yarn which is heavier than and of different color from the remaining portions. So far as I am aware the methods of manufacture heretofore employed for stockings of this character have resulted in the production of a fabric which, although united throughout, was not of uniform continuity—that is to say, the foot comprising what may be termed the "two halves" made of different yarn was necessarily composed of two independently-knit webs united along their proximate edges by interknitting, and this structure was followed throughout the whole article, so that the seam or line of demarcation between the two distinct webs was manifest not only where the webs were formed of different yarns, but also where the yarn of both webs was the same, as in the leg portion. The stocking thus made was therefore characterized by a certain lack of finish or apparent imperfection in that the line of union of the two webs in the leg portion presented the appearance of a seam or partial cord, as distinguished from a smooth and uniform fabric.

My present invention is intended to avoid the undesirable features found in a fabric having the structure just described; and to that end the improvement consists in a stocking whose leg portion is composed of a single uniform web having the characteristics of a tube knit by continuous progress of the loops in a spiral direction, while the foot or fraction composing the two portions made of different yarns is formed of two individually-knit webs united by interknitting of their edges to constitute a tube.

I prefer to employ for knitting the stocking a machine of the general type shown in my Letters Patent No. 582,547, dated May 11, 1897, comprising two flat needle-beds disposed at an angle to each other and having a reciprocating carriage which actuates the needles. Such carriage is capable of alternative methods of operation—that is to say, it may actuate the needles of one bank alone twice during a complete reciprocation back and forth and then perform a similar function upon the needles of the other bank alone during the next complete reciprocation, or it may actuate the needles of one bank alone on its outward movement and the needles of the other bank alone on its return movement. The result of the first-mentioned mode of operation is to produce two flat webs independently knit and having their edges immediately adjacent to one another, while the second mode of operation produces a single uniformly continuous tubular web. The two independently-knit webs required for the foot portion can obviously be formed upon such a machine and can be united at their proximate edges by interknitting. The preferred method for effecting such interknitting is to actuate a needle at the end of that row which for the time being is idle and to throw said needle over, so as to take a loop in the fabric which is then being formed upon the opposite row, this action being repeated at each end of the web during one complete reciprocation of the carriage. The result thereof is that the loop thus engaged in the web which is then forming is carried across to the opposite side, so that during the next complete reciprocation of the carriage said loop shall be interknit with the loops of the other web. When this method of operation has been carried on during a period sufficient for the formation of the desired quantity of fabric—say, for instance, throughout the foot and heel portion of a stocking—I have found that it is practicable to directly pass to the other or alternative mode of operation, whereby instead of forming two independent webs a single and uniformly continuous tubular web shall be knit. The fabric thereafter formed will consequently be free from any of the peculiar loops which characterize the line of interknitting of the two

webs and will be identical both in construction and appearance with an ordinary tubular fabric formed by continuous progress of the loops in a spiral direction. The change
 5 from one yarn to another at predetermined intervals, whereby the composite fabric of the foot portion is formed, may be effected by any mechanism adapted for that purpose—such, for instance, as that set forth in my said patent.
 10 I do not, however, in this application claim the mechanism or process by which the above-stated results are accomplished, nor do I limit myself to the use of the above-described machinery, which I have selected for the explanation of a typical method of production.
 15 The fabric or article which constitutes my invention might be produced upon any type of knitting-machine which is capable of reciprocating or rotary movement or the equivalents thereof, and hence it must be understood that
 20 I do not restrict my claims by any reference to the mode of operation or mechanism above mentioned.

In the accompanying drawings I have illustrated, in Figure 1, the complete article itself, and in Fig. 2, upon an enlarged scale, a piece of fabric typical of the composite web.

Thus Fig. 1 represents a stocking knit in accordance with my invention and having a
 30 leg portion A, a foot portion B, with the usual heel and toe pockets C D, respectively. The toe portion, the bottom of the foot, and the heel portion are represented as knit of light-colored yarn, while the top of the foot is knit
 35 of darker yarn, the lines of union of the independently-formed webs being represented by *d*, *b*, and *c*. At the line *a*, however, the light-colored yarn is discontinued, and the leg portion from and above this line is a continuous tube, formed in the instance shown of
 40 dark yarn only.

In Fig. 2 I have illustrated, on an enlarged scale, the structure of the different webs. In said figure F and G represent the independently-knit webs interknit at their edges as far
 45 up as the line *a' a'*. It will be seen that loops *g* of the yarn of which the web G is composed are interknit with loops *f* of the yarn of which the other web F is composed, the interknitting in this instance being of the character
 50 shown. From and above the line *a' a'*, however, the web E is continuous and uniform, owing to the fact that it has been knit by what may be considered as the equivalent of continuous circular knitting.
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Of course I do not restrict myself to the precise structure shown in Fig. 2 as indicating a typical line of interknitting, nor do I limit my claims to the use of a single yarn in the continuous web, since obviously any desired combination of yarns might be employed
 60 in the production of that portion or, indeed, any portion of the web. So, also, the yarns of which the two independently-knit but united webs are formed may differ in weight, color,
 65 number, or all of these characteristics, the only essential feature being that the article as a whole shall comprise the composite structure above more fully set forth.

Having thus described my invention, I
 70 claim—

As a new manufacture, a stocking whose foot portion comprises two independently-knit webs, interknit at their proximate edges; and whose leg portion is continuous with said
 75 webs, but has its loops in a single tubular web, substantially as set forth.

JOHN G. POWELL.

Witnesses:

JAMES H. BELL,
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