

(Specimens.)

C. H. YOUNG.

WIDENED TUBULAR KNIT FABRIC AND THE ART OF KNITTING THE SAME.

No. 412,057.

Patented Oct. 1, 1889.

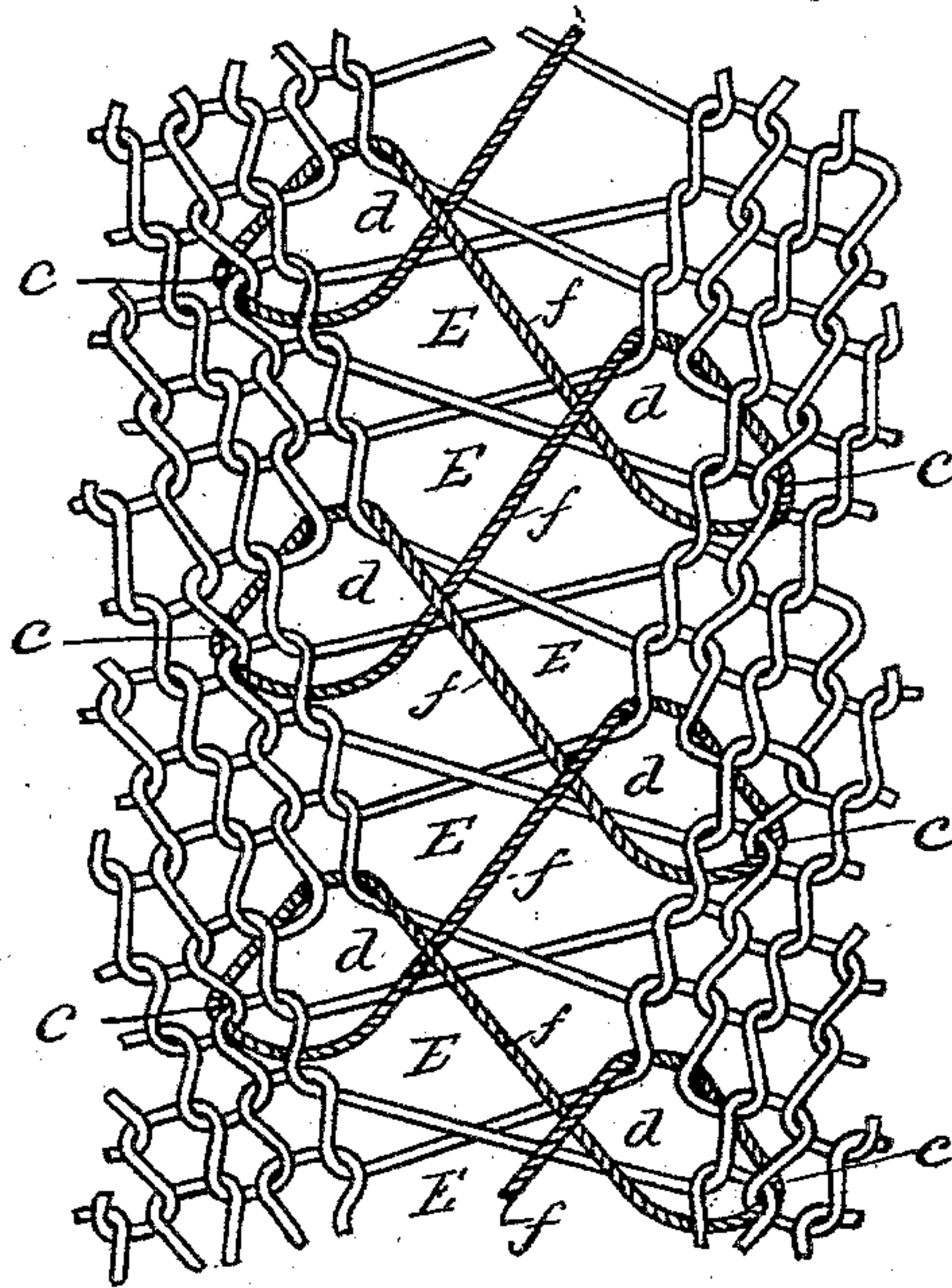


Fig. 1.

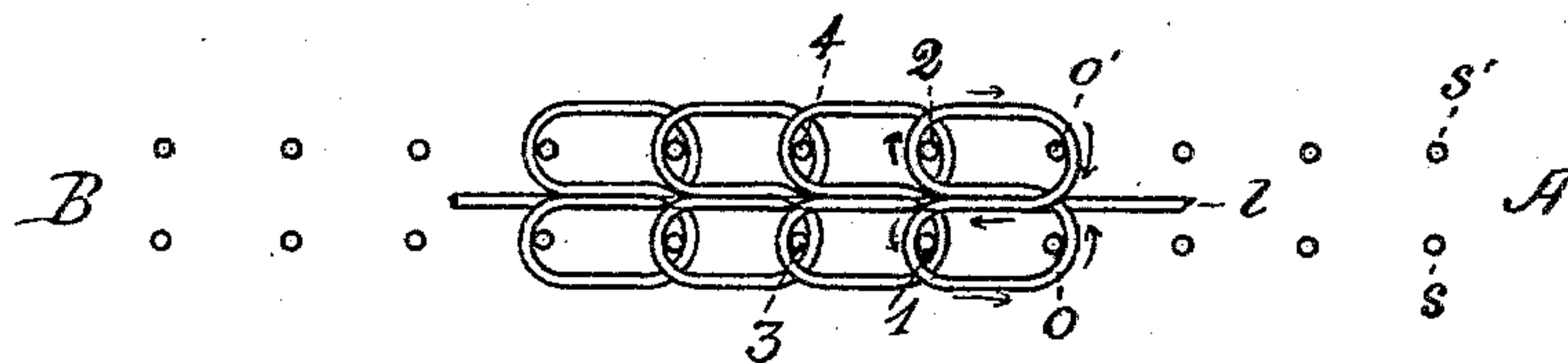


Fig. 2.

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WIDENED TUBULAR-KNIT FABRIC AND THE ART OF KNITTING THE SAME.

SPECIFICATION forming part of Letters Patent No. 412,057, dated October 1, 1889.

Application filed June 17, 1887. Serial No. 241,603. (Specimens.)

To all whom it may concern:

Be it known that I, CHARLES H. YOUNG, of Manchester, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Widened Tubular-Knit Fabrics and the Art of Knitting the Same, of which the following is a specification.

My invention relates to widened tubular-knit fabrics and to the art of producing the same.

It is a fact well understood by all knitting artisans and others having knowledge of the manufacture of knit goods that while it is very desirable for many purposes that a circular, seamless, fashioned fabric—that is, a circular seamless fabric widened or narrowed to fit the body or limbs of the wearer—should for many purposes be produced, the task has been found to be one very difficult of performance. The narrowing of a circular seamless web involves the transfer of stitches on the needles and the dropping or throwing out of action of the needles from which the stitches have been taken, or the dropping of stitches from the needles, throwing such needles out of action, and subsequently crocheting or otherwise securing the dropped stitches or loops to prevent raveling and to finish the fabric. The widening process involves the bringing into operation of additional needles; and to avoid what are termed “eyelet-holes”—that is, a hole or large mesh at the point where a new needle is brought into operation—it is necessary to transfer to the added needle a portion of an adjacent loop, or after the goods leave the machine to finish the fabric by crocheting or otherwise to close the eyelet-holes. Both processes mentioned are difficult of accomplishment, requiring much time and great skill on the part of the operator in order to produce perfect work.

After long and patient experiment I have discovered that in knitting a circular web on two rows or ranks of needles, and widening the same by bringing into operation additional needles, the eyelet-holes that would be formed at the base of the new wale made by the added needle may be closed by employing an additional or supplementary thread interknitted or interlocked with the loops

comprising the body of the fabric and drawn across the points where eyelet-holes would be made.

My invention consists in the method hereinafter described and claimed and the article produced thereby, which method and article embody the use of a supplemental thread at the point of widening, as and for the purposes indicated.

Reference is to be had to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, in which drawings—

Figure 1 represents a view, on an exaggerated scale, of a piece of fabric embodying my invention, said fabric being shown as distended to an undue degree at the point of widening to better portray its structural character. Fig. 2 is a diagram serving to assist in making clear the manner of practicing my improved method.

In carrying out my invention I may employ a machine equipped with needles arranged in two ranks or rows parallel with each other, so that a circular web may be produced by knitting along on a portion of one rank or row, crossing over to the other rank and knitting back thereon, then recrossing to the first-mentioned rank, knitting along thereon, as before, and so on; and for convenience of the present description I will suppose the method to be carried out on a machine constructed, equipped, and operating as set forth in my application filed in the United States Patent Office April 6, 1886, Serial No. 197,936. In the machine described in said application I employ two threads or yarns, one of which is fed to one rank or row of needles and the other to the other rank, the yarns being crossed at the ends of the two ranks of needles, and each then fed to the opposite rank or row.

Having reference to the diagram shown in Fig. 2 of the drawings, let it be supposed that knitting has been “set up” and proceeded with for one or more courses on the needles $s o s' o'$, as indicated by the double-headed arrow, and that it is desired to widen by bringing into operation additional needle 1. The supplemental yarn l is therefore secured to the fabric at a proper point, and while the yarn-guides are at or toward the end A of the two ranks or rows of needles, the new or ad-

ditional needle 1 having been raised, the supplemental yarn *l* is laid into the hooks of needles *o* 1, as indicated by the bent arrows, and the additional needle 1 is depressed, holding
 5 a loop from the supplemental thread or yarn. Upon the carriers moving toward the point B knitting will be performed on the needles *s o s' o'*, as before, needle 1 being held down with a loop of the supplemental yarn in its hook.
 10 Needle 1 with needles *s o s' o'* before in operation, is now raised, so that as the carrier moves from the point B to the point A all of said needles *1 s o s' o'* will have the main yarn fed to them, the said needle 1 being thereafter continued in regular action. The next
 15 widening will be performed upon the needles *o' 2* in the opposite rank, said needles being operated for this purpose, as has been described with reference to needles *o* 1, the supplemental yarn being laid around said needles, as indicated in dotted lines in Fig. 2. Subsequent widenings will be accomplished on needles 1 3 and 2 4, and so on to the end B, if need be, of the two rows or ranks. In
 20 this way the supplemental yarn *l* will be made to form the base of the new or added wale, as represented at *d*, Fig. 1, to be interlooped or connected with the adjacent wale, as indicated at *c*, and to be drawn across what would
 25 otherwise be an eyelet-hole E, as at *f*, effectually closing said eyelet-hole and obviating a defect of this nature in the fabric.

As has before been remarked, the fabric, as represented in Fig. 1 of the drawings, is
 35 shown as unduly stretched or distended at the point of widening, this being done for the purpose of better illustrating its structural character.

It is obvious that the supplemental yarn *l*
 40 might be fed to more than one of the needles *s o s' o'* regularly in action, and that it might be fed to the needles in an order or a manner opposite to that described—that is, in a direction opposite to the bent arrows—and that
 45 other changes may be made in the manner of feeding the supplemental thread or yarn

to the needles; but these variations would not constitute a departure from the essential features of my invention, which consist in bringing into operation an additional needle, 50 feeding a supplemental yarn thereto and to a needle already in action, and subsequently feeding main yarn to such added needle, with the needles already in action, so that the supplemental thread or yarn will be drawn across 55 the space which would otherwise constitute an "eyelet-hole," so called.

It is to be further noted that the widening process can be carried on at both ends A and B of the two ranks or rows of needles, so that 60 a tubular web can be widened on both sides, or at opposite points simultaneously.

Having thus described my invention, what I claim is—

1. In the art of widening a tubular knit 65 fabric produced on two rows or ranks of needles, the improvement consisting in bringing into action a new or additional needle, feeding a supplemental yarn thereto and to a needle already in action, retiring such new or 70 added needle and knitting with the main yarn on the needles already in action, then bringing into action the new needle holding a loop of the supplemental yarn, and knitting thereon and on the needles before in action with 75 the main yarn, as set forth.

2. A widened tubular-knit fabric having a supplemental yarn looped or connected with the loops comprising the body of the fabric, said supplemental yarn being drawn across 80 the wide meshes or eyelet-holes formed at the base of the new or widening wales, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two 85 subscribing witnesses, this 2d day of June, A. D. 1887.

CHARLES H. YOUNG.

Witnesses:

C. F. BROWN,
 ARTHUR W. CROSSLEY.