June 12, 1928. 1,672,873

F. BACON ET AL

KNITTED FABRIC AND METHOD OF MAKING THE SAME

Filed Oct. 27, 1926

Fig. 1.

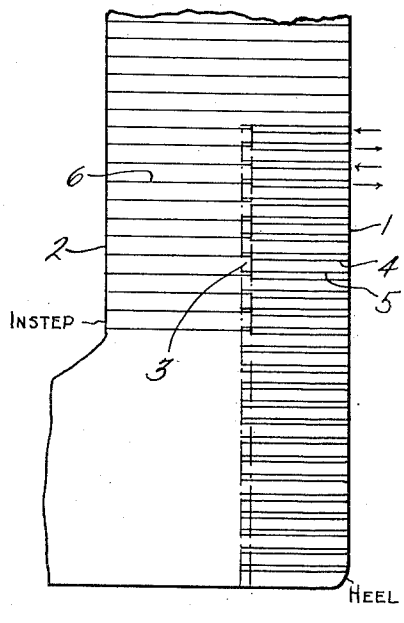


Fig. 2.

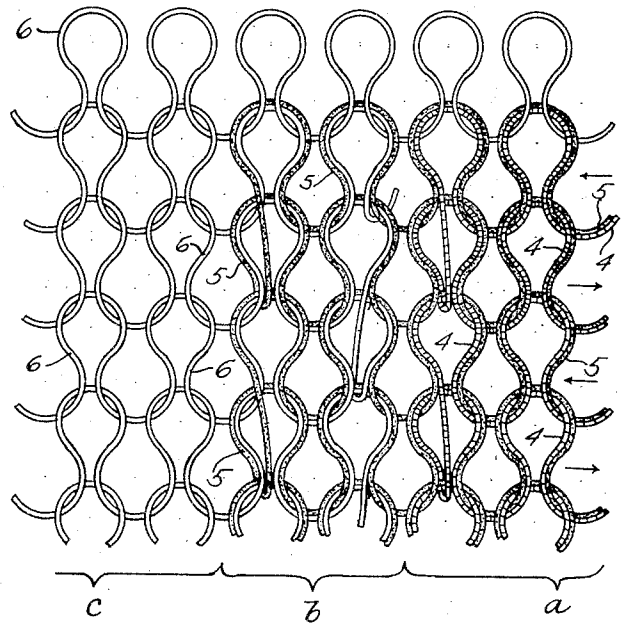


Fig. 3.

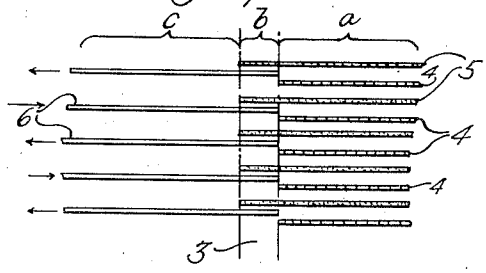


Fig. 4.

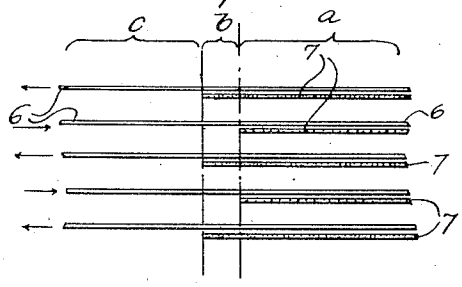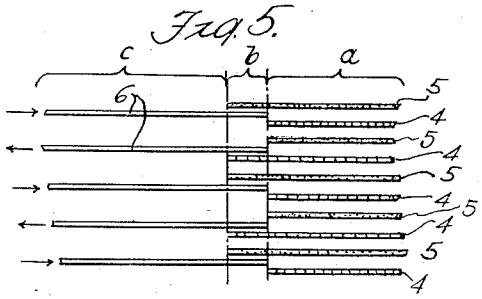


Fig. 5.



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Patented June 12, 1928. 1,672,873

UNITED STATES PATENT OFFICE.

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KNITTED FABRIC AND METHOD OF MAKING THE SAME.

Application filed October 27, 1926. Serial No. 144,431.

The present invention relates to an improvement in knitted fabrics and a method of making the same. One object thereof has been to produce in a knitted fabric comprising adjoining portions of different thicknesses, or other characteristics a joining or suture between said portions which will present a better appearance and afford greater strength than has heretofore been found in similar fabrics knitted on flat machines. For example, in making stockings, it is common to reinforce the heel and other portions by using heavier thread, multiple threads, or both. This causes a bunching or thickening of the fabric along the joint or suture which detracts from the smooth appearance of the stocking by unduly emphasizing the reinforced splice and places the first or adjoining line of loops of the thinner thread under tension along lateral portions of the splice. According to our invention it is possible to produce a more gradual transition from a relatively thick portion to a thinner portion of knitted fabric, or from a portion having one characteristic as to thread to a portion having a different characteristic and, in so doing, to provide a more sightly and effective joining so that, in the case of stockings, the occurrence of runs beginning at the heel splice corner is measurably reduced and the stocking presents a relatively smooth appearance.

An embodiment of our invention is disclosed in the drawings accompanying the present specification, and in which

Figure 1 is a diagrammatic side view of the heel and instep portion of a stocking embodying our invention with arrows indicating the possible direction of movement of thread guides during the formation of several courses thereof.

Fig. 2, an enlarged fragmentary detail thereof,

Figure 3, a diagrammatic representation of instrumentalities and the sequence of their operation involved in carrying out one form of our improved method and in knitting one end of a fabric employing threads of three different kinds, the arrows indicating the direction of movement of thread guides in the formation of several courses thereof.

Figure 4, a similar view in which two threads are employed, and

Figure 5, a diagrammatic representation of a modification in which the transition from a portion having certain characteristics to an adjoining portion having different characteristics is made in alternating courses.

Although the present invention may be effectively employed in the making of various knitted fabrics, we will describe it in connection with the knitting of a stocking of the full fashioned type such as is commonly made on a flat machine employing spring beard needles.

In Figures 1 and 2, we illustrate a stocking construction having a reinforced heel splice 1 adjoining an instep portion 2. These portions are connected by a suture or transition portion 3. Thus, as shown more clearly in Figure 2, and indicated in Figures 1 and 3, the portion 1 comprises a plurality of threads 4 and 5 respectively which are interknitted in plating relation, said threads being of different color, different material or different weight depending on the type of stocking to be produced. The portion 2 is shown as comprising a single thread 6 although it is obvious that this portion may comprise more than one thread. In the suture 3, Figs. 1 and 3, it will be noted that the thread 5 interknits with thread 6 and in the splice 1 thread 5 interknits with the thread 4.

Where the above described fabric is knitted on a flat machine, the knitting method includes introducing thread guides carrying a plurality of threads feeding simultaneously to the required number of needles to form loops of the splice portion or zone 1. In Figure 3, these needles are shown as group *a*. Assuming movement of the thread guides from right to left in the first or upper course, that one carrying thread 4 is dropped at the suture and a guide carrying thread 6 is introduced. The guide carrying the remaining thread or threads of portion 1, in this case thread 5, continues past two or more needles, preferably two, forming group *b* where it is dropped, thread 5 being thereby interknitted with thread 6. Thereafter thread 6 is carried alone on the *c* needles to form the instep portion 2. As will be well under-

stood where the article knitted is a full fashioned stocking, the same thread changes are effected in inverse order at the end of said first course from right to left and again at the end of the next succeeding course in which the movement of the thread guides is from left to right. If desired, a course such as has been just described may alternate with a course in which threads 4 and 5 interknit on the *a* needles, Figure 5, until thread 5 is dropped and then thread 4 interknits on the *b* needles with thread 6, after which thread 6 continues alone on the *c* needles as before, this sequence of operation being repeated until the required number of courses have been run. While the inventive concept has been shown and described in its simplest form, it will be clear that the sequence of dropping and introducing carriers may be varied to extend the suture or transition zone over a greater number of needles and the cycle of change may extend through more than two courses so that instead of alternating courses of different loop sequence characteristics, there will be alternating groups of courses, presenting a stepped or zigzag arrangement of loops or lock stitches.

Figure 4 illustrates diagrammatically the sequence of operations employed to produce a stocking in which the main thread 6 or that forming the instep portion is carried entirely across the splice and is therein plated with another thread as 7 commonly of cotton, where thread 6 is silk, or having some other characteristic designed to reinforce the heel splice.

As shown in Figure 4, the modified method includes carrying the thread 7 through the *a* and *b* needle groups along with thread 6 in one course and in the next course carrying thread 7 only through the *a* group, these operations being repeated alternately over the required number of courses.

We claim as our invention:

1. The method of forming a knitted fabric having adjoining portions of different characteristics, which includes knitting in each course, a plurality of threads to form one portion and a single thread distinct from said plurality of threads to form another portion, and knitting between said portions and continuously therewith a suture portion comprising only one of said plurality of threads interknitted with said single thread.

2. The method of forming a knitted fabric having adjoining portions of different characteristics, which includes knitting a plurality of threads to form one portion and a single thread to form another portion, and knitting between said portions and continuously therewith a suture portion comprising, in alternating courses, one of said plurality of threads interknitted with said single thread and another of said plurality of threads interknitted with said single thread.

3. The method of forming a suture in a knitted fabric between adjoining portions thereof made up of different numbers of threads, which comprises in one course consecutively interknitting the larger number of threads, interknitting one part of said larger number of threads with the smaller number of threads and knitting said smaller number of threads, and then in another course consecutively interknitting said larger number of threads, interknitting another part of said larger number of threads, and knitting said smaller number of threads.

4. A full fashioned stocking having an instep portion, a reinforced portion comprising at least two threads distinct from any thread in said instep portion and a suture between said reinforced portion and said instep portion and including alternating courses, one of which comprises one of the reinforced portion threads interknitted with an instep portion thread, and the other of which comprises another of said reinforced portion threads interknitted with said instep portion thread.

In testimony whereof, we have signed our names to this specification this 22nd day of Oct., 1926.

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HARRY D. TROOP.