May 11, 1937. L. B. HERB 2,079,738

STOCKING HAVING STRAIN ABSORBING ZONE WITH IMPROVED CAPACITY TO STRETCH

Filed Dec. 23, 1936

Fig. 2.

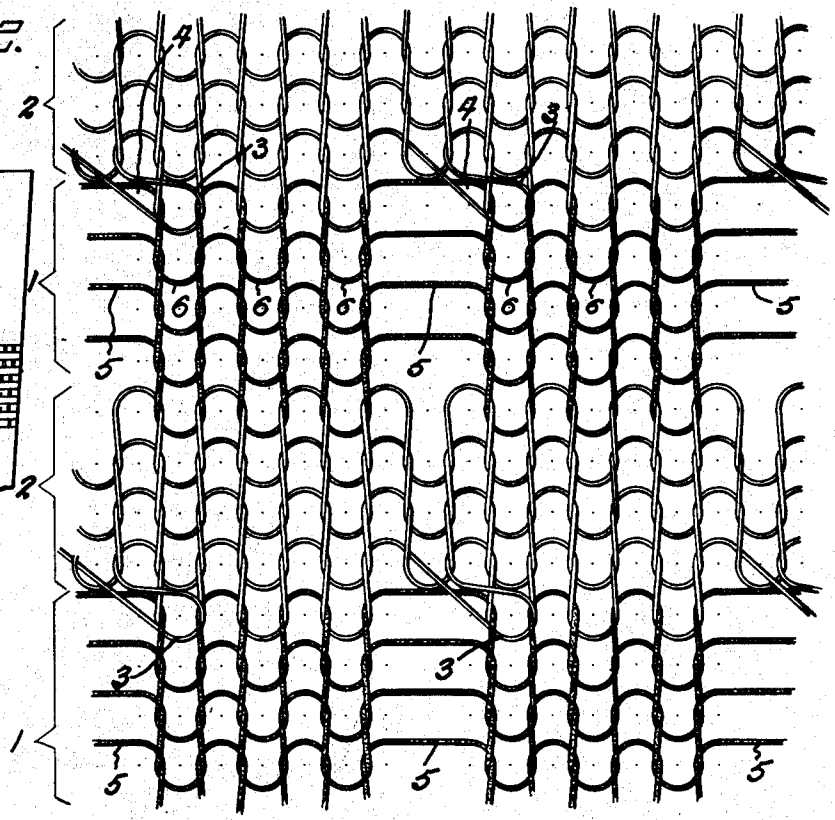


Fig. 1.

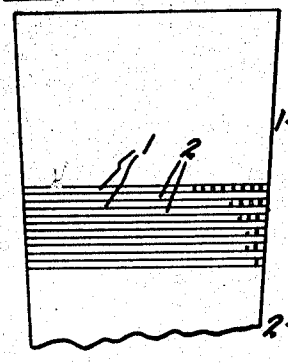
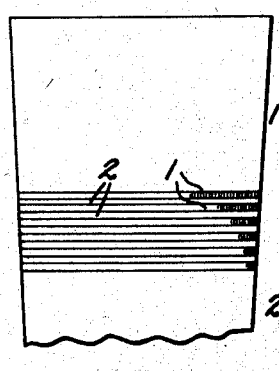
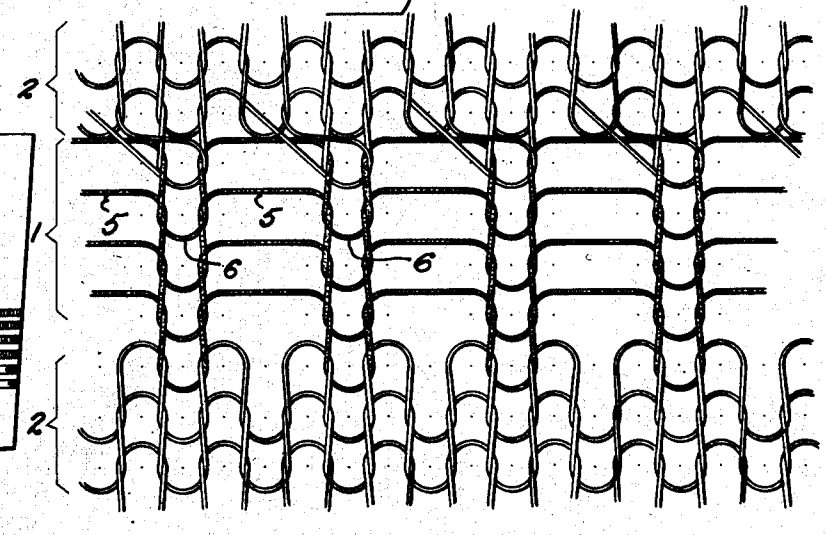


Fig. 4.

Fig. 3.





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STOCKING HAVING STRAIN ABSORBING ZONE WITH IMPROVED CAPACITY TO STRETCH

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5 Claims. (Cl. 66—172)

This invention relates to hosiery of the type described and claimed in the patent to Howard B. Snader, No. 1,929,006, granted October 3, 1933, in which a strain absorbing zone is provided between the welt and knee composed of a plurality of integrally knit narrow bands of fine gauge covered elastic rubber yarn alternating with narrow bands of the basic fabric of the stocking.

Although fine gauge covered elastic rubber yarn cannot be knit without becoming tensioned and when knit as a large number of contiguous courses, it exhibits an unbecoming tendency to curl in a transverse direction, due to its tension, yet in the forms of the invention within the contemplation of said patent, the objectionable curling is effectively eliminated by breaking up the rubber elastic strain absorbing zone into a plurality of alternating narrow elastic and inelastic bands, and consequently, the solution of the problem of preventing or inhibiting curling is not the purpose of the present invention.

It is known, since the advent of the above mentioned patent that the strain absorbing zone must be more easily stretchable than is the basic fabric of the stocking and that the aggregate range of the amount of stretch, that is, the longitudinal elongation of the strain absorbing zone must be greater than the elongation which the basic fabric would have to undergo under maximum stress were it not for the strain absorbing zone. This range of stretch in the strain absorbing zone is provided for not only through the employment of a gauge of covered rubber yarn approximating in fineness that of the basic yarn, but also through the provision of a relative large number of courses of knitting in the strain absorbing zone. For example, thirty-six courses of the fine gauge covered rubber yarn has been found adequate for all expectable stresses of the stocking. A very few courses of elastic rubber yarn is inadequate.

The object of the present invention is to enhance the stretchability of the strain absorbing zone beyond that inherent in the elasticity of the yarn so that for the same coefficient of elasticity of the strain absorbing zone a fewer number of courses of the fine gauge covered rubber yarn may be used or for the same number of elastic rubber courses the coefficient of elasticity of the zone will be increased. It is thus possible by the present invention to economize in the quantity of fine gauge covered rubber yarn employed, or to improve the elasticity of the strain absorbing zone, or, possibly for the sake of appearance to enable the knitting of a narrower strain absorbing zone.

Other objects of the invention will appear as the following description of a preferred and practical embodiment thereof proceeds.

In the drawing throughout the several figures of which the same characters of reference have been employed to denote identical parts:

Figure 1 is a side view of the upper part of a stocking illustrating a strain absorbing zone made according to the principles of the present invention;

Figure 2 is a diagrammatic illustration of the type of knitting in the strain absorbing zone, included in the scope of the present invention;

Figure 3 is a side view of the upper part of the stocking showing a modified form of the invention; and

Figure 4 is a diagrammatic view illustrating the pattern of knitting employed in Figure 3.

Before proceeding with a description in detail of the several figures, it may be stated that the underlying principle of the invention is to employ the same amount of rubber in each of the courses, but by dropping the stitches in certain rows to distribute the rubber of the dropped stitches among the laterally adjacent stitches so as to relieve them from the tension incident to their knitting with the result that they will start stretching from a repose condition rather than from an initially tensioned condition and consequently will have a greater range of stretch.

In Figure 1 a strain absorber is shown consisting of a plurality of narrow bands 1 of fine gauge elastic rubber yarn alternating with a plurality of narrow bands 2 of the basic yarn of the stocking fabric. Said alternating bands are integrally knit as is clear from the diagrammatic showing of Figure 2 in which figure it will also be observed that loops 3 from the last knit courses of the inelastic bands 2 are transferred to laterally positioned needles forming lace or lock stitches 4. These may be formed at any desired interval circumferentially of the strain absorbing zone. In the present instance, there are three stitches intervening between the transferred loops.

The courses of fine gauge covered rubber yarn are then knit and after the narrow band 1 has been produced, loops in the last knit row of rubber yarn of each of said bands 1 and in the same rows from which the loops 3 were transferred are slipped from the needles, forming ladders 5 which run back to the lock stitches 4.

Since as has been explained, the fine gauge

covered rubber yarn is necessarily tensioned in the act of knitting, the intervening stitches 6 will pull together to a condition of repose straightening out the released loops of the ladders 5 as shown. Thus the same amount of fine gauge covered rubber yarn is knit into each of the courses of the elastic bands, but distributed among a fewer number of stitches in consequence of which the stitches start to stretch from a condition of repose and not from an initially tensioned condition.

It may be said of that form of the invention shown in Figures 1 and 2 inasmuch as there are several rows of stitches intervening between the ladders they will draw together forming a kind of rib. Were the bands 1 wider, these ribs would be effective in resisting the tendency to curl transversely which ordinarily characterizes wide bands of fine gauge covered rubber yarn. In the present instance since the bands are sufficiently narrow to be free from objectionable curling, the drawing together of the intervening stitches 6 has mainly to do with the appearance of the fabric in the strain absorbing zone, producing an ornamental pucker.

In Figures 3 and 4 a form of the invention is shown which differs from that disclosed in Figures 1 and 2 mainly in the fact that a stitch is dropped in the last course of the rubber elastic band of every alternate row so that the fullness or bight of the dropped loops of the ladders 5 is absorbed by the single row of intervening stitches 6 instead of by a plurality of intervening rows so that the stitches 6 are not only in repose condition, but extremely loosely knit, the result being a maximum increase in the extent of stretchability of the strain absorbing zone.

It is obvious to those skilled in the art that the two examples herein disclosed are merely illustrative of many ways in which the same amount of fine gauge covered rubber yarn may be used in the elastic courses, but distributed among a fewer than normal number of stitches and that the inventive concept shall be construed as covering all variations in the pattern of knitting which may function within the underlying principle of the invention.

What I claim is:

1. Stocking having an integrally knit strain absorbing zone above the knee, formed of fine gauge covered rubber yarn having transverse rows of dropped stitches at circumferential intervals, the fullness of the loops of the dropped stitches being absorbed by the stitches in the intervening rows, the latter stitches being thus relieved from tension, thereby increasing the stretching capacity of the fabric in the strain absorbing zone.

2. Stocking having an integrally knit strain absorbing zone above the knee, comprising a plurality of bands of courses of fine gauge covered rubber yarn of such narrowness as to obscure the inherent tendency of said bands to transverse curling, said bands of rubber yarn alternating with narrow bands of the relatively inelastic basic fabric of the stocking, said bands of rubber yarn having transverse rows of dropped stitches at circumferential intervals, the fullness of the loops of the dropped stitches being absorbed by the stitches in the intervening rows, the latter stitches being thus relieved from tension, thereby increasing the stretching capacity of the strain absorbing zone.

3. Stocking having an integrally knit strain absorbing zone above the knee, formed of fine gauge covered rubber yarn having alternate transverse rows of stitches dropped, the fullness of the loops of the dropped stitches being absorbed by the stitches in the intervening rows, the latter stitches being thus relieved from the tension incident to the knitting, thereby increasing the stretching capacity of the fabric in the strain absorbing zone.

4. Stocking having an integrally knit strain absorbing zone above the knee comprising a plurality of bands each consisting of a plurality of courses of fine gauge covered rubber yarn, said bands being of such narrowness as to obscure the inherent tendency of said bands to transverse curling, and alternating with narrow bands of the relatively inelastic basic fabric of the stocking, said narrow bands of rubber yarn having the alternate rows of stitches dropped, the fullness of the loops of the dropped stitches being absorbed by the stitches in the intervening rows, the latter stitches being thus relieved from tension, thereby increasing the stretching capacity of the strain absorbing zone.

5. Stocking having an integrally knit strain absorbing zone above the knee comprising a plurality of bands each consisting of a plurality of courses of fine gauge covered rubber yarn, said bands being of such narrowness as to obscure the inherent tendency of said bands to transverse curling, said bands alternating with narrow bands of the relatively inelastic basic fabric of the stocking, said bands of rubber yarn having transverse rows of dropped stitches at circumferential intervals with a plurality of intervening rows of stitches, the fullness of the loops of the dropped stitches being thus relieved from tension, thereby increasing the stretching capacity of the strain absorbing zone, the contraction of said intervening rows of stitches giving a puckered appearance to the fabric of the strain absorbing zone.

LEROY B. HERB.