Nov. 10, 1942. L. B. HERB 2,301,540

HOSIERY AND KNITTED FABRIC HAVING STRAIN ABSORBING ZONES

Filed Dec. 23, 1936

Fig. 2.

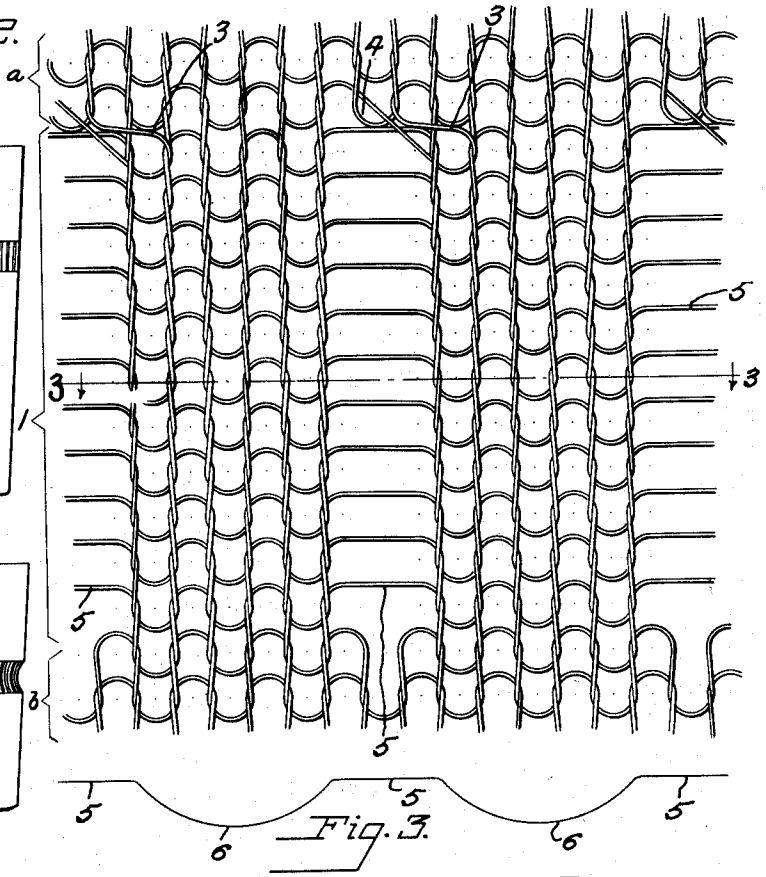


Fig. 1.

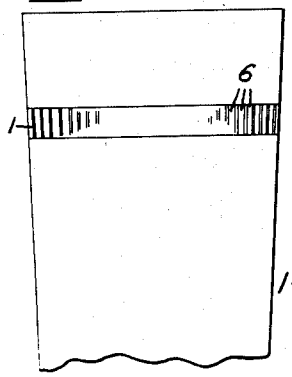


Fig. 6.

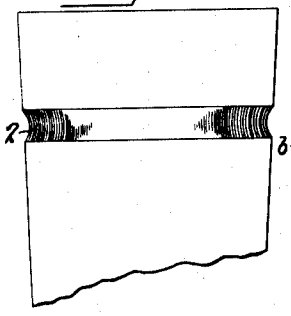


Fig. 3.

Fig. 4.

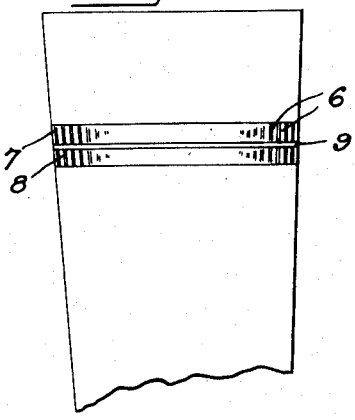
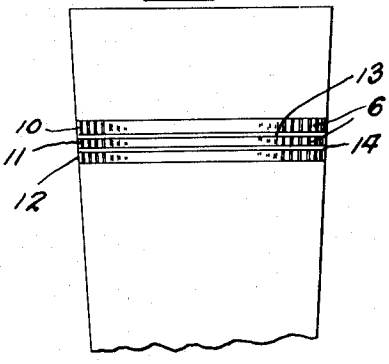


Fig. 5.



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HOSIERY AND KNITTED FABRIC HAVING STRAIN ABSORBING ZONES

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Application December 23, 1936, Serial No. 117,399

19 Claims. (Cl. 66—172)

This invention relates to hosiery of that type having a strain absorbing zone adjacent the top and has for its object the provision of means for preventing objectionable curling in the integrally knit longitudinally stretchable band of fine gauge covered rubber yarn which constitutes the strain absorber.

Such curling as the device of the present invention seeks to resist is the result of the inevitable tensioning of the rubber yarn in the operation of knitting. Such tensioning cannot be avoided for in order that the covered rubber yarn may be effective as a strain absorber, it must be more freely stretchable than the basic fabric of the stocking, requiring that the yarn be of such fine gage that it is tensioned by the mere act of the needles drawing the loops.

The curling which is referred to in the present specification is in a transverse direction of the strain absorbing band and causes the band to assume the form of a circumferential channel about the stocking when unworn, giving it an unsightly appearance. Such curling is not objectionably perceptible in a narrow band consisting of only several courses of covered elastic rubber yarn, but a strain absorbing zone to be adequately extensive must contain a large number of covered elastic courses, for example, thirty or more, making a band affected by curling to such an extent as to be objectionable.

The present invention has for its object to so knit the fine gage covered rubber yarn in the strain absorbing zone as to form a plurality of transverse ribs or wales, reinforcing or stiffening the fabric in the direction of curling and therefore resisting the tendency to curl.

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 designate identical parts:

Figure 1 is a side view showing the upper portion of a stocking with a strain absorber constructed according to the principles of the present invention;

Figure 2 is a diagrammatic view showing the construction of the transverse ribs or wales;

Figure 3 is a diagrammatic cross section taken along the line 3—3 of Figure 2 illustrating the concave nature of the ribs or wales;

Figure 4 is a modified form in which a single wide band of fine gage covered rubber yarn knitting is substituted by two bands;

Figure 5 is a side view of another modified form of the invention; and

Figure 6 is a diagrammatic view illustrating how the strain absorber will normally curl if in the form of a single wide band.

Referring now in detail to the several figures, it will be understood that the strain absorbing band or zone 1 is above the knee and preferably below the welt and that it is most effective when it is employed in connection with a hose supporter which exerts a longitudinal pull upon the top of the stocking. The object of the strain absorber is to stretch more than the stocking will stretch in the region of the knee when the leg is flexed. Since the stockings in connection with which it is contemplated to employ the strain absorbing zone are customarily made of quite sheer knitted fabric and possessed of a high degree of elasticity due to the open character of the stitch, it is obvious that in order for the strain absorbing band or zone to stretch more than the basic fabric of the stocking, it must be made of an extremely fine gauge covered rubber yarn and a large number of courses of said yarn must be provided. Such a band will normally curl transversely as at 2 in Figure 6, which curling detracts from the appearance of the stocking as an article of merchandise.

Referring to Figure 2, those portions of the fabric within the brackets *a* and *b* are the basic fabric of the stocking immediately above and below the strain absorbing band 1. In knitting, a loop 3 is taken at intervals in the last course of the basic fabric above the proposed strain absorbing zone and transferred to the needle at one side forming the lock or lace stitch 4 as shown. In the illustration, every fourth loop is thus transferred, but the interval between the lace stitches is a matter of option. The knitting of the requisite number of courses of fine gauge covered rubber yarn then proceeds and when the final course is reached, the loops in those rows coincident with the transferred loops are slipped from the needles producing ladders 5 which run back to the lock or lace stitches 4. The tension of the rubber yarn in those rows of stitches between the ladderings causes the rows to contract together forming convex wales or ribs as indicated at 6 in Figure 3. These wales or ribs extend widthwise of the strain absorbing band and due to their convex form, they acquire a stiffness which resists curling of said band. Since the said ribs or wales are curved or curled in a direction perpendicular to the direction of stretch of the strain absorbing band, but are straight in

the direction of stretch of said band, their useful elasticity is not diminished by reason of their convexity and consequently while they resist the tendency of the band to curl, they do not impair the capacity of the strain absorbing band to stretch in a longitudinal direction.

In that form of the invention shown in Fig. 4, the wide band of fine gauge covered rubber yarn is separated into two bands 7 and 8 of half the width by a narrow band 9 consisting of a few courses of the basic yarn of the stocking. Since each of the bands 7 and 8 would have a perceptible curl, it is preferred to diversify them into a plurality of transversely extending convex ribs or wales 6. Figure 5 shows still another form of the invention in which the aggregate number of courses of fine gauge covered rubber yarn is divided into three bands 10, 11 and 12 separated by two narrow bands 13 and 14 of the basic knitting. With so few a number of elastic bands as three the curling may still be sufficiently pronounced to call for the employment of the curl-resisting ribs 6. Where the number of strain absorbing bands have increased greatly beyond 3, as in the invention forming the subject matter of Howard B. Snader's Patent No. 1,929,006, granted October 3, 1933, the amount of curl in each of the narrow elastic bands is so small as to be negligible.

While I have in the above description disclosed what I believe to be a preferred and practical embodiment of the invention, it will be understood to those skilled in the art that the specific means by which the desired result is accomplished is one of many equivalents which may be selectively substituted therefor without transcending the spirit and scope of the invention as claimed.

What I claim is:

1. Knit hosiery having an elastic strain absorbing zone adjacent the top integrally knit from fine gauge covered elastic rubber yarn, of such width as to have an inherent tendency to objectionable curling transversly of said zone, the elastic rubber fabric in said zone being formed with transverse ribs resisting said tendency to curling.

2. Knit hosiery having an elastic strain absorbing zone adjacent the top integrally knit from fine gauge covered elastic rubber yarn, of such width as to have an inherent tendency to objectionable curling transversely of said zone, the elastic rubber fabric in said zone being formed with transverse ladderings, and between the ladderings a plurality of rows of stitching contracted by the inherent elasticity of the yarn, into transverse convex ribs.

3. Stocking having a strain absorbing zone below the welt and above the knee, the adjacent portion of the welt and the adjacent portion of the leg of the stocking down to a point at least below the knee being knit from relative inelastic yarn, said strain absorbing zone being integrally knit with the said adjacent portions and comprising a plurality of bands of courses of covered elastic rubber yarn separated by one or more narrow bands of courses of relatively inelastic yarn whereby the stress created by the knee when flexed is referred to the said strain absorbing zone without substantially stretching the fabric in the region contacted by the knee, said bands of covered elastic rubber yarn being of sufficient width to have an inherent tendency to objectionable transverse curling, said bands of covered rubber elastic yarn being formed at intervals extending circumferentially thereabout with transverse ladderings, and between said ladderings a plurality of rows of stitches contracted by the inherent elasticity of the yarn into transversely extending convex ribs which resist the said inherent tendency to curl.

4. Knit hosiery having an elastic zone adjacent the top integrally knit from fine gauge elastic yarn, of such width as to have an inherent tendency to objectionable curling transversely of said zone, the elastic fabric in said zone being formed with transverse ribs resisting said tendency to curling.

5. Knit fabric having an elastic zone integrally knit from fine gauge elastic yarn, the said zone being of such width as to have an inherent tendency to objectionable curling transversely of said zone, the elastic fabric in said zone being formed with transverse ribs adapted to overcome said inherent tendency.

6. Knit hosiery having an elastic zone adjacent the top integrally knit from fine gauge elastic yarn, the said zone being of such width as to have an inherent tendency to objectionable curling transversely of said zone, the elastic fabric in said zone being formed with transverse ribs adapted to overcome said inherent tendency.

7. Knit hosiery having a series of knitted elastic courses adjacent the top providing an elastic zone which has an inherent tendency to curl transversely of the zone, said series of courses providing a series of coursewise ribs to relieve said zone of its inherent tendency to curl.

8. A stocking having a plain knit top section, said top section having consecutive courses of regular stitches of inelastic yarn, an immediately following course having a plurality of spaced transferred stitches, and immediately following series of courses providing an elastic zone of such width as to have an inherent tendency to objectionable curling, and having a series of coursewise spaced ribs, said series of courses being knit of an alternating arrangement of elastic and inelastic yarns at least substantially throughout.

9. A stocking comprising a leg portion, a garter attaching portion at the top, and a strain absorbing zone between said leg and garter attaching portions of such width as to have an inherent tendency to objectionable curling transversely of said zone, said zone consisting of knitted courses of inelastic yarn alternating with knitted courses of elastic yarn, certain of said courses having loops of spaced wales laterally transferred and doubled with loops of other wales.

10. Knit hosiery having a two-way elastic stretch band adjacent the top integrally knit from groups of courses of fine gauge elastic yarn alternating with groups of courses of fine gauge inelastic yarn, said band being of such width as to have an inherent tendency to objectionable curling transversely of the band, the elastic fabric in said band being formed over its area with transferred loops and groups of drop stitches associated therewith, thereby resisting the tendency of the band to curl.

11. Knit fabric having a two-way elastic stretch band integrally knit from groups of courses of fine gauge elastic yarn alternating with groups of courses of fine gauge inelastic yarn, said band of such width as to have an inherent tendency to objectionable curling transversely of the band, the elastic fabric of said band being formed over its area with transferred loops and groups of drop stitches associated

therewith, thereby resisting the tendency of the band to curl.

12. A knit two-way elastic stretch fabric knit from groups of courses of fine gauge elastic yarn alternating with groups of courses of inelastic yarn, said fabric of such width as to have an inherent tendency to objectionable curling transversely of the fabric, said fabric having over its area a multiplicity of transferred loops and a multiplicity of groups of drop stitches associated with the transferred loops, thereby resisting the tendency of the fabric to curl.

13. Knit hosiery having a two-way elastic stretch band adjacent the top integrally knit from courses of fine gauge elastic yarn, said band of such width as to have an inherent tendency to objectionable curling transversely of the band, the elastic fabric in said band being formed over its area with transferred loops and groups of drop stitches associated therewith, thereby resisting the tendency of the band to curl.

14. A knit two-way elastic stretch fabric knit from courses of fine gauge elastic yarn, said fabric of such width as to have an inherent tendency to objectionable curling transversely of the fabric, said fabric being formed over its entire area with a multiplicity of transferred loops and a multiplicity of drop stitches associated therewith, thereby resisting the tendency of the fabric to curl.

15. A stocking having a welt fabric and a strain absorbing fabric connected thereto and located above the knee and of such width as to have an inherent tendency to objectionable curling, the adjacent portion of the leg of the stocking down to and below the knee being knitted to provide less easily stretchable fabric, the strain absorbing fabric being knit integral therewith and comprising a plurality of courses of covered elastic yarn alternating with courses of inelastic yarn, those courses knitted from one of said yarns having certain loops thereof transferred into interknitted engagement with associated loops.

16. Knit hosiery having a two-way stretch band knit from courses of fine gauge elastic yarn, said band of such width as to have an inherent tendency to objectionable curling transversely of the band, the elastic fabric in said band provided with a multiplicity of transferred loops associated with a multiplicity of drop stitches, the transferred loops being so positioned as to provide lock loops for the drop stitches.

17. A knit fabric having a two-way elastic stretch band integrally knit from fine gauge elastic yarn, said band of such width as to have an inherent tendency to objectionable curling transversely of the band, the elastic fabric in said band being formed over its area with transferred loops and groups of drop stitches associated therewith thereby resisting the tendency of the band to curl.

18. Knit fabric having a series of knitted elastic courses providing an elastic zone of such width as to have an inherent tendency to objectionable curling transversely of the zone, said series of courses providing a series of coursewise ribs to relieve said zone of its inherent tendency to curl.

19. Knit hosiery having a series of knitted elastic courses providing a zone of such width as to have an inherent tendency to objectionable curling, said series of courses providing a series of ribs to relieve said zone of its inherent tendency to curl.

LEROY B. HERB.