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STOCKING WITH ELASTIC STRAIN ABSORBING BAND INCORPORATING RELAXED MESHES

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Fig. 1.

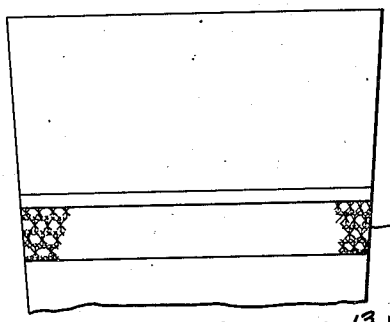
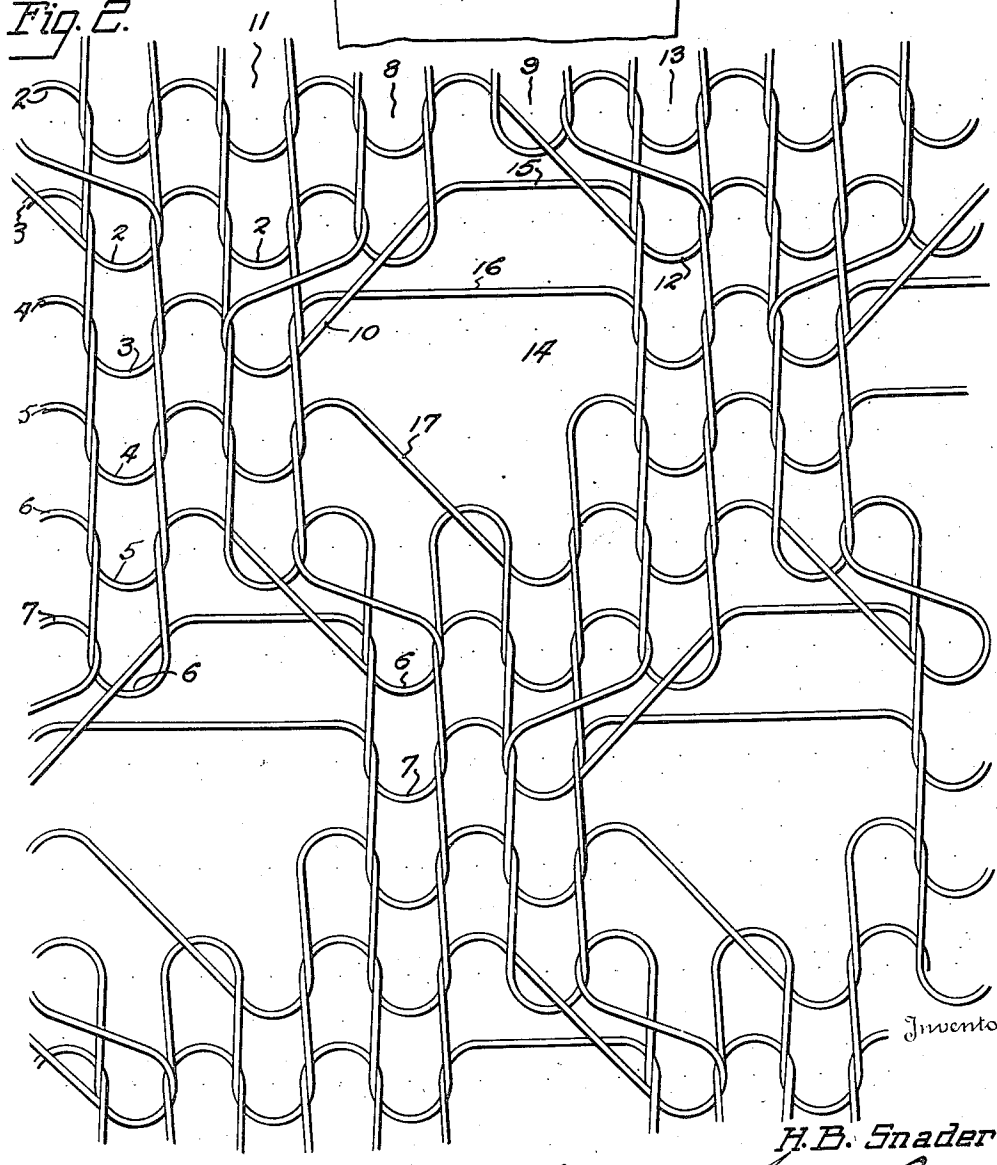


Fig. 2.



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STOCKING WITH ELASTIC STRAIN ABSORBING BAND INCORPORATING RELAXED MESHES

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12 Claims. (Cl. 66—172)

This invention relates to hosiery of that type having an integrally knit two-way stretch band incorporating fine gauge covered rubber elastic yarn, above the knee, the longitudinal stretch component of which makes the band a strain absorber to relieve the knee portion of the stocking from bursting stresses resulting from the bulge of the knee when the leg is flexed.

A band, such as described, to be of effective service as a strain absorber must comprise quite a number of courses and is subject to an inherent tendency to curl, that is, to shape itself into a channel, this being due to the fact that fine gauge rubber yarn cannot be knit without its becbming tensioned, and as the knitting is released from the needles, the rubber yarn contracts, thereby drawing the fabric of the band together, producing the curling.

This concave or dished appearance of the strain absorbing band is a detriment to the sales appeal of the stocking, to obviate which, several remedial expedients have been proposed. One of these is to break the width continuity of the elastic fabric into a plurality of very narrow bands of the fine gauge covered rubber elastic yarn, alternating with narrow bands of the basic inelastic yarn of the stocking. Another is to cross the band with a widthwise series of stiffening ribs.

The present invention has for its object the provision of means to prevent objectionable curling of the strain absorbing band, not by breaking it down into a plurality of separated narrow bands, not by providing transverse stiffening ribs, but by the employment of a pattern of knitting which provides sufficient fullness distributed through the band, to allow for the full contraction of the elastic yarn without its drawing the elastic band together.

Another object of the invention is to divide the strain absorbing band into alternate groups of courses of fine gauge covered elastic rubber loops, and groups of courses of inelastic loops, the fabric of the band being knit so as to provide circumferential series of meshes in which the elastic yarn appears in the form of loose drop stitches, the locking means for which are formed by transferred loops to the right and to the left, respectively, in the silk yarn and the meshes being closed by a loose loop or bar of the elastic yarn resulting from one of the drop stitches. The transferred lock stitches are inelastic, and therefore, do not draw the fabric together, while the closing loop although elastic, is adequately loose and full, being the result of a drop stitch, to permit full contraction of the elastic without drawing the fabric.

A further object of the invention is to stagger the meshes so that the transferred locking loops will occur in the same wale at greater distance intervals than when the meshes of adjacent groups are in longitudinal alignment, this diminishing the rib effect which results from the doubling of the loops in a single wale.

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

In the drawing which accompanies and forms a part of the following specification:

Figure 1 is a view in elevation, of the upper part of the stocking showing a strain absorbing band incorporating the features of the present invention, and

Figure 2 is a diagrammatic layout of the knitting pattern.

Referring now in detail to the several figures, the strain absorbing band, which is designated by the reference character 1, occupies the position above the knee portion of the stocking and preferably at some little distance from the top edge of the stocking, and extends circumferentially thereabout. The strain absorbing band is integrally knit with respect to the adjacent portions of the stocking, both above and below, and in the present embodiment of the invention it is composed of a plurality of groups of alternating courses composed, respectively, of fine gauge covered rubber elastic yarn and the fine gauge basic yarn of the stocking. As shown, each group consists of two courses. In Figure 2 the courses 2 and 3 are final courses of silk or other inelastic yarn in that portion of the stocking above the strain absorbing band. Then come the two courses 4 and 5, which are composed of fine gauge covered rubber yarn. These are followed by the courses 6 and 7 which are of inelastic yarn, and this order is repeated throughout the strain absorbing zone.

It is to be understood from what has been said in the prefatory paragraphs of this specification that the fine gauge covered rubber yarn cannot be knit without its being tensioned. This is due to the fact that the fine gauge elastic yarn is so readily stretchable that in a full fashion machine the length of the elastic yarn laid in front of the needles is stretched by the action of the sinkers which push it between the needles. When the loops are shed by the needles they are free to contract towards a state of repose, and this draws in the fabric of the strain absorbing band,

producing the objectionable phenomenon known as "curling."

The present invention seeks to distribute over the entire strain absorbing band a system of small areas of fullness which will permit the elastic yarn to relax down to a state of repose without distorting the adjacent fabric. These areas in the present invention take the form of meshes arranged in circumferential series in the several groups of courses and the peculiar manner in which these meshes are formed creates the fullness which permits complete relaxation of the fabric without distortion, and therefore, without curling.

The principle which underlies the formation of these meshes is that of the drop stitch, certain stitches being dropped, releasing loops both of the elastic and inelastic yarn, and thereby creating the fullness which allows for the complete relaxation of the fabric.

Referring to Figure 2, it will be observed that the meshes are created by the obliteration of the adjacent wales 8 and 9 in the areas of said meshes, and that this obliteration is brought about by the dropping of a stitch in the last-knit course 5 of the elastic yarn in the group in the wale 8, and the dropping of the stitch in the first-knit course of elastic yarn 4, in the wale 9. Thus, the dropped stitches are staggered longitudinally in the two wales by the distance of one course. The runs created by the dropping of said stitches are stopped or locked by the transfer of a loop 10 in the last-knit course 3 of inelastic yarn in the preceding group of basic loops from the wale 8 leftward to the wale 11, and the transfer of a loop 12 in the next to last course 2 of inelastic yarn in the said preceding group from the wale 9, rightward to the wale 13. Thus, the locking loops are staggered longitudinally in the respective wales by the distance of one course, in longitudinal directions corresponding to the displacement of the drop stitches, making the runs created by the drop stitches equal in length.

It is of course, understood that the dropping of a stitch causes the loop of said stitch to resolve itself into a straight bar having fullness acquired from the dissolution of the loop, and that all loops in the wale of the drop stitch up to the locking loop, whether elastic or inelastic, are likewise resolved into straight bars with consequent fullness. Thus in all the meshes, of which the mesh 14 is an example, we have the top of the mesh bounded by the oppositely transferred loops 10 and 12, which being inherently inelastic are in a state of relaxation and repose, these being tied together by the straight full bar 15 of inelastic yarn which bridges the wale 9. The sides of the mesh are bridged by the straight bar 16 of elastic yarn which possesses double fullness in view of the fact that it bridges both wales, and therefore, the sides of the mesh are in a complete state of relaxation. At its lower end the mesh is closed by the straight bar 17 of elastic yarn, and which is full in view of the fact that it bridges the wale 8.

Thus, the structure of the knitting which bounds the meshes is such as to permit the fabric between the meshes to freely contract down to a position of repose without distorting the fabric, and therefore, without producing curling.

It is, of course, well understood that the wales to which loops are transferred, ordinarily assume a ribbed effect, due solely to the thickening of the wales produced by the doubling of the loops. In order to minimize this rib-like effect, it is preferred to stagger the meshes, whereby the transferred loops of successive circumferential series of meshes will not fall in the same wale. This will, of course, widen the intervals at which the doubling of loops occurs in a single wale, and will prevent the rib-like appearance of the wale. As a matter of fact, the structure as described is such as to give the fabric in the strain absorbing zone the appearance of being composed of French knots uniformly distributed both coursewise and walewise, while at the same time the fabric is without any stiffening bias in either direction, and entirely free from any tendency to curl.

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 principle of the invention may be exemplified in other patterns of knitting than those specifically described.

What I claim as my invention is:

1. In a knit stocking of the strain absorber type, a strain absorbing band integrally knit in the stocking above the knee, the fabric of said band including alternate groups of courses consisting respectively of a plurality of courses of fine gauge covered rubber yarn, and a plurality of courses of fine gauge inelastic yarn, said fabric being formed with circumferential series of meshes, each mesh being formed by runs in adjacent wales emanating from staggered dropped stitches starting respectively in the last and next to last knit courses in a group of elastic courses, said runs being locked by staggered stitches oppositely transferred from said adjacent wales respectively in the last and next to last inelastic courses in the precedingly knit inelastic group, whereby said mesh is bounded at one end by inherently relaxed transferred loops tied by a full bar of inelastic yarn bridged across one wale, closed at the opposite end by a full bar of elastic yarn bridging the other wale, and having an intermediate bar of elastic yarn of double fullness acquired from both wales bridging its sides.

2. In a knit stocking of the strain absorber type, a strain absorbing band integrally knit in the stocking above the knee, the fabric of said band including alternate groups of courses consisting respectively of a plurality of courses of fine gauge covered rubber yarn and a plurality of courses of fine gauge inelastic yarn, said fabric being formed with circumferential series of meshes, each mesh being formed by runs in adjacent wales emanating from staggered dropped stitches starting respectively in the last and next to last courses of a group of elastic courses, said runs being locked by staggered stitches oppositely transferred from said adjacent wales respectively in the last and next to last inelastic courses in the precedingly knit inelastic group, whereby said mesh is bounded at one end by inherently relaxed inelastic transferred loops tied by a full bar of inelastic yarn bridged across one wale, and closed by a full bar of elastic yarn bridged across the other wale, and having an intermediate bar of elastic yarn of double fullness acquired from both wales bridging its sides, alternate series of meshes being staggered whereby the intervals at which transferred loops occur in the same wale are increased, minimizing the ribbed effect of the wales.

3. A stocking having a plain knit top section, said top section having consecutive courses of regular stitches of inelastic yarn, an immedi-

ately following pair of courses of inelastic yarn each having a plurality of spaced transferred stitches, the transferred stitches in said courses being relatively transferred in opposite directions and relatively staggered walewise, and an immediately following series of courses providing a series of coursewise spaced meshes, locked by said transferred stitches, said series of courses being knit of elastic yarn at least substantially throughout.

4. 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 of such width as to have an inherent tendency to objectionable curling transversely of the band, the elastic fabric in said band being provided with groups of oppositely transferred loops relatively staggered walewise of the band, and groups of drop stitches associated therewith, thereby resisting the tendency of the band to curl.

5. A one-way stretch 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 in said band provided with groups of oppositely transferred loops relatively staggered walewise of the band, and groups of staggered drop stitches associated therewith, thereby resisting the tendency of the band to curl.

6. A knit two-way elastic stretch fabric knit from groups of courses of fine gauge elastic yarn alternating with groups of courses of fine gauge inelastic yarn, said fabric of such width as to have an inherent tendency to objectionable curling transversely of the fabric, said fabric being provided with groups of oppositely transferred loops relatively staggered walewise of the fabric, and groups of drop stitches associated therewith thereby resisting the tendency of the fabric to curl.

7. A stocking comprising a knitted foot fabric, a knitted leg fabric, and a knitted top fabric, the top fabric being fabricated of an alternating arrangement of a plurality of knitted courses of elastic yarn and inelastic yarn, certain of the courses of inelastic yarn having a predetermined number of pairs of associated loops transferred in opposite directions, the pairs of transferred loops in succeeding courses being relatively staggered in a walewise direction, and the courses of elastic yarn consisting entirely of untransferred loops.

8. A stocking having a welt fabric, and a strain absorbing section connected thereto and located above the knee, 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 section being knitted integral therewith and comprising a plurality of courses of covered elastic yarn alternated with courses of inelastic yarn, those courses knitted from one of said yarns having groups of associated loops therein transferred in opposite directions to provide drop stitches for the purpose set forth, said transferred loops and drop stitches in succeeding courses being relatively staggered walewise of the fabric.

9. In a knit stocking of the strain absorber type, a strain-absorbing band integrally knit in the stocking above the knee, the fabric of said band including a plurality of groups of courses of elastic yarn separated by a group or groups of courses of inelastic yarn, said fabric being provided with circumferential series of meshes relatively staggered walewise of the band, each mesh constituted by runs through a group of elastic yarns emanating from dropped stitches in said group of elastic yarns, said meshes being locked at one end by loops transferred from the wales of said runs, and said meshes being closed at the other end by a bar of elastic yarn resulting from one of said dropped stitches.

10. In a knit stocking of the strain absorber type, a strain-absorbing band integrally knit in the stocking above the knee, the fabric of said band including a plurality of groups of courses of elastic yarn separated by a group or groups of courses of inelastic yarn, said fabric being provided with circumferentially spaced series of drop stitch meshes relatively staggered walewise of the band and locked at one end by loops transferred from inelastic courses preceding said group of elastic yarns, and said meshes being closed by a bar of elastic yarn resulting from the first of said dropped stitch meshes.

11. In a knitted stocking of the strain-absorbing type, a strain-absorbing band integrally knit in the stocking above the knee, said band including a plurality of groups of courses of elastic yarn alternating with a plurality of groups of courses of inelastic yarn, said band being provided with circumferentially spaced series of groups of dropped loops defining dropped stitches and groups of loops transferred in opposite directions located at the terminus of each of said series of dropped stitches, said groups of loops being relatively staggered walewise of the band.

12. A knitted stocking having incorporated therein above the knee a strain-absorbing band consisting of a plurality of groups of courses of elastic yarn alternating with a plurality of groups of courses of inelastic yarn, the groups of courses of elastic yarn being provided with a plurality of circumferentially spaced dropped stitches each of a width greater than the width of a single wale, said groups of courses of inelastic yarn having loops transferred in opposite directions at the terminus of each series of dropped stitches, said groups of loops being relatively staggered walewise of the band.

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