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KNITTED WEAR

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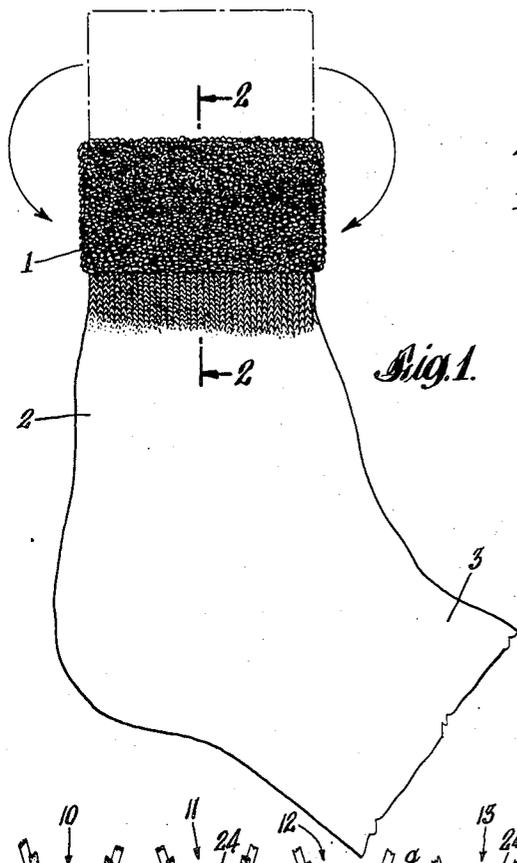


Fig. 1.

Fig. 2.

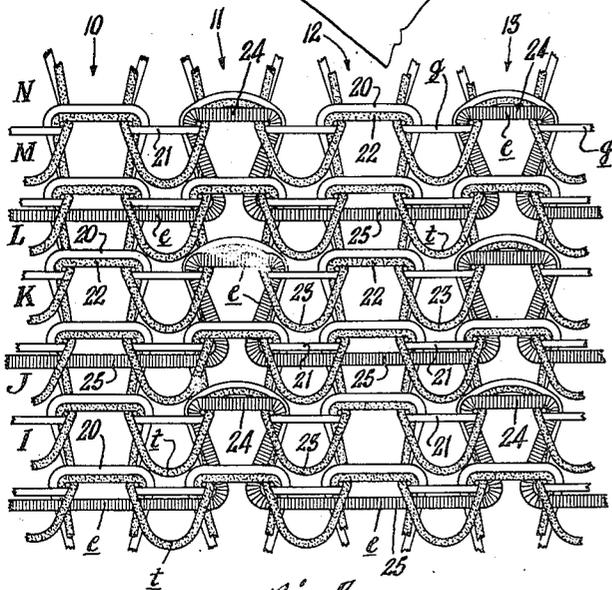
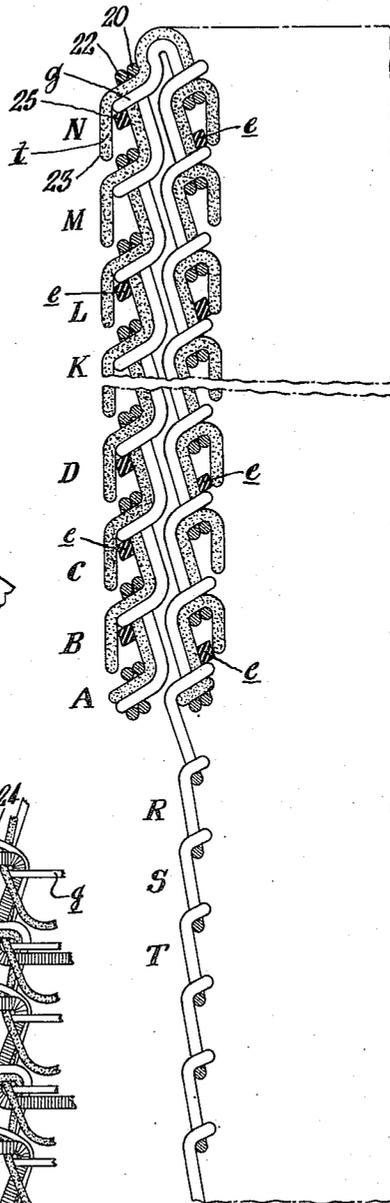


Fig. 3.

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## KNITTED WEAR

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5 Claims. (Cl. 66—172)

This invention relates to knitted wear and particularly to knitted articles having self-adjusting means incorporated therein, and to a method of making such articles.

In the manufacture of knitted wear it has been found that, since the several portions of the body of the wearer vary considerably in diameter and shape, it is necessary to either shape certain portions of the article or provide increased elasticity of certain portions. In the case of hosiery, for example, it is necessary to form the upper portion of the leg of the stocking, sock or anklet of more elastic fabric than the plain knit fabric which usually forms the leg and foot portions, in order to permit the hose to be drawn over the foot of the wearer and to insure a snug fit of the top portion on the corresponding portion of the leg of the wearer.

It has been customary in knitting half hose, for example, to form the top or cuff of rib knit fabric in order to provide the desired increased elasticity, and to knit the leg and foot of plain knit fabric in order to secure the desired fineness of texture and neatness of appearance. In knitting seamless hosiery in accordance with the customary method, the top or cuff is knit on a rib knitting machine employing two sets of needles and the top is then transferred manually to a plain knitting machine employing a single set of needles on which machine the remainder of the leg and foot are knitted. The manufacture of ribbed top stockings and the like thus necessitates the use of additional machines, the rib knitting machines and the employment of time-consuming and expensive manual operations.

In order to provide hose having a plain knit top or cuff portion, which hose can be knit without "transferring", and which has the desired elasticity and ability to fit snugly on the leg of the wearer, stockings, half hose, anklets and the like have been made having elastic strand material, such as elastic thread, incorporated therein throughout a portion or all of the top or cuff. This has been accomplished by attaching elastic thread to the inner face of the fabric during the knitting operation. Where the elastic thread has been incorporated in this manner, it has not heretofore been expedient to provide outwardly turned cuffs, such as are commonly desired on anklets, golf hose and the like, inasmuch as, when the top or cuff is turned outwardly, the elastic thread is exposed on the outer surface of the hose. It has, therefore, been necessary to provide an unturned cuff or to fold

the cuff inwardly, with the result that the top or cuff did not snugly and neatly fit the leg and an unsightly appearance resulted.

In accordance with an illustrative embodiment of the present invention, a stocking, such as an anklet, for example, is formed with a top constituted by essentially plain knit fabric, which preferably is knit uniform with the other portions of the leg, but which may be knit separately and attached to the leg as desired. The top has incorporated therein elastic thread which provides the desired shaping and elasticity of this portion of the anklet. The top is preferably formed by attaching the elastic in a plurality of selected, and preferably separated, circular courses at selected, and preferably spaced, points in each course, the elastic being incorporated in any suitable manner, but preferably by either feeding it in the hooks of selected needles, or by feeding it against the shanks of selected needles and behind intervening needles.

The top is preferably knitted by a knitting operation which produces a looped or terry fabric. The terry loops or tufts of the auxiliary thread are positioned so that they extend over and conceal the elastic thread on the inner face of the fabric and hence, when the top portion of the cuff is turned outwardly to provide the two ply or folded cuff, the elastic threads are concealed.

The elastic thread conveniently is continuous throughout the selected courses and preferably is fed under a suitable tension so that, when the top of the hose is completed, the fabric has the desired increased elasticity. Thus, the top is self-adjusting and fits the leg of the wearer snugly and neatly. The top also exerts sufficient distributed compression on the leg of the wearer to support the leg portion of the hose in position without the use of extraneous supporting means, such as garters. In the case of an anklet, the cuff fits snugly against the anklet and does not sag or drop down over the shoe of the wearer.

The present invention permits the production of a stocking, sock, anklet or other garment knit entirely of plain fabric on a single machine, thus dispensing with the additional cost and maintenance of a rib knitting machine and eliminating the cost and annoyance of transferring the top. At this point it will be noted, however, that the present invention is not limited to a stocking or other garment knitted on a single machine. It is within the purview of one embodiment of the invention to knit the cuff on one machine and transfer the same to another machine to knit the remainder of the garment in

certain cases, where this operation is advantageous.

An object of the present invention is the provision of an article of hosiery such as a stocking, sock or anklet, having at least a portion thereof of such construction as to snugly and neatly fit the leg of the wearer.

Another object of the invention is the provision of a hosiery article having elastic strand material incorporated therein and providing a snug fitting construction, wherein the elastic strand material is effectively concealed when the article is in position on the leg of the wearer.

Still another object of the invention is the provision of an anklet formed of plain knit fabric having elastic strand material incorporated therein and concealed in such manner that the top or cuff of the anklet can be turned outwardly to provide a neat and attractive appearance without exposing the elastic strand material.

Various other features and advantages of the invention will be apparent from the following particular description and from an inspection of the accompanying drawing.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawing forming a part hereof, in which

Fig. 1 is a fragmentary side elevational view of an anklet illustrating particularly the top or cuff, which is shown in turned over position;

Fig. 2 is an enlarged fragmentary, and somewhat diagrammatic view of a cross-section taken along line 2—2 of Fig. 1; and

Fig. 3 is a fragmentary view of the turned portion of the cuff illustrated in Fig. 2, this view being diagrammatic as to the positions of the threads and being intended primarily to illustrate the stitch formation.

In the following description and in the claims, various details will be identified by specific names for convenience, but they are intended to be as generic in their application as the art will permit. Like reference characters denote like parts in the several figures of the drawing.

For the purpose of illustration, the invention is disclosed in connection with its application to a formation of an anklet to which the invention is especially well adapted. However, it will be understood, as the description proceeds, that the invention may be applied to other articles of apparel and particularly hosiery which have a portion adapted to fit a predetermined part of the wearer's body where it is desired that the article be more or less form-fitting.

Referring now to Fig. 1, the anklet is formed with a top or cuff 1, the construction of which is hereinafter more fully described, a leg or ankle portion 2 and a foot portion 3, the latter being provided with the usual heel, instep and toe portions which are not shown in detail as they may be of any suitable construction.

The top or cuff 1 comprises an inelastic body or ground thread *g* knit to form needle loops 20 and sinker loops 21, constituting plain knit fabric having wales 10, 11, 12 etc. and courses K, L, M, etc. A terry thread *t* is incorporated in the fabric in a suitable manner and in the present example, is knit to form needle loops 22, plated

with the needle loops 20 of the ground thread *g*, and loose sinker loops 23. An elastic thread *e* of a suitable type, which may be a covered rubber thread, such as "Lastex", is incorporated in the fabric in a suitable manner. In the present example, the elastic thread *e* is knitted with the ground thread *g* at spaced wales, for example, 11 and 13, in spaced courses, for example, K and M. The elastic thread *e* is incorporated by knitting loops 24 thereof with the needle loops of the ground thread *g* at the spaced wales 11 and 13 in the aforesaid spaced courses K and M, the elastic thread *e* being floated, as indicated at 25, between the loops 24.

The anklet may be formed on any suitable knitting machine capable of knitting terry fabric and capable of incorporating elastic thread in the desired manner. Preferably, a circular stocking machine having terry sinkers (not shown) and an elastic incorporating attachment (not shown) is employed.

The cuff 1 of the anklet is formed by knitting a plurality of successive courses of plain fabric, as for example, courses A, B, C, etc., these courses being knit from the inelastic ground thread *g* by feeding the ground thread *g* to all of the needles of the machine at a first feeding station and thereafter actuating the needles at a knitting station by a suitable cam arrangement (not shown) in the usual manner, whereby the needles execute a knitting movement and draw loops of the ground thread *g* to form the usual plain stitches.

A terry thread *t*, which may be of the same color and kind as the ground thread *g* or which may be different, if desired, is fed to all of the needles, preferably at a second feeding station (which preferably is nearer the knitting station than the said first feeding station), and these needles are actuated, preferably at the aforementioned knitting station, to draw the loops of the terry thread *t* along with the loops of ground thread *g*. Suitable terry sinkers (not shown) of any ordinary construction are employed in the usual manner to form terry loops 23 of the terry thread *t*.

It will be noted that, in the present example, the terry thread *t* is fed to all of the needles in all of the courses of the cuff and all of the sinker loops 23 of the terry thread are loose terry loops. However, as hereinafter explained, variations in the manner of knitting the terry thread *t* may be made without departing from the invention.

An elastic thread *e* is incorporated in the cuff during the knitting thereof. In the present example, the elastic thread *e* is fed to the hooks of selected needles at a third feeding station (preferably in advance of said first feeding station) and the selected needles are actuated at the knitting station to draw loops of the elastic thread *e* along with the loops of the ground thread *g* and terry thread *t*, thus knitting the elastic thread *e* into the fabric at selected wales in plating relation with the ground thread *g*. In the present example, it will be noted that the elastic thread *e* is fed to and knitted by every other needle in every other course. However, variations in needle and course selection may be employed as hereinafter explained.

The selection of those needles which are to receive and knit the elastic thread *e* may be accomplished in any known manner employed in forming plated fabric. For example, suitable cams (not shown) may be employed for raising the selected needles above the remaining needles.

The elastic thread is fed to the hooks of these selected, raised needles whereafter all of the needles are actuated in the usual manner to knit the elastic thread into the fabric.

5 In the illustrative embodiment, the elastic thread is knit into every other course of the fabric. This may be accomplished either by needle-selecting cams which are thrown into operation during the knitting of every other course, or by  
10 employing a multiple feed machine wherein two inelastic ground threads are fed at two feeding stations and knit at two knitting stations, and the elastic thread is fed at a single feeding station and knit at one of the knitting stations.  
15 Thus elastic thread is incorporated only in every other course.

The elastic thread preferably is incorporated in every course for several courses at the start of the cuff and thereafter is incorporated in the  
20 selected courses, for example, every other course.

The elastic thread is fed under predetermined, controlled tension which preferably is sufficient to cause the fabric to be drawn in when the fabric leaves the needles thereby providing increased  
25 elasticity to the fabric. However, in certain cases it may be found desirable to knit the elastic under only sufficient tension so that when the fabric contracts as it leaves the knitting needles the elastic will contract correspondingly and thus  
30 will not have loops or kinks therein but will be entirely incorporated in the fabric.

After the cuff has been completed, the knitting of the elastic thread *e* preferably is discontinued and the machine is operated to knit plain fabric  
35 courses R, S, T, etc. In many cases it is desirable also to discontinue the knitting of the terry thread *t* so that the leg and foot are formed of ordinary plain knit fabric. However, in other cases it may be desirable to provide a so-called  
40 "fleece-lined" anklet in which case the terry thread *t* is knit throughout the desired additional portions of the anklet.

The heel, instep and toe of the anklet may be knitted in the usual manner to complete the  
45 anklet; preferably, the leg and foot are made on the same machine as that on which the top is made, thus eliminating the necessity for "transferring".

Various modifications may be made in the construction of the anklet without departing from the spirit of the invention. For example, the elastic thread may be knit into the fabric in every wale of the courses in which it is incorporated, or it may be incorporated in wales spaced  
55 apart by two or more intervening wales and floated on the back of the fabric across these intervening wales. Variations may also be made in the course spacing of the elastic strands. For example, the elastic thread may be incorporated,  
60 either by knitting or interlacing, in every course, every other course, in every third course or with even greater spacing, between the courses in which it is incorporated. It is generally preferable to space the elastic carrying courses and provide one or more intervening courses free of  
65 elastic thread in order to prevent the fabric from being too dense.

If desired, the elastic may be incorporated in the fabric by feeding it under the latches of selected needles and behind the remaining needles during the knitting of the ground thread whereby the elastic is incorporated by interlacing with the loops of ground thread instead of being knit into the fabric in plating relation as where it is  
75 fed in the hooks of the needles. Where the elas-

tic is incorporated by interlacing, it may be incorporated in contiguous or spaced courses, as may be desired, and may be fed under the latches of every other needle, every third needle or in other manners as will be apparent to those skilled  
5 in the art. Where the elastic is incorporated in this manner, the terry thread may be incorporated in any suitable manner, it being only necessary that the terry loops be so located and of sufficient density to suitably conceal the elastic  
10 thread and to produce the attractive appearance contemplated by the invention.

It will be understood that it is not necessary to incorporate the terry thread in contiguous courses but it may be incorporated only in every  
15 other course, every third course or the like. It is preferable, however, that the terry thread be incorporated in a sufficient number of courses and so located and that the sinker loops be of sufficient length so as to substantially conceal  
20 the elastic thread. Where the elastic thread is incorporated in relatively widely spaced courses of the fabric, the concealing of the elastic thread may be accomplished by incorporating the terry thread in a course or courses at or near the elastic thread so that the terry loops extend over  
25 and conceal the elastic thread.

It is not necessary to incorporate the terry thread in such manner that the loops thereof appear on the entire surface of the fabric but various design effects may be produced by suitable  
30 incorporation of the terry thread. For example, the terry thread may be omitted from certain courses, or it may be drawn with close sinker loops so that no loose terry loops are formed. On the other hand, other design effects may be produced by drawing the sinker loops tight in certain wales of one or more of the courses. For example, a striped or ribbed effect is produced if the loops of terry thread are drawn tight in corresponding  
40 spaced wales of consecutive courses.

The terry loops may be continued throughout the entire anklet, sock or stocking, except possibly the heel and toe pockets, to provide an article having a thicker and heavier texture than  
45 ordinary plain knit fabric. In this case, the article can be turned inside out and worn inside out, in which case an unusual and attractive appearance is provided. While it is preferable in such case to wear the article without turning down the  
50 cuff, the cuff can be turned if desired. In any case, no matter in what fashion the article is worn, the strands of elastic thread are concealed and do not detract from the attractive appearance of the article.  
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While the terry thread may be incorporated in every course or spaced courses, as above described, beginning at the top of the cuff, an attractive and finished appearance may be provided at the top edge of the cuff by omitting the  
60 terry thread from the first or the first few courses of the top or by drawing the terry thread in close loops with the ground thread so that the sinker loops of the terry thread do not project from the fabric. This provides a variation in  
65 the appearance of the cuff at the extreme edge thereof, as compared to the remainder of the cuff and produces an attractive and unusual appearance.

The present invention is particularly advantageous in connection with the manufacture of so-called anklets which have relatively short leg portions adapted to terminate at the lower portion of the leg of the wearer adjacent the ankle. In order to provide a finished appearance for  
75

anklets, the cuff is often turned over. However, where elastic strand material is incorporated in the cuff, it has not been possible to turn the cuff outwardly as the strand material thereof is exposed and presents an unsightly appearance. The present invention permits the cuff to be turned outwardly and the terry loops effectively conceal the elastic strand material. Furthermore, the inner face of the fabric, which has the terry loops projecting therefrom, is exposed when the cuff is turned outwardly and provides a very attractive appearance which contrasts with the appearance of the plain knit fabric adjacent the turned over cuff.

The elastic thread incorporated in the cuff provides elasticity for the cuff and causes the cuff to cling to and snugly fit the leg of the wearer and thus prevents the cuff from dropping over the top of the shoe of the wearer and presenting an unkempt appearance. While the invention is particularly applicable to anklets, it is also suitable for other articles, as for example, golf stockings, sweater cuffs and the like.

While certain novel features of the invention have been disclosed herein, and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. An article of hosiery comprising a foot, leg and top, said top being formed of terry knit fabric, the terry loops of which project on the inner face thereof, said top having an elastic thread incorporated therein throughout a plurality of courses on the inner face of the fabric, and said tufts being sufficiently long and dense

to substantially conceal said elastic thread, so that when said cuff is turned outwardly a form-fitting two-ply cuff is provided having a plush-like surface exposed and the elastic thread substantially concealed.

2. An anklet formed essentially from plain knit fabric having a top portion formed of terry knit fabric and having elastic strand material incorporated therein and floated on the inner face of the fabric, the terry loops being sufficiently dense and of sufficient length to overlap and substantially conceal the elastic strand material.

3. An article of hosiery comprising foot, leg and top, said top being formed of terry knit fabric and having elastic strand material incorporated therein under sufficient tension to provide a form-fitting top.

4. The method of knitting an article of hosiery on a circular knitting machine which comprises knitting a plurality of courses of terry knit fabric to form a top, incorporating an elastic thread in a plurality of courses of said top on the inner face of said top and thereafter continuing to knit plain fabric to form a leg and foot without removing the article from the knitting machine.

5. The method of knitting an article of hosiery which comprises knitting a plurality of courses of plain knit fabric, thereafter knitting further courses of terry fabric, incorporating an elastic thread in the plain knit courses and courses of terry fabric during the knitting operation, said elastic thread being incorporated under sufficient tension to draw in the top of said article and to provide substantially greater elasticity than normal for the plain knit fabric.

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