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SELF-SUPPORTING HOSIERY TOP

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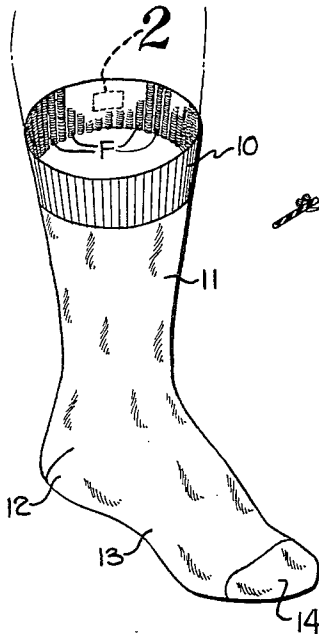


Fig-1

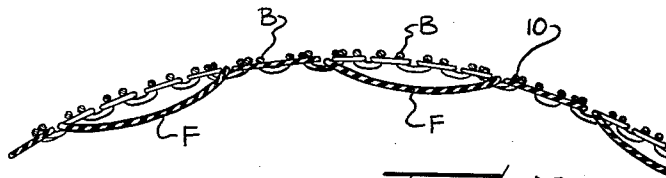


Fig-3

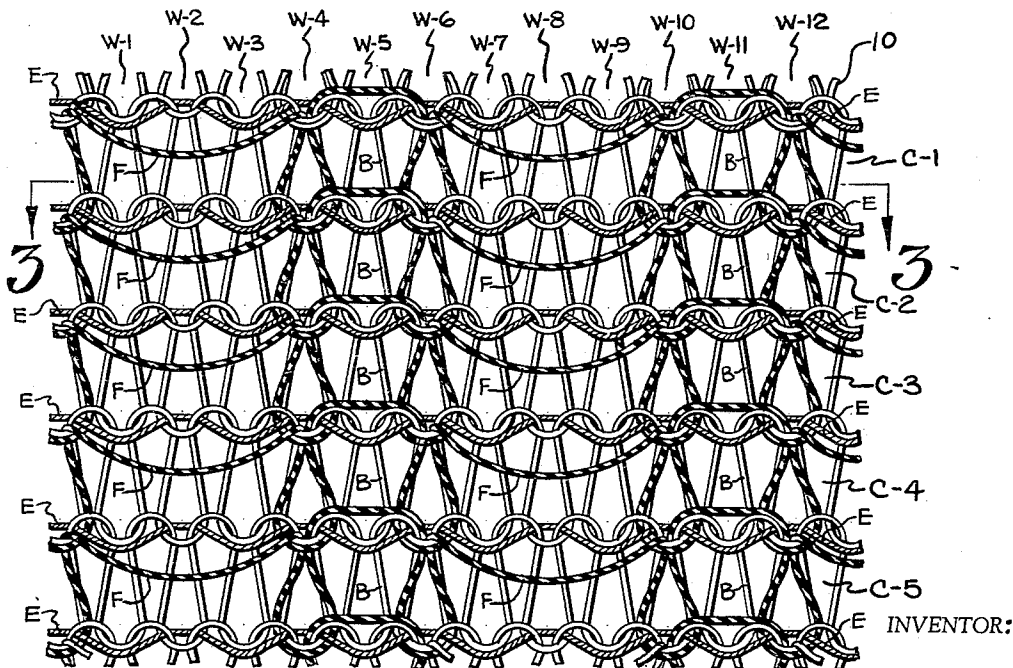


Fig-2

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SELF-SUPPORTING HOSE TOP

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8 Claims. (Cl. 66—172)

This invention relates generally to self-supporting hosiery and more particularly to a self-supporting hosiery top having inwardly extending loops of relaxed frictional material around the inner periphery of the top which frictionally engage the leg of the wearer to support the top of the hose.

Most so-called self-supporting hose presently available have a covered elastic strand or thread incorporated in the top as the fabric is knit. The covered elastic strand is usually incorporated in the fabric under considerable tension, thus causing the top of the hose to contract when the fabric is removed from the knitting machine. In this type of self-supporting hosiery, the amount of support provided depends entirely upon the amount of compressive force with which the top of the hose grips the leg of the wearer. In order to accomplish its intended purpose, that is, support the hose on the leg, the covered elastic strand must be incorporated in the fabric with so much tension that, in many cases, the top of the hose grips the leg so tight that it interferes with the normal circulation of blood in the leg and is uncomfortable to the wearer. Also, should the covered elastic strand break, the support will be lost and after laundering, the elastic strand will lose some of its force and the top of the hose will then lose its ability to stay up on the leg.

Recognizing the above disadvantages of using covered elastic strands to cause the top of the hose to grip the leg, it has been proposed to apply a coating of latex or the like to the interior surface of the top of the hose. Woven bands having outwardly extending loops of uncovered rubber have also been used to support the top of the hose. The supporting band is sewed or otherwise attached to the top edge of the hose in such a manner that the loops engage the leg of the wearer and help support the same. However, neither of these hosiery supporting methods have proved entirely satisfactory because, in most cases, they are objectionable from an appearance standpoint and they require an additional operation after completion of the knitting to apply the supporting material to the top of the stocking.

With the foregoing in mind, it is a primary object of the present invention to provide a self-supporting hosiery top having a strand of frictional material incorporated in the knitted cuff or top of the hose in such a manner that relaxed loops of the frictional strand extend inwardly of the cuff to engage the leg of the wearer and frictionally support the top of the hose without relying solely upon the gripping action of the knit top or cuff against the leg.

It is another object of the present invention to provide a hose having a self-supporting top in which a strand of frictional material is incorporated in the knitted top of the hose while the top is being knit and in such a manner that the top, leg and foot of the hose may be economically knit in a continuous operation on a single knitting machine.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

FIGURE 1 is a perspective view looking downwardly on one type of hosiery to which the present invention may be applied and illustrating generally the appearance of the outermost surface of the cuff and also illustrating the man-

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ner in which the relaxed loops of frictional strand material are positioned on the inner surface of the cuff;

FIGURE 2 is a greatly enlarged fragmentary elevational view of the area of the cuff fabric indicated by the dotted rectangle 2 in FIGURE 1 and looking at the inner surface of the self-supporting top of the hose;

FIGURE 3 is a horizontal sectional view through the fabric shown in FIGURE 2 and illustrating the manner in which the relaxed loops of frictional strand material extend inwardly from the inner face of the fabric.

Referring to FIGURE 1, the hose includes a knit cuff or top 10, a leg 11, a heel pocket 12, a foot 13 and a toe pocket 14. The hose may be knit either from the top to the toe or from the toe to the top and in either case, the parts are successively knit and joined together, preferably on the same knitting machine. In the present instance, the hose will be described as being knit from the top to the toe, which is the most popular method presently employed. Any desired type of anti-ravel, make-up or selva courses are first knit while a body yarn, indicated at B in FIGURE 2 is fed to the needles to form stitch loops in the wales at the top of the hose.

The body yarn B may be of any conventional type of yarn formed of natural or synthetic material such as cotton, wool, rayon, silk, nylon or the like each of which normally has a relatively low coefficient of friction, particularly when compared to the relatively high coefficient of friction of those strands employed for forming loops which frictionally engage the leg of a wearer, to be later discussed.

After the upper selva is formed, the body yarn is fed to all of the needles in the machine to form a base fabric having stitch loops forming wales, such as those indicated at W-1 to W-12 in FIGURE 2, and courses such as those indicated at C-1 through C-5. During the knitting of the base fabric, it is preferred that a covered elastic strand E be incorporated therein. In the present instance, the covered elastic strand E is fed to the hooks of alternate needles and as the body yarn B is knit, the covered elastic strand E is "laid in" the fabric in a conventional manner, as illustrated in FIGURE 2.

The covered elastic strand E is laid in the fabric under sufficient tension to constrict or draw together the fabric in a walewise direction. The covered elastic strand E is provided in most hosiery tops to support the top of the stocking on the leg of the wearer. This elastic strand E does not normally come into contact with the leg of the wearer unless it is laid in every third wale of the fabric and even then, it does not have sufficient frictional engagement with the leg to prevent downward movement of the cuff and the support provided is through its constricting action to draw the fabric tighter around the leg.

Although the covered elastic strand E is shown in the drawings, it is not used to tightly draw the fabric around the leg of the wearer but to contract the fabric only enough to cause the top of the hose to lightly engage the leg. In some instances, it will not be necessary to use the covered elastic strand E, such as when the base fabric is knit of a stretchable body yarn and engages the leg snugly.

During the formation of the courses C-1 through C-5 in the top 10 of the hose, a strand of uncovered frictional material F is incorporated in the fabric in such a manner that portions thereof form inwardly extending relaxed loops which engage the leg of the wearer when the hose is placed on the leg to prevent slippage and retain the same in position on the leg.

In the present instance, the strand of frictional material F is incorporated in the fabric by knitting it in plated relation with the body yarn B in the spaced apart wales W-4, W-6, W-10 and W-12. It is preferred that the

strand of frictional material extend inwardly from the inner face of the fabric as it is floated across the wales W-1, W-2, W-3 and W-7, W-8, W-9 to form untensioned inwardly extending loops. The portion of the strand F which is floated across the wales W-5 and W-11 may be under some tension so that it will stay in fairly close relationship to the inner face of the fabric.

It is preferred that an uncovered strand of rubber be used for the strand of frictional material F since it inherently has a high coefficient of friction and has been found to provide sufficient frictional resistance to prevent slippage of the top 10 of the hose downwardly on the leg while at the same time avoiding an uncomfortable and tight feeling. However, the strand of frictional material F may be formed of other suitable stretchable or non-stretchable material as long as it has sufficient frictional resistance to slippage when engaging the skin.

For example, it has been determined that spandex types of yarn, such as Lycra and Vyrene (recently developed stretchable synthetic yarns having a high coefficient of friction), treated or latex coated yarns such as cotton or rayon, etc., have the desired properties for being used to carry out the present invention. It has also been determined that yarns such as conventional untreated cotton, wool, rayon, silk, nylon and the like do not have the desired properties for being used for forming the leg engaging loops of the present invention since they do not provide sufficient frictional engagement with the leg of the wearer.

The frictional strand material F may be floated in the fabric in relaxed condition between the stitch loops in any desired manner. For example, strand engaging instrumentalities may be provided above the circle of needles to engage and hold the floated portions of the strand F inwardly until after the strand is incorporated in the fabric. After the instrumentalities release the portions of the strand F, they will form inwardly projecting relaxed or untensioned loops (FIGURE 3). A knitting machine having strand engaging instrumentalities suitable for forming the relaxed loops of the frictional strand material F is disclosed in my prior U.S. Patent No. 2,661,612 issued December 8, 1953. Of course, the loops of the strand F may extend inwardly a greater or lesser amount than that shown, if desired.

In the present instance, the strand of frictional material F is knit in plated relationship with the body yarn in spaced apart wales and in succeeding courses, the strand is knit in the same wales however, it is to be understood that the strand of frictional material F may be incorporated in spaced apart courses only and in some instances, it may be desirable to lay in the strand F instead of knitting it in. Also, it is not necessary that the wales in which the strand of frictional material F is knit be positioned in walewise alinement as the strand F may be knit in different wales from course to course to thus alternate the walewise position of the inwardly extending loops from course to course. Although the strand of frictional material F is shown floating across three needle wales, it is to be understood that it may float across a greater or fewer number of needle wales and may be incorporated in a greater or lesser number of wales between loops than that shown.

The self-supporting hosiery top of the present invention employs a strand of frictional material, such as uncovered rubber, which may be economically incorporated in the top of a hose in such a manner that it forms inwardly extending loops on the inner face of the top which frictionally engage the leg of the wearer and comfortably support the hose on the leg. Although the present self-supporting hosiery top is shown as being knit integral with the leg and foot of a man's hose, it may be knit integral with the top of ladies' or childrens' hose also. It will be understood that the manner of incorporating the strand of frictional material in the knit fabric to form the

inwardly extending loops may be changed and modified without departing from the invention.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn to form a base fabric having a plurality of courses and wales, a strand of elastic material incorporated in certain wales of said courses and resiliently holding said wales close together, a strand of frictional material having a relatively high coefficient of friction incorporated in certain spaced apart wales of certain of said courses, and said strand of frictional material floating across the wales between said certain wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

2. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn having a relatively low coefficient of friction to form a base fabric having a plurality of courses and wales, a strand of elastic material incorporated in certain wales of said courses to resiliently hold said wales together, a strand of frictional material having a relatively high coefficient of friction knit in plated relationship with the body yarn in certain spaced apart wales of certain of said courses, and said strand of frictional material floating across the wales between said certain wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

3. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn having a relatively low coefficient of friction to form a base fabric having a plurality of courses and wales, a strand of covered elastic material incorporated in certain wales of said courses to resiliently hold said wales together, a strand of frictional material having a relatively high coefficient of friction knit in plated relationship with the body yarn in certain spaced apart wales of certain of said courses, and said strand of frictional material floating across the wales between said certain wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

4. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn having a relatively low coefficient of friction to form a base fabric having a plurality of courses and wales, a strand of elastic material incorporated in certain wales of said courses to resiliently hold said wales together, a strand of frictional material having a relatively high coefficient of friction knit in plated relationship with the body yarn in certain spaced apart wales of certain of said courses, at least some of said plurality of courses having both said elastic material and said frictional material therein, and said strand of frictional material floating across the wales between said certain wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

5. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn having a relatively low coefficient of friction to form a base fabric having a plurality of courses and wales, a strand of elastic material incorporated in certain wales of said courses to resiliently hold said wales together, a strand of frictional material having a relatively high coefficient of friction knit in plated relationship with the body yarn in certain spaced apart wales of certain of said courses, at least some of said plurality of courses having both said elastic material and said frictional material therein and both being positioned in at least some of the same wales therein, and said strand of frictional material floating across the wales

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between said certain wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

6. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn having a relatively low coefficient of friction to form a base fabric having a plurality of courses and wales, a strand of elastic material incorporated in alternate wales of each of said courses to resiliently hold said wales together, a strand of frictional material having a relatively high coefficient of friction incorporated in certain spaced apart wales of each of said courses, and said strand of frictional material floating across the wales between said certain wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

7. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn having a relatively low coefficient of friction to form a base fabric having a plurality of courses and wales, a strand of elastic material incorporated in certain wales of said courses to resiliently hold said wales together, a strand of frictional material having a relatively high coefficient of friction knit in plated relationship with the body yarn in certain spaced apart wales of certain of said courses, and said strand of frictional material floating across at least three wales between said certain wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

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8. A hose having a self-supporting knit top comprising stitch loops knit of a body yarn having a relatively low coefficient of friction to form a base fabric having a plurality of courses and wales, a strand of elastic material incorporated in certain wales of said courses to resiliently hold said wales together, a strand of frictional material having a relatively high coefficient of friction knit in plated relationship with the body yarn in spaced apart wales of certain of said courses, said strand of frictional material floating across a single wale between certain of said spaced apart wales, and said strand of frictional material floating across at least three wales between certain of said spaced apart wales and forming loops extending from the inner face of the base fabric which are adapted to frictionally engage the leg of a wearer.

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