Sept. 13, 1938. E. C. LOCHHEAD 2,130,018

HOSIERY AND METHOD OF MAKING THE SAME

Filed Sept. 29, 1936

FIG. 1.

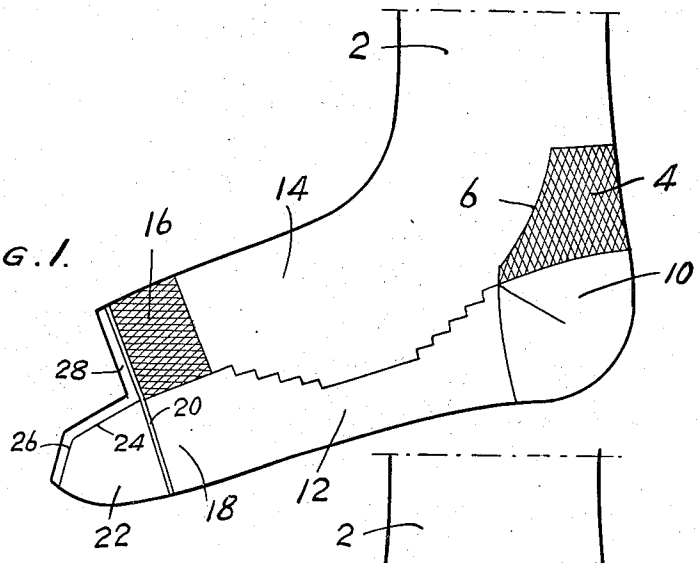


FIG. 2.

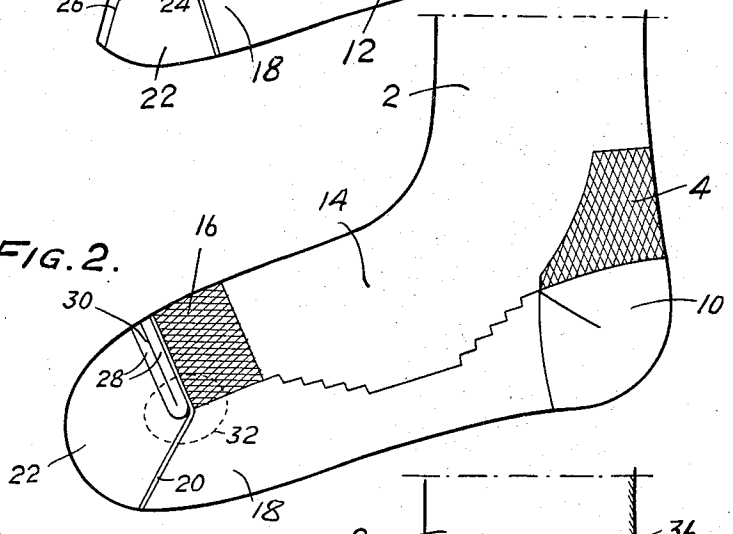
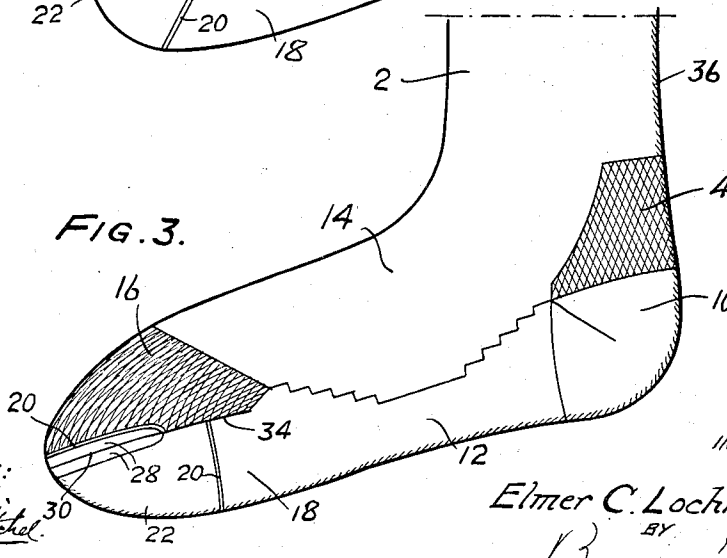


FIG. 3.



WITNESS:

INVENTOR

Elmer C. Lochhead

BY

ATTORNEYS.

Patented Sept. 13, 1938 2,130,018

UNITED STATES PATENT OFFICE

2,130,018

HOSIERY AND METHOD OF MAKING THE SAME

Elmer C. Lochhead, Moberly, Mo., assignor of one-half to Charles R. Henderson, Moberly, Mo.

Application September 29, 1936, Serial No. 103,072

9 Claims. (Cl. 66—185)

This invention relates to hosiery and a method of making the same, and particularly refers to the production of mesh areas in hosiery of the circular knit type.

With the use by women of sandals open about the toes, there has been introduced the style of providing in the toes of stockings open mesh areas of a more or less toe-revealing nature. The production of mesh areas of this type in full-fashioned hosiery offers no particular problem. On the other hand, in the case of circular knit hosiery, the introduction of such areas involves manufacturing problems in the way of maintenance of proper fit and appearance along with the production of the mesh area. It is an object of the present invention, therefore, to provide mesh areas of the type indicated in circular knit hosiery while at the same time maintaining a proper fit and appearance of the stocking.

It is a further object of the invention to provide a mesh area serving as a reinforcement above the heel in place of the usual plain knitted high splice.

The above and other objects, particularly relating to details of construction and procedure, will be apparent from the accompanying drawing in which:

Fig. 1 indicates the foot portion of a stocking blank formed in carrying out the method of this invention as the blank is taken from the knitting machine;

Fig. 2 is a view similar to Fig. 1, but showing the product following the looping operation and indicating a portion of the stocking which is to be cut from each side thereof; and

Fig. 3 is a similar view of the foot portion of the finished stocking.

The stocking blank may be formed on a circular knitting machine of any conventional type having suitable pattern devices for the formation of mesh fabric. For example, the machine may be of the type disclosed in Smith Patent 1,772,230, dated August 5, 1930 and the patents referred to therein. While the pattern devices indicated in the Smith patent may be specifically used, it will be clear that other equivalent machines are equally applicable to the formation of this product. The pattern set-ups which are required will be obvious from the discussion of the mode of manufacture.

Referring first to Fig. 1, the stocking blank is provided with a circular knit leg portion **2** surmounted by a top of any conventional type. When the position of the usual high splice is reached, the circular knitting is continued, but there is introduced an additional yarn at the rear of the stocking, while, at the same time, the needles forming the rear of the stocking are so manipulated as, for example, indicated in the Smith patent, that there is produced a mesh area indicated at **4** corresponding to the usual closely knitted high splice. As is well known in the art, various types of meshes may be produced by manipulations of the yarns through selected needles to produce various arrangements of floats and draw and tuck stitches. The Smith patent referred to above, for example, illustrates (in Fig. 5 thereof) the type of mesh which may be used. The mesh so produced is of satisfactorily open character to give the desired results. Preferably by introducing needles into action at the edges of the series which are being controlled by the pattern mechanism and which are taking the additional reinforcing and mesh-producing yarns, the high splice **4** may be tapered as indicated at **6**. The outline given to the high splice may, of course, be varied in any suitable fashion, depending upon the appearance desired.

Until the completion of the high splice, rotary knitting is maintained. The heel is then formed by reciprocatory knitting in the usual fashion, successive narrowing and widening producing the heel indicated at **10**, which, as is usual, may be formed from a heavier yarn.

Following the completion of the heel, rotary knitting is resumed to knit the instep and, by the addition of the reinforcing yarn, a cradle sole indicated at **12**, which may have its boundaries suitably formed by control of the number of needles taking the auxiliary yarn.

After the completion of the proper lengthwise extent of instep, the instep needles are manipulated in a fashion similar to that of the sole needles during the production of the high splice **4**, and an auxiliary yarn is introduced to the instep needles to form the mesh area indicated at **16** which, in general, for the sake of appearance, though not necessarily, will embody the same type of mesh as that appearing in the high splice. Simultaneously with the formation of this mesh, the knitting of the sole continues to form the portion **18**, with the continued introduction of the auxiliary sole yarn. The side boundaries of the mesh area **16** may be substantially straight as indicated in Fig. 1, or, by selective control of the needles forming that area, there may be produced a tapering or rounded mesh area.

Following the completion of the mesh area at **16**, plain circular knitting may be resumed for a few courses as indicated at **20**. Thereafter, the instep needles are taken out of action and, with the introduction of a reinforcing yarn, reciprocatory knitting effected with a narrowing operation to produce the toe portion **22** having a tapered boundary as indicated at **24**, the narrowing being produced in the customary fashion by successive removal of needles from the active group. When the point **26** is reached marking the boundary of the narrowed portion, all of the needles are restored to action and looper's rounds are knitted as indicated at **28**. The blank is thus completed.

In the formation of the usual toe on a circular knit machine, the narrowing just referred to would have been succeeded by a widening operation to produce the conventional toe pocket. In the present instance, that is not the case, and there is left to be looped to the upper half of the looper's rounds the portion of the looper's rounds extending along the tapered edge **24** and the end of the toe portion **22**.

In the next step involved in the production of the stocking, this looping is effected along the line indicated at **30** in Fig. 2.

The result of this operation is to produce a toe portion of quite unsatisfactory shape which may be recognized to have far too much material at the sides adjacent the junctions of the mesh portion **16**, the sole **18** and the toe portion **22**. The excess material may be removed from these junctions by cutting out the portions of the fabric on opposite sides within the areas approximately delineated by the dotted line designated **32** in Fig. 2.

Following the removal of this material, the edges of each of the holes are brought together and stitched along lines indicated at **34** in Fig. 3. The addition of seaming **36** along the rear of the leg and extending down through the sole portion completes the product.

By the removal of the area indicated at **32** and the provision of the seaming indicated at **34**, a toe is produced having as good fitting qualities as conventional stocking toes. By boarding, the mesh area at **16** is somewhat distorted as indicated in Fig. 3 so as to extend well down toward the front of the toe. The looping line **30** has, of course, a quite satisfactory appearance, but at any rate, being disposed quite low about the tips of the toes, is substantially unnoticeable. The same is true of the seams **34**. The result is the production of a toe having a quite satisfactory fit and appearance, to be worn with an open type of sandal.

The type of mesh produced by the knitting of two yarns with variously placed floats and tuck or draw stitches is not weak, but, on the contrary, constitutes a reinforced portion of the stocking which is particularly resistant to the production of runs. Although the mesh type of high splice is not so desirable as the mesh toe, it offers the advantages of a reinforcement and run-resistant area. The usual reason for a high splice is, of course, the provision of reinforcement where wear occurs due to friction with the edge of the heel portion of a shoe. High splices formed by plain knitting are not run-resistant.

Various portions of the stocking to the rear of the toe will be recognized as substantially conventional, particularly if, instead of the mesh high splice, a conventional high splice is used. For the formation of the high splice and foot portions of the stocking, there may be adopted various arrangements such as that indicated in my application Serial No. 79,448, filed May 13, 1936. The arrangement just referred to improves the fit to a considerable extent. It will also be obvious that the invention is applicable to the split foot type of stocking and other types.

It will be clear that numerous other variations may be made in details of the invention; for example, in the type of mesh which is used and in the specific formation of the boundaries of the various areas and their extents.

What I claim and desire to protect by Letters Patent is:

1. Circular knit hosiery comprising a toe portion having a circularly knit open mesh upper part and a lower part shaped by narrowing without substantial subsequent widening and seamed to the upper part.

2. Circular knit hosiery comprising a toe portion having an open mesh upper part knit integrally with the instep and a lower part knit integrally with the sole, the two parts being joined by a seam extending about the front of the toe portion.

3. Circular knit hosiery comprising a toe portion having an open mesh upper part knit integrally with the instep and a lower part knit integrally with the sole, the two parts being joined by a seam extending about the front of the toe portion, the rearward portions of the seam extending diagonally across the wales of both said parts.

4. Circular knit hosiery comprising a toe portion having an open mesh upper part knit integrally with the instep and a lower part knit integrally with the sole, looping stitches joining the forward portion of said parts to provide a seam extending about the front of the toe portion, the rearward portions of said parts being joined by stitching extending diagonally across the wales of both said parts.

5. The method of forming a toe portion in hosiery comprising knitting a mesh area as a continuation of the instep of the foot portion and also a continuation of the sole of the foot portion by rotary knitting, then knitting by reciprocatory knitting a lower narrowed toe part, looping said lower toe part to said mesh area, cutting excess material from the sides of the toe portion, and closing the resulting opening by stitching.

6. The method of forming a toe portion in hosiery comprising knitting a mesh area as a continuation of the instep of the foot portion and also a continuation of the sole of the foot portion, then knitting a lower toe part, stitching said lower toe part to said mesh area, cutting excess material from the sides of the toe portion, and closing the resulting opening by stitching.

7. The method of forming a toe portion in hosiery comprising knitting a mesh area as a continuation of the instep of the foot portion and also a continuation of the sole of the foot portion, then knitting a lower toe part, stitching said lower toe part to said mesh area along a line extending about the front of the toe of the finished stocking, and taking up excess material at the sides of the toe portion by stitching.

8. The method of forming a toe portion in hosiery comprising knitting an upper mesh toe part and a lower toe part, joining said parts together by stitching, cutting excess material from the sides of the toe portion, and closing the resulting opening by stitching.

9. The method of forming a toe portion in hosiery comprising knitting an upper mesh toe part and a lower toe part, joining said parts together by stitching along a line extending about the front of the toe of the finished stocking, and taking up excess material at the sides of the toe portion by stitching.

ELMER C. LOCHHEAD.