Jan. 2, 1962 M. KAPLAN 3,015,171

STRETCHABLE SLIPPER CONSTRUCTION

Filed Nov. 13, 1959

Fig. 1.

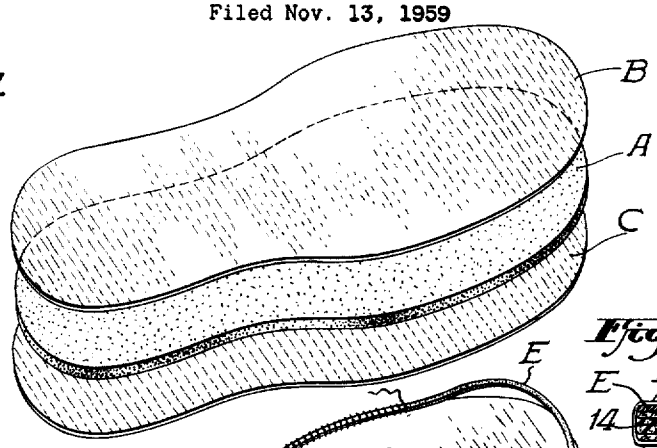


Fig. 2b.



Fig. 2a.

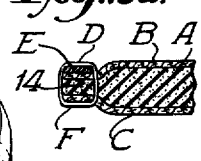


Fig. 2.

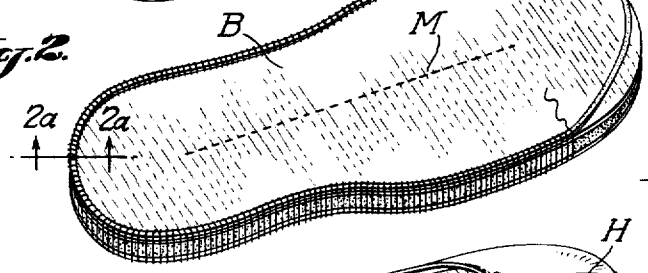


Fig. 3a.

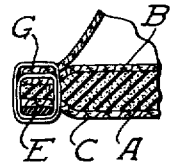


Fig. 3.

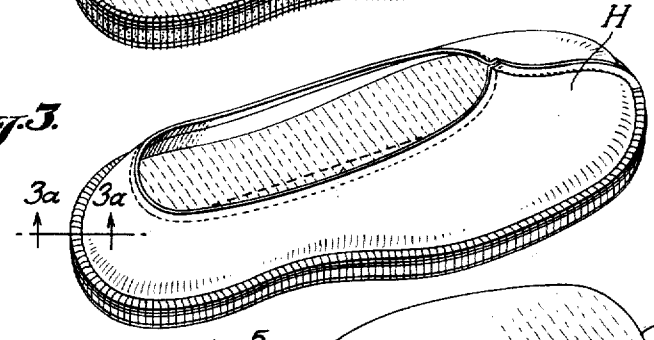


Fig. 4.

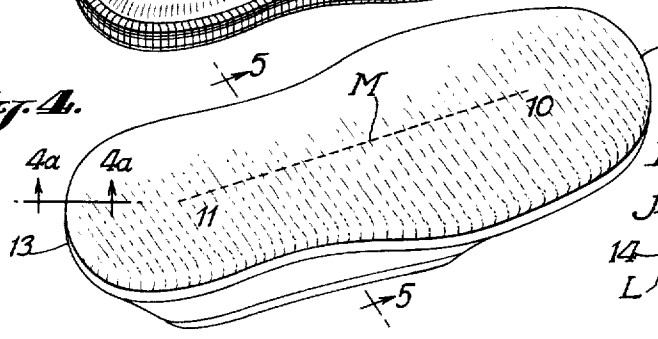


Fig. 4a.

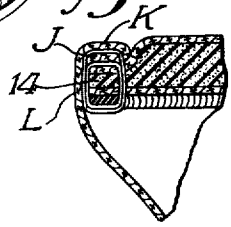
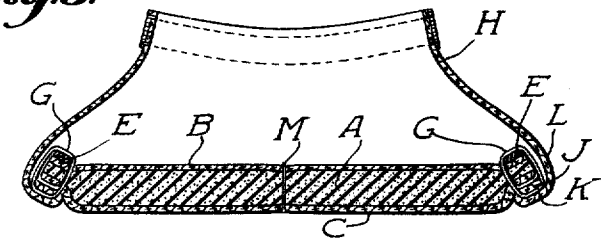


Fig. 5.



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STRETCHABLE SLIPPER CONSTRUCTION

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The present invention relates to a stretchable slipper construction and it particularly relates to a construction in which the slipper is formed of layers of knitted and synthetic plastic materials which are attached together so as to permit stretching to accommodate the foot of the wearer or user.

It is among the objects of the present invention to provide a novel slipper construction in which the slipper will conveniently adjust itself to a wide variety of foot sizes and shapes, will be comfortable to wear, and will not tend to stretch or sag and become unsightly in appearance.

Another object is to provide a simple, inexpensive, durable slipper construction in which the slipper will closely cling to the foot, yet not cause any compression or undue restriction thereon and at the same time will accommodate itself to a wide variety of shapes and sizes of feet.

Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

According to the preferred embodiment of the present invention, the sole of the slipper is formed of knitted cotton upper and lower cover portions, with an intermediate polyurethane sponge of 1/16 to 1/4 inch in thickness.

The wales or ridges of the cotton fabric should desirably extend transversely of the diameter of the sole and, although the upper knitted cotton cover may have a transverse grain, while the lower knitted cotton cover has a longitudinal grain, nevertheless it has been found most satisfactory to have both the upper cotton cover and the lower cotton cover with transverse grain extending parallelly to each other.

Although nylon knitted fabrics, or even rayon or acetated knitted fabrics, can also be utilized, it has been found most satisfactory to have a substantial cotton content, which should exceed 40 to 60%. Where nylon strands are utilized in a knitted fabric, such as a stretchable nylon yarn known as Helanca, such Helanca yarn may be utilized in bands, for example 1/4 to 1/2 inch in width, extending transversely with alternate bands of a cotton knitted fabric.

In all cases, a standard ribbed knitted fabric is utilized and the lips of the knitted structure are so disposed, together with the sides of the lips, so that the stretchability will be below 75% and not exceed about 40 to 60%.

Furthermore, where a trilaminate is employed, the intermediate, relatively thick polyurethane should be tacked to the upper and lower knitted transversely ribbed cotton and/or nylon.

Although the tacking may be a small tacking at the central portion of the sole, it has been found most satisfactory to have a line of tacking, desirably of a stretched nylon yarn such as Helanca, extend along the central axis of the sole, a distance equal to one-half to three-quarters of the length of the sole and desirably terminating at least one-quarter of the length of the sole of the toe and heel portions.

This type of tacking will prevent offsetting of the upper and lower cover portions for the intermediate polyurethane sole.

Furthermore, in the preferred structure, the weight and

size of the yarn used for the lower sole portion should be one and a half to two and a half times the weight and size of the yarn used for the upper sole portion and the knitted fabric should weigh about one and a half to two and a half times the same square area on the lower portion as it does on the upper sole portion.

This extra weight may be accomplished by closer knitting but is desirably accomplished by extra weight of the yarn.

To aid the balance of the slipper, there is attached to the upper peripheral edge of the sole, on the outside thereof adjacent the foot, there is a continuous peripheral strip of heavy rubber material which acts as a stabilizer.

Desirably, the trilaminate is bound together around the periphery by a circular stitching which will hold the edges together and then this extra rubber edging or strip is attached by a further encircling stitching on top of the first encircling stitching.

In the preferred construction, however, this second encircling stitching is used to hold both the lower edge of the upper in position on one side of the periphery of the sole and the rubber strip on the other side of the periphery of the sole.

This is accomplished normally by attaching the rubber strip and the upper in reversed position to the peripheral edges of the sole after the three layers of the sole or the trilaminate have been peripherally stitched together.

Then after the lower edge of the upper has been stitched to the lower periphery of the sole, and the rubber strip has been stitched to the upper periphery of the sole, the upper is reversed so that it has a U formation, with the edge of the upper being turned outwardly at the periphery of the sole and then extending inwardly and then outwardly and upwardly around the periphery of the sole to form the preferred construction.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

FIG. 1 is a separated top perspective view, showing the three layers that form the sole before they have been assembled together.

FIG. 2 is a top perspective view, showing the three layers of the sole after they have been assembled together and with the rubber stripping attached to the periphery thereof.

FIG. 2*a* is a fragmentary transverse sectional view taken upon the line 2*a*—2*a* of FIG. 2, showing the rubber strip held in position by the stitching which connects the periphery of the three members of the sole.

FIG. 2*b* is an alternative form of the invention in which the rubber strip is held in position at the periphery of the sole by encircling peripheral stitching separate from that which attaches the three sole layers together.

FIG. 3 is a top perspective view, showing the completed slipper, with the upper attached to the top of the periphery of the sole and the rubber strip attached to the bottom of the periphery of the sole.

FIG. 3*a* is a transverse sectional view upon the line 3*a*—3*a* of FIG. 3.

FIG. 4 is a bottom plan view of an alternate form of slipper construction in which the upper is attached to the bottom periphery of the sole.

FIG. 4*a* is a transverse fragmentary sectional view taken upon the line 4*a*—4*a* of FIG. 4, showing the edge construction.

FIG. 5 is a further transverse sectional view taken upon the line 5—5 of FIG. 4, showing the side edge construction of the embodiment of FIG. 4.

Referring to FIG. 1, there is shown an intermediate polyurethane sole with a top transversely ribbed knitted cover B and a bottom transversely ribbed knitted cover C.

These three layers may be attached together by the circular stitching D, with or without the addition of a rubber strip E which may be attached by the same circular stitching F as binds the periphery together, as shown in FIG. 2*a* or by separate circular stitching G. This binds the rubber strip E to the already connected periphery, which has been previously stitched together by the stitching F.

The upper H may be attached to the top of the periphery, as indicated in FIG. 3*a* by the additional stitching G opposite the rubber strip E on the outside, as shown in FIG. 3*a*, or it may be attached to the bottom of the periphery, as indicated at J and then lopped backwardly, as indicated at K, so that the lower portion L of the upper will encircle the periphery of the trilaminate sole construction.

In such case, desirably the rubber strip E is stitched into position, together with the edge J of the upper H in reverse condition by the outer stitching G, and then the upper H is reversed.

In the preferred form, an axial line of stitching M is provided, extending one-half to three-quarters of the length of the sole to terminate at **10** and **11** one-quarter to one-third short of the toe portion **12** and the heel portion **13**.

In the preferred structure, the periphery of the upper is stitched to the bottom of the trilaminate A—B—C.

After the trilaminate has already been stitched together by the initial circular stitching F, the rubber strip E and the edge J of the upper are attached at the same time by the second peripheral circular stitching G.

The first circular stitching F is generally more divided than the second circular stitching G so that the edge **14** of the polyurethane layer will be compressed to about one-half of its thickness, as indicated in FIGS. 2*a*, 3*a*, 4*a* and 5.

This structure gives a most balanced, stretchable slipper, which will accommodate itself to a wide variety of foot shapes and sizes and at the same time will not become unsightly due to undue stretching at any part thereof.

In respect to the polyurethane material which serve as the sole filler, this should vary from one-eighth to five-sixteenth of an inch in thickness and preferably should be about one-quarter of an inch in thickness.

Desirably the top and bottom layers B and C should be of knitted cotton fabrics with the ribbing extending longitudinally or parallelly of the long dimension of the sole so that the maximum stretch will be in width and the minimum stretch will be in the length.

Desirably the edge stitching of the knitted fabric indicated at E and G should be made on a Merrow machine with twelve stitches per inch. The cotton yarn used in the soles and uppers should be about 26 to 28 single count.

As many changes could be made in the above stretchable slipper construction and many widely different embodiments of this invention could be made without departure from the scope of the claims, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed, what is claimed is:

1. A laminated stretchable slipper construction having an upper and having a trilaminate sole and a penta-laminate edge including a central relatively thick polyurethane foam sole, cross grain knitted fabrics enclosing and sandwiching the top and bottom faces of the foam sole, said fabrics and foam sole being centrally stitched together, an elastic narrow heavy rubber strip overlaying the upper peripheral face of the sandwich and inside circular stitching extending through and around said periphery extending around the edges of and being exposed on the outside of the laminate, said circular stitching being enclosed inside of the lower periphery of the upper around the sole and outside circular stitching around the edges of the trilaminate sole and elastic strip and the lower edge of the upper being folded inwardly to be under the edge of the sole and stitched in position thereto.

2. A stretchable slipper construction having a sole composed of a trilaminate of a relatively thick central layer of polyurethane foam and upper and lower layers of transversely ribber knitted fabric peripherally tightly connected together by a circular stitching and an edge rubber stripping and the lower edge of the upper also stitched to said sole by a second circular stitching to said previously stitched periphery, said first circular stitching tightly compressing said foam to less than one-half of its thickness, a longitudinally axial line of stitching extending centrally of the trilaminate sole to prevent lateral displacement, said rubber stripping being attached to the upper periphery and the lower edge of the upper being turned inwardly and outwardly and being stitched to the lower outer periphery of the sole.

3. A laminated stretchable slipper construction having an upper and having a trilaminate sole and a penta-laminate edge including a central relatively thick polyurethane foam sole, cross grain knitted fabrics enclosing and sandwiching the top and bottom faces of the foam sole, said fabrics and foam sole being centrally stitched together, an elastic narrow heavy rubber strip overlaying the upper peripheral face of the sandwich and inside circular stitching extending through and around said periphery extending around the edges of and being exposed on the outside of the laminate, said circular stitching being enclosed inside of the lower periphery of the upper around the sole and outside circular stitching around the edges of the trilaminate sole and elastic strip and the lower edge of the upper being folded inwardly to be under the edge of the sole and stitched in position thereto, the fabrics consisting of knitted cotton with the wales extending transversely across the sole and with the said central stitching extending longitudinally the major length of the trilaminate but terminating substantially short of the toe and heel portions of the trilaminate, the knitted fabric contacting the floor having a weight in size from one and one-half to two and one-half times the weight and size of the yarn of the upper inside fabric of the trilaminate in which the lowermost edge consists of an inward U-fold of the upper and the top peripheral face consists of the heavy rubber elastic strip, the floor contacting face of the sole terminating in a groove around and inside of said periphery and the outer floor contacting edge of the slipper construction being formed by an inwardly folded edge portion of the upper with the fold inwardly and the side edge of the upper extending around contacting the inside and outside vertical stitching.

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