Aug. 28, 1951 H. E. McMAHON 2,565,662

SHOE HAVING A CUSHIONING ELEMENT

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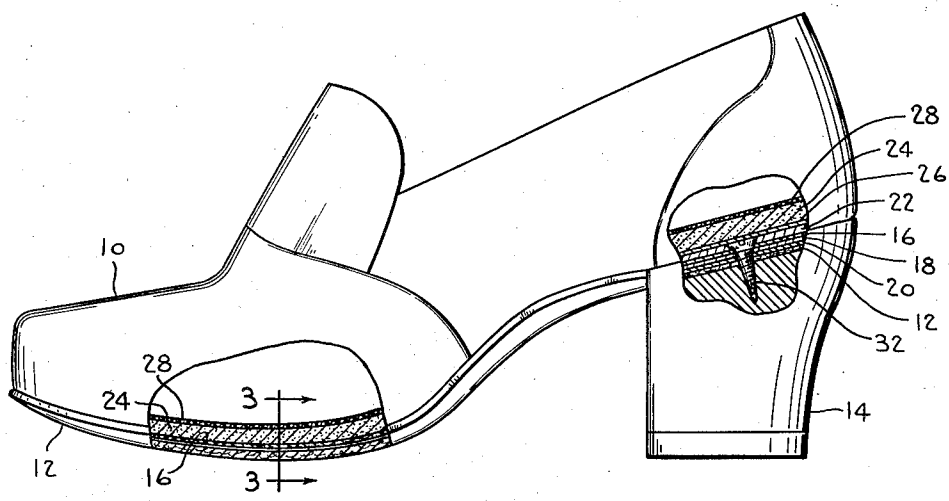


FIG. 1

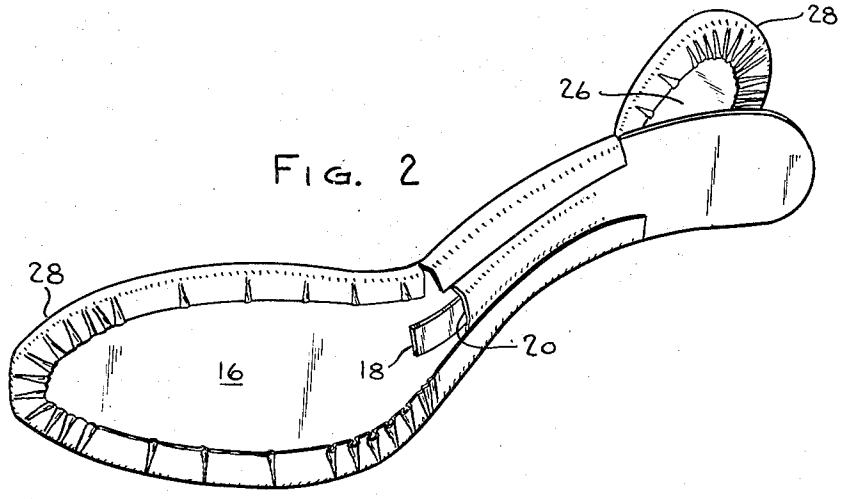


FIG. 2

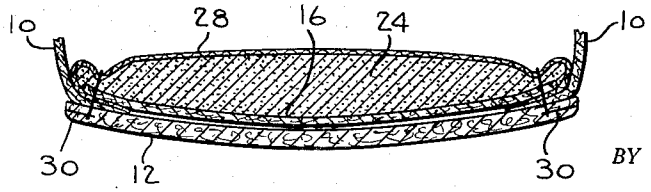


FIG. 3

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SHOE HAVING A CUSHIONING ELEMENT

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3 Claims. (Cl. 36—19)

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This invention relates to improvements in shoe structures embodying a cushioned insole and the method of making the same.

Heretofore the cushioning element has either been incorporated as a middle sole positioned between the insole and the outsole or it has been incorporated as a floating liner cemented to the top of the insole. When the cushioning element is between the insole and the outsole its cushioning effect is negligible because of the stiffness of the insole. When the cushioning element is a floating liner cemented to the top of the insole its cushioning effect is only temporary. The liner will not stay in place long and soon slips forming uncomfortable bunches making the shoe unfit for wear.

It is an object of this invention, therefore, to provide a shoe having a cushioning element on the upper side of the insole which will stay in place during the wearing life of the shoe.

A further object of this invention is to provide a process for incorporating a foot cushioning element on the top of the insole of a shoe so that such element will stay in place during the normal wearing life of the shoe.

These objects are obtained by covering the top of the insole with a cushioning layer of air cell rubber. Such layer is coextensive with the insole and with the exception of the heel area is cemented to the surface of the insole. A fabric or leather cover is tightly stretched over the cushioning layer compressing the edges of the latter and the peripheral margins of such cover are drawn under and cemented to the bottom of the insole throughout its entire periphery with the exception of the heel area. The underside of the heel area of the cushioning layer has a fibre stiffener cemented thereto and the heel area margins of the cover are drawn under and cemented to the bottom of such plate. The insole unit thus constructed includes a cushioning element the heel area of which is swingable away from the main body of the insole to permit the insertion of a steel clincher plate and the assembly of the heel. The insole unit thus formed may be lasted to a complete upper and an outsole by the Littleway process. In the lasting a steel clincher plate is temporarily inserted between the heel areas of the insole and the cushioning layer. This insures the clinching of the tacks or staples which hold the heel area of the upper. The outsole is then lock-stitched to the insole and the upper, the stitches running through the cushioning layer and its covering. This unites the entire periphery of the cushioning element (with the exception of the heel area) to the upper and outsole of the shoe, preventing such element from creeping or sliding with respect to the insole. The heel area of the cushioning layer is then folded forwardly out of the way and the heel is fastened to the insole. Thereafter the heel area of the cushioning element is cemented down to the heel area of the insole.

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The novel features, which are considered characteristic of the invention, are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of a specific embodiment when read in connection with the accompanying drawings, in which:

Fig. 1 is a view in side elevation with portions broken away and shown in section for the sake of clarity of a shoe embodying the present invention;

Fig. 2 is a perspective view of the lower surface of an insole unit prior to being lasted; and

Fig. 3 is an enlarged fragmentary sectional view taken on line 3—3 of Fig. 1.

Referring to the drawing by reference numerals, the invention is shown embodied in a woman's shoe made by the Littleway process. While the invention is of more importance when incorporated in women's shoes which usually have high heels and therefore increase the tendency of the cushioning layer to slide and bunch, it may also be embodied in men's shoes. The upper 10, complete with lining and stiffeners, the outsole 12, and heel 14 are all of well-known construction and will not be described in detail. The insole 16, before the cushioning element is added, is also of well-known construction and is known to those skilled in the art as a unishank insole. It has a steel shank 18 secured to the insole by a fibre reinforcer 20. The heel area of the insole 16 has a fibre heel plate 22 into which are clinched the tacks for holding the upper to the heel area of the insole. It is not, however, necessary to use a unishank insole in the manufacture of shoes embodying this invention. The invention may be used with any shoe construction which adapts itself to the Littleway method of lasting.

The cushioning element 24 comprises a layer of air cell rubber commonly known as sponge rubber. It is cut in the shape of and substantially coextensive with the outline of the insole. While the uncompressed thickness of the layer may vary, depending upon the amount of cushioning desired and grade of air cell rubber used, a thickness of approximately $\frac{5}{16}$'' is used in this particular embodiment. The contacting surfaces of the layer 24 and insole 16 forward of the heel area are cemented to form a bond therebetween. A fibre stiffener 26 coextensive with the heel area of the layer 24 is secured to the under side of the layer. A cover 28 is tightly

stretched over the layer **24** compressing the edges of such layer against the insole **16** and the margins of such cover are drawn under and cemented to the bottom of the insole **16** along its periphery forward of the breast of the heel area. The margins of the heel area of the cover **28** are drawn under and cemented to the bottom of the fibre stiffener **26**. This permits the heel area of the layer **24** to be swung away from the heel area of the insole (see Fig. 3) for the purpose of permitting the temporary insertion of a steel clincher plate and for the assembly of the heel **14**. The cover **28** may be made of cotton fabric such as duck or other fabric which is strong enough to hold the lock-stitching by which the insole, upper, and outsole are secured. If a cotton fabric is used it may be desirable to add a leather sock lining to the upper surface of the cushioning layer after the shoe has been assembled. If instead of using a fabric for the cover **28** such cover is made of leather properly treated and of sufficient strength to hold the lock-stitching, it will not be necessary to add a sock lining. Hereinafter when the term "insole unit" is used it will mean the insole **16** with the cushioning element **24** and cover **28** assembled.

To assemble the shoe, the insole unit is positioned on the last with a steel clincher plate shaped to conform with the heel area temporarily positioned between the fibre heel plate **22** and the fibre stiffener **26**. The upper **10** is then put on the last, stitched and fastened to the insole unit by the staples used in the Littleway process, and the heel area margins of the upper are tacked in place to the insole heel area, the ends of such tacks being clinched in the fibre heel plate **22** by the action of the temporary steel clinching plate. Thereafter the outsole **12** is temporarily secured in place on the insole and the shoe removed from the last. The temporary steel clinching plate is then removed and the shoe is stitched on the standard machines used in the Littleway process. This machine makes a lock-stitch in the setting of which the leather and other material stitched are put under compression and the stitch is sunk below the surface of the material. As is customary with this process, the outsole is channeled, as indicated at **30**, and after assembly the channel is closed and glued. The lock-stitching extends around the periphery of the shoe forward of the breast of the heel area. The stitching passes through the cover **28**, the layer **24**, the margins of cover **28** below the layer **24**, the margins of the upper **10**, and the outsole to the channel **30**. As is shown in Fig. 2, the cover **26** is drawn downwardly by the stitching and the layer **24** compressed thereby. This permanently locks the entire periphery of the cushioning layer **24** and its cover **28** forward of the heel area to the insole, the upper, and the outsole. The heel **14** is then attached by wood screw **32** and nails (not shown) in the customary manner, the heel area of the layer **24** being swung forwardly out of the way during the heel attaching process. When the heel **14** is properly fastened the heel area of the cushioning layer **24** is swung into place and the fibre stiffener **26** and fibre heel plate **22** are cemented together. The cushioning layer of the shoe so constructed will not slip or creep as the shoe is worn and thus the full cushioning effect obtained by the cushioning layer being immediately adjacent the foot of the wearer is obtained without the creeping and slipping which has hereto resulted when the floating type of cushioning layer insert was used.

Although only one embodiment of the invention is shown and described herein, it will be understood that this application is intended to cover such changes or modifications as come within the spirit of the invention or scope of the following claims:

I claim:

1. In a shoe having an outsole and an upper, an insole having a layer of cushioning material coextensive thereof and adhered to the area thereof forward of the heel area, a cover adapted to hold lock-stitches on said cushioning layer and adhered to the lower side of said insole, and lock-stitching extending from said cover to said outsole to secure said layer, said layer having a heel area provided with a fibre stiffening plate, said cover having a heel area covering the heel area of said layer and secured to the bottom of said plate, said plate being cemented to the heel area of said insole.

2. In a shoe; an upper; a unit consisting of an insole comprising a lower base, an intermediate layer of air cell rubber, an upper cover of material adapted to hold stitches, said cover having margins drawn under and cemented to the bottom of said base for that portion of the periphery thereof extending forwardly of the breast of the heel, and a fibre stiffener on the bottom of the heel area of said intermediate layer, the margins of the heel area of said upper cover being drawn under and adhered to the bottom of said fibre stiffener; an outsole; and stitching extending from said cover and said outsole and passing through said layer to join the upper to the insole and outsole and hold said layer in place.

3. In a shoe, an upper with margins to be attached to the insole, an insole having a layer of soft resilient cushioning material on the top thereof co-extensive therewith, a cover adapted to retain stitches over said layer and having margins secured to the bottom of said insole along the periphery thereof forward of the breast of the heel area, the remaining peripheral margins of said cover being secured beneath said layer and unattached to said inner sole so that the heel area of said layer may be swung away from said inner sole while a heel is being attached, an outsole engaging said first mentioned margins and said insole, and stitches through said cover, said layer, both said first and second mentioned margins, and said outsole whereby said shoe is held together and said layer prevented from slipping.

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