Aug. 16, 1955 A. DEL VECCHIO 2,715,285

LAMINATED SOLE STRUCTURE

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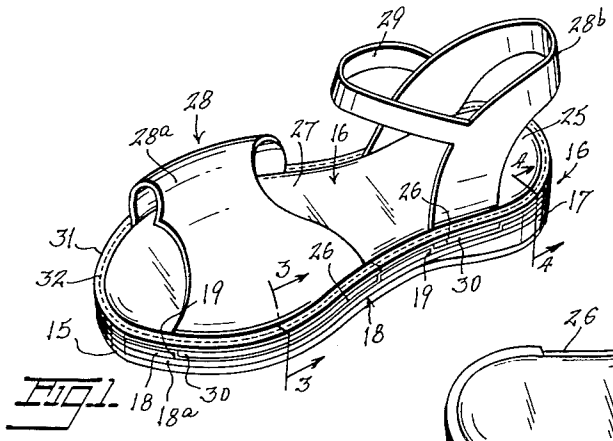


Fig. 1

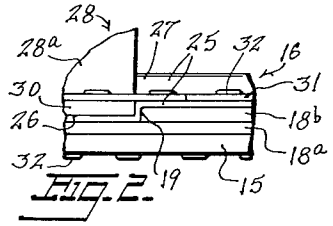


Fig. 2

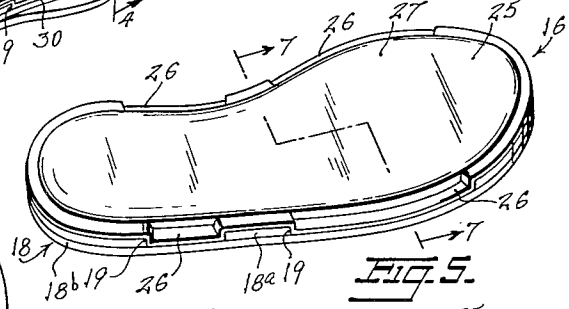
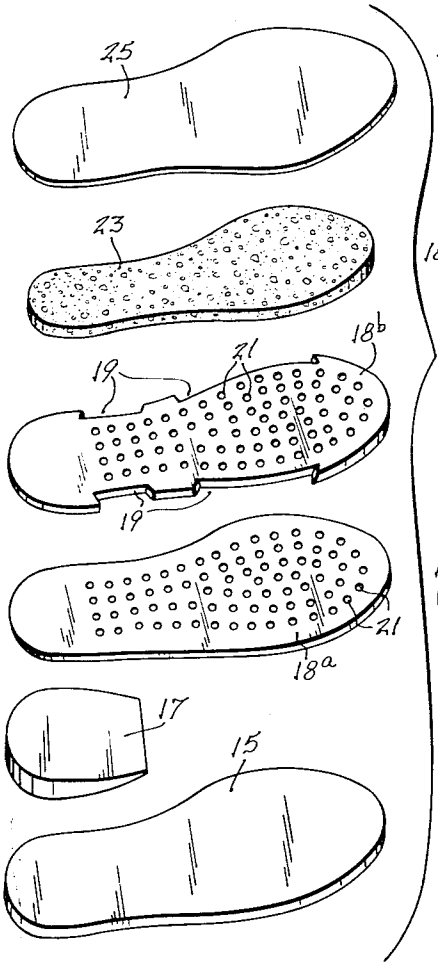


Fig. 5



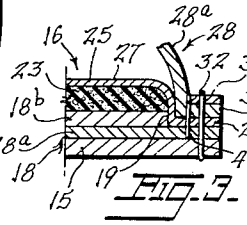


Fig. 3

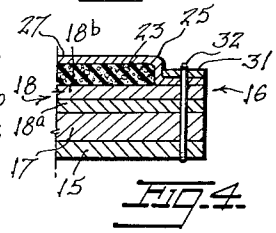


Fig. 4

Fig. 9

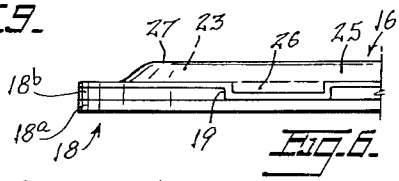


Fig. 6

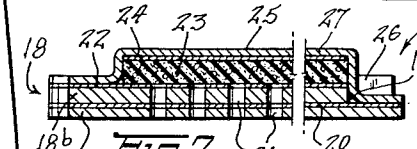


Fig. 7

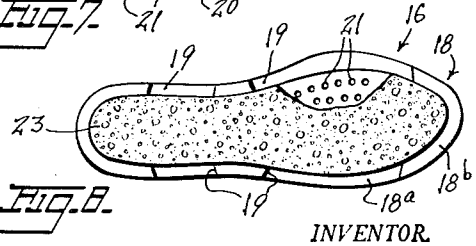


Fig. 8

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LAMINATED SOLE STRUCTURE

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1 Claim. (Cl. 36—44)

This invention relates to new and useful improvements in a sandal-type shoe and the construction of a multi-layer inner sole for use in such a sandal-type shoe.

More specifically, the present invention proposes the construction of a novel sandal-type shoe having an outer sole upon which an inner sole is superimposed and which inner sole is formed at its sides with recesses which open to the top face and the peripheral edges of the inner sole in a manner to snugly receive the outer edge portions of an upper element.

Still further, the present invention proposes forming the recesses to be of a depth corresponding to the thickness of the material of which the upper element is formed so that with the outer edge portions of the upper element fitted into said recesses the top faces of those outer edge portions will be flush with the top face of the inner sole while the outer edges of those outer edge portions are flush with the peripheral edges of the inner sole in a manner so that a welt can be positioned about the top face of the inner sole adjacent its peripheral edges and smoothly over the top faces of the outer edge portions of the upper element where they are fitted snugly into the recesses.

Another object of the present invention proposes forming the inner sole with a raised resilient central portion within the confines of the welt to be engaged by the sole of the foot on which the sandal-type shoe is worn to take up the shock of each walking step.

As a further object, the present invention proposes arranging the outer sole, the inner sole, the edge portions of the upper element and the welt so that a single line of stitches engaged through those parts adjacent the peripheral edges of the outer and inner soles will join those parts together forming an integral shoe thereof.

The present invention is further characterized by the method of fabricating a sandal-type shoe of the type specifically referred to in the preceding paragraphs.

A further object of the present invention relates to the formation of a multi-layer inner sole for use in a sandal-type shoe of the type previously referred to which is characterized by a base layer having notches at the sides thereof opening to the top face and peripheral edges thereof and upon which a cover layer is extended to have its peripheral edge portions aligned with the notches secured in position therein to form upward and outwardly opening recesses to receive the outer edge portions of an upper element.

Still another object of the present invention proposes interposing a resilient layer between the base layer and the cover layer which is of a peripheral size smaller than the base layer in a manner to form a raised resilient central portion on the inner sole in a manner to be engaged by the sole of the foot onto which the shoe having such an inner sole is fitted.

The present invention further proposes characterizing the base layer of the inner sole by a lower ply and an upper ply secured to the lower ply and which is formed at its side edges with the notches into which areas of the peripheral edges of the cover layer are passed.

Still further, the present invention proposes forming the lower ply and the upper ply of the base layer of the inner sole with aligned holes for creating dead air spaces in the completely assembled shoe to better insulate the same making the shoe more comfortable to wear, especially in warm weather.

Another object of the present invention proposes forming the upper ply of the base layer of material having the same thickness as the material of which the upper element is formed so that the recess, which results from pressing the aligned areas of the peripheral edges of the cover layer into the notches of the upper ply, will be of a depth corresponding to the thickness of the material of the upper element so as to snugly receive the outer edge portions thereof.

It is a further object of the present invention to form a sandal-type shoe of the type described which is simple in construction, which is durable when worn and which can be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

On the accompanying drawing forming a material part of the present disclosure:

Fig. 1 is a perspective view of a sandal-type shoe constructed in accordance with the present invention.

Fig. 2 is an enlarged side elevational view of a portion of Fig. 1.

Fig. 3 is an enlarged partial transverse sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged partial transverse sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of the inner sole of the sandal-type shoe, per se.

Fig. 6 is an enlarged partial side elevational view of Fig. 5.

Fig. 7 is an enlarged transverse vertical sectional view taken substantially on the line 7—7 of Fig. 5 and with the center portions thereof broken away.

Fig. 8 is a plan view of the inner sole prior to the attachment of the cover layer and with a portion of the resilient layer broken away.

Fig. 9 is an exploded view showing the parts of the sole assembly of the sandal-type shoe in perspective.

The sandal-type shoe, according to the present invention includes an outer sole **15** and a multi-layer inner sole **16** superimposed on the outer sole **15**. To raise the heel portion of the sole assembly just slightly, a wedge-shaped heel segment **17** is interposed between the adjacent faces of the outer sole **15** and the inner sole **16** at the rear thereof. The outer sole **15** may be shaped of leather, rubber, but is preferably formed of one of the synthetic sole materials such as "Neolite" or the like. The heel segment **17** is preferably formed of the same material as the outer sole **15**, but may be formed of any other rigid, non-compressible material. The outer sole **15** is formed as a single ply of material, and is provided to absorb all of the wear when the shoe is worn.

The formation of the inner sole **16** can be best determined from Figs. 5 to 9 from which it will not noted that the inner sole includes a base layer **18** of two-ply construction consisting of a lower ply **18^a** and an upper ply **18^b**. The two plies are co-extensive and each is of the same peripheral size as the outer sole **15**.

The plies **18^a** and **18^b** are formed of fibre, pressed board, cardboard or any other similar relatively flexible material. The upper ply **18^b** has notches **19** in its opposed sides for mounting the shoe upper element as will become clear as this specification proceeds. The size and number of the notches **19** depends upon the formation of

the particular upper element to be mounted upon a particular sole assembly. The two plies 18a and 18b are secured together by an intervening layer of a suitable mucilage 20. Inward of the notches 19, the plies of the base layer 18 are formed with aligned holes 21 extended completely therethrough. The holes are provided for forming dead air spaces in the completely assembled sole to insulate the same making the sandal-type shoe more comfortable to wear especially in warm weather. The formation of the aligned holes 21 is not essential and that feature may be omitted if desired without in any way effecting the basic formation of the shoe.

Formation of the base layer 18 of two plies makes it easy to form the required notches 19 by a simple stamping operation using die cutters to shape the upper ply 18b and simultaneously form the notches 19. However, if desired, the base layer 18 can be formed of a single ply of material with the notches 19 being cut or pressed therein to the desired depth and to open to the top face and the peripheral edges of the base layer.

The top face of the upper ply 18b of the base layer 18 is coated with a layer of mucilage 22, see Fig. 7, to which a resilient layer 23 is adhered. The resilient layer 23 is of a peripheral size smaller than the base layer 18 and positioned concentrically on the base layer so that the edge portions of the base layer project beyond the peripheral edges of the resilient layer 23 completely thereabout. The size of the resilient layer 23 is such that its peripheral edges are flush with the material of the upper ply 18b defining the inner edges of the notches 19, see Figs. 7 and 8. On the drawing, the resilient layer 23 is illustrated as being formed of foam or sponge rubber; but again that is by way of illustration only as that resilient layer may be formed of resilient material as resilient matted wool, cotton batting or the like.

Again, the top face of the resilent layer 23 is coated with a layer of mucilage 24 to which a cover layer 25 is adhered. The cover layer 25 is preferably formed of a thin sheet of good quality leather, but may also be formed of a sheet of resinous plastic material, oilcloth or any other similar material. The cover layer 25 is of the same peripheral size as the base layer 18 and has its edge portions where they project beyond the periphery of the resilient layer 23 secured to the top face of the upper ply 18b by the layer of mucilage 22, see particularly the left-hand side of Fig. 7. Those areas of the cover layer 25 located above the notches 19 of the upper ply 18b of the base layer 18 are pressed down into those notches and secured to the top face of the lower ply by the layer of mucilage 20, see the right-hand side of Fig. 7. Pressing the cover layer 25 down into the notches 19 forms complementary recesses 26, aligned with each of the notches, which open to the top face and outer peripheral edges of the inner sole 16.

After the cover layer 25 has been sealed in position, the formation of the inner sole 16 is complete and the layers thereof are joined to form an integral unit, as shown in Fig. 5. The insertion of the resilient layer 23 between the base layer 18 and the cover layer 25 of the inner sole 16 provides the inner sole with a raised central portion 27 which is resilient and which is to be engaged against the bottom of the foot. The resilient raised central portion 27 acts as a shock absorber to take the shock of each walking step making the sandal-type shoes more comfortable to wear.

Provided for attachment to the top face of the inner sole 16, there is a shoe upper element 28. In the sandal-type shoe illustrated on the drawing, the upper element 28 is of two-part construction consisting of a front vamp portion 28a for extension over the top of the foot just to the rear of the toes and a heel or counter portion 28b for extension about the heel of the foot. The counter portion 28b includes an ankle strap 29 integral with the counter portion 28b at one side thereof and releasably joined to a buckle, not shown, mounted on the counter portion at the other side thereof, all as known in the art of shoe making.

The specific upper element 28 shown on the drawing is by way of illustrating the present invention only and it is appreciated that the upper element may be of various different shapes, forms and sizes all within the scope and intent of the present invention.

The portions 28b and 28c of the upper element have their outer side edge portions 30 nested snugly down into the recesses 26 and onto the top face of the cover layer 25 where the areas of that cover layer are sealed down in the notches 19 of the upper ply 18b of the base layer 18. The outer edges of the edge portions 30 of the upper element 28 are flush with the peripheral edges of the inner sole 16, see particularly Figs. 1 and 3.

In forming the base layer 18 of the inner sole 16, it is essential to form the upper ply 18b of material having the same thickness as the thickness of the material used for forming the upper element 28. With that being so, the notches 19 and the resulting recesses 26 will have a depth corresponding to the thickness of the material from which the upper element 28 is formed. The outer edge portions 30 of the vamp portion 28a and the counter portion 28b are secured in position within the recesses by the four separate lines of stitches 40, see Fig. 3, causing those edge portions to be pressed snugly into respective recesses 26 with the top faces of those edge portions 30 flush with the top face of the peripheral edge portions of the cover layer 25 where they are joined to the top face of the upper ply 18b, see Figs. 1 and 2.

The upper element 28 is preferably formed of leather, but may, if desired, be formed of a resinous plastic material or any other similar decorative material.

Following attachment of the upper element 28 to the inner sole 16, the inner sole-upper element sub-assembly is ready for attachment to the outer sole 15 with the heel segment 17 inserted therebetween, at the back of the sole assembly.

The outer sole 15, the inner sole 16 and the heel segment 17 can be temporarily joined, pending final stitching, by the use of daubs of a suitable mucilage between the adjacent faces of those parts. Such mucilage is not shown on the drawing and its use is not essential as the parts can be held together by hand until such time as they are finally stitched.

Finally, a welt 31 in the form of an elongated strip of leather or resinous plastic is laid on the top face of the inner sole 16 between the peripheral edges of the raised central portion 27 and the peripheral edges of the inner sole 16. With the outer edge portions 30 of the upper element 28 flush with the top face of the peripheral edges of the cover layer 25, it is apparent, as best shown in Figs. 1 and 2, that the welt 31 will extend smoothly across the top face of the outer edge portions 30 without humping thereover so that in the final assembly of the shoe the welt will have a smooth flat top face.

The welt 31, the outer edge portions of the upper element inner sole sub-assembly and the peripheral edges of the outer sole 15 are all joined to form an integral unit by a single line of stitches 32 extended all about the periphery of the sole assembly. At the rear of the sole assembly, the stitches 32 extend through the outer peripheral edges of the heel segment 17, see Fig. 4, to also secure that segment in position.

The peripheral edges of the sole assembly can then be finished in the usual way by sanding the exposed peripheral edges of the several superimposed layers and by painting those edges so that the layers seem to blend together giving the appearance that the sole assembly is formed as one complete layer.

From the foregoing description, it is apparent that the present invention proposes a novel and inexpensive manner of forming sandal-type shoes of unusual durabil-

ity and aesthetic appearance. The sole assembly is made resilient by reason of the inclusion of the resilient layer **23** in the formation of the inner sole **16** which makes the shoe particularly comfortable to wear with the resilient layer taking up the shock of each walking step. Furthermore, the construction of the shoe is such that a wide selection of materials is possible while still producing a shoe of approximately the same durability, regardless of the materials selected, making it a simple matter to meet competition and still produce a shoe which will be appealing to the eye. While the present disclosure is concerned chiefly with the formation of a sandal-type shoe, it is appreciated that the teachings of the present invention can also be employed in the making of bedroom slippers, mules, slippers for beach wear as well as many other types of footwear.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as set forth in the appended claim.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

A plural layer inner sole for use in a sandal-type shoe having an outer sole and upper structure, com-

prising a base layer adapted for positioning on the outer sole, a second layer superposed on said first layer and secured thereto, said second layer having elongated notches in its opposite edges extending throughout the thickness thereof, said second layer having its edge exclusive of the notched portions aligned with the edge of said base layer, a resilient layer superposed on said second layer and secured thereto, said resilient layer having an edge substantially aligned with the inner walls of said notches, and a cover layer superposed on said resilient layer and having a perimeter substantially conforming to that of the base layer, said cover layer having its central major area secured to said resilient layer, the marginal portion of said cover layer being secured to the margin of said second layer projecting beyond said resilient layer with portions thereof being depressed into said notches and secured to said base layer.

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