April 2, 1963 F. J. DIAMANT 3,083,477

LAMINATED SOLE STRUCTURE HAVING CONTROLLED SLIPPAGE

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FIG. 1

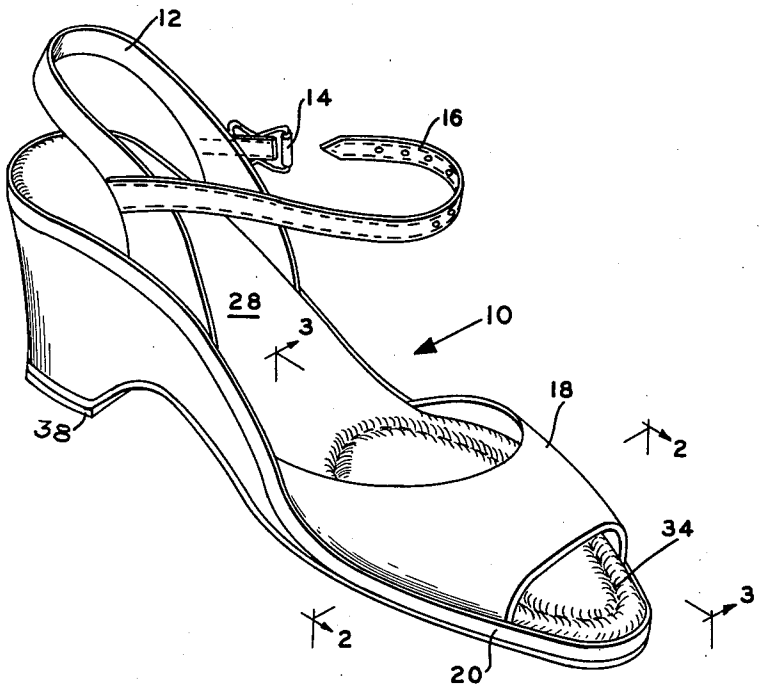
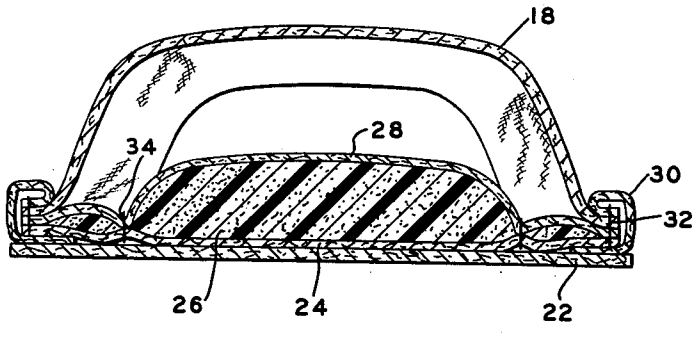


FIG. 2



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FIG. 3

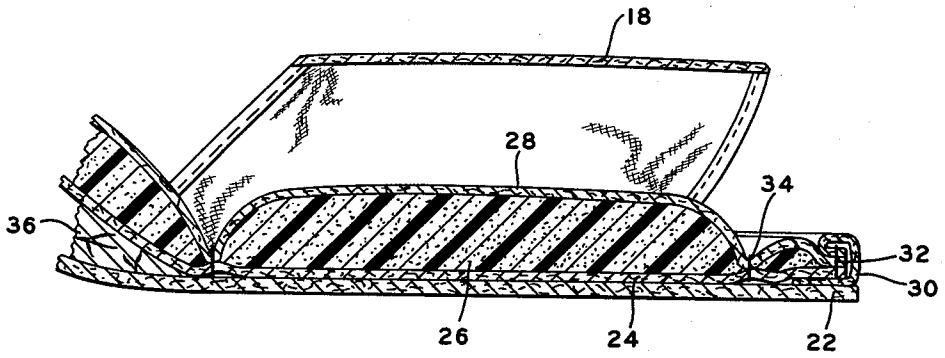
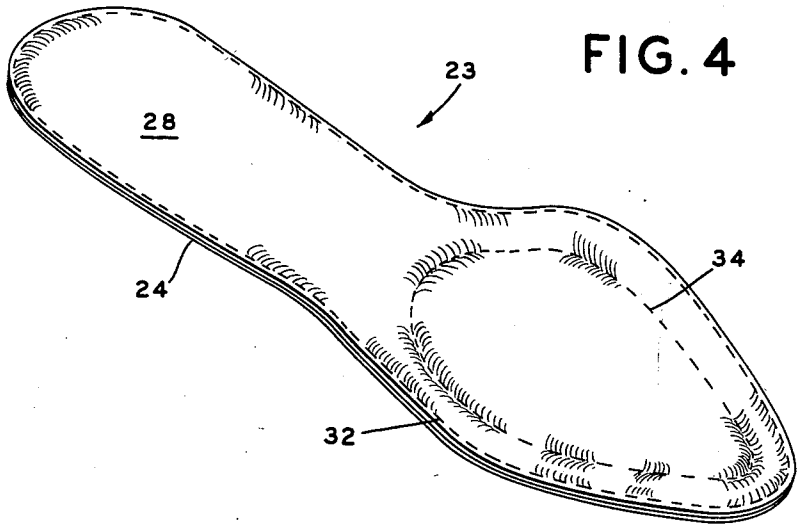


FIG. 4



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LAMINATED SOLE STRUCTURE HAVING CONTROLLED SLIPPAGE

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6 Claims. (Cl. 36—28)

This invention relates to a shoe, and more particularly, to a shoe having a cushioned sole with means being provided to control slippage between the layers of the sole.

Numerous forms of shoes have been proposed heretofore wherein cushioning means such as a layer of foam rubber is provided in the sole of the shoe. The provision of such a cushioning means greatly increases the comfort of the shoe particularly to those people who stand on their feet for great lengths of time or do a considerable amount of walking. When a shoe of this nature has been worn for a considerable period of time, the constant rubbing applied to the insole by the ball of the foot of the wearer causes slippage between the insole and the layer of the sole juxtaposed thereto. The slippage causes a separation between the insole and the layer of the sole juxtaposed thereto, more commonly found in the form of a crease, wrinkle, or buckling of the insole. Thereafter, the comfort of the shoe is materially decreased since the wrinkle or buckle of the insole is a source of irritation to the ball of the foot.

The present invention seeks to overcome the above mentioned disadvantage of the shoes proposed heretofore by providing a positive slippage control means. The slippage control means of the present invention comprises a closed loop of stitching extending through the insole and the layer of the sole juxtaposed thereto in that portion of the insole which is adapted to support the ball of the foot.

It is an object of the present invention to provide a shoe having a novel cushioned sole.

It is another object of the present invention to provide a shoe having a novel cushioned sole with positive means being provided to prevent slippage between the insole and the layer of the sole juxtaposed thereto.

It is another object of the present invention to provide a novel laminated structure for use in shoes wherein positive means is provided to prevent slippage between layers thereof.

Other objects will appear hereinafter.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a perspective view of a shoe made in accordance with the present invention.

FIGURE 2 is a transverse sectional view taken along the lines 2—2 in FIGURE 1.

FIGURE 3 is a longitudinal sectional view taken along the lines 3—3 in FIGURE 1.

FIGURE 4 is a perspective view of a laminated structure comprising the insole and a layer of foam resin secured thereto.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a shoe designated generally as **10**.

The shoe **10** comprises an upper which may take the form of any of the well known and conventional uppers proposed heretofore. For purposes of illustration, the upper for the shoe **10** is shown as being of the type comprising a back-strap **12** having a buckle **14** thereon and a cooperating cross-strap **16**. The upper as illustrated in FIGURE 1 also includes a vamp **18** which lacks a toe cap. Accordingly, it will be seen that the shoe **10** is a toeless, heelless wedgie type sport shoe.

The shoe **10** is provided with a sole designated generally as **20**. The sole **20** includes an outsole **22**. A laminated structure designated generally as **23** having the same contour as the outsole **22** is adhesively secured thereto.

The laminated structure **23** includes a layer of canvas **24** fused to or adhesively secured to a layer of foam synthetic resin **26** such as foam polyurethane. A leather insole **28** is fused to or adhesively secured to the other side of the layer of foam resin **26**. As shown more clearly in FIGURE 4, stitching is provided around the periphery of the structure **23** with said stitching extending through the canvas layer **24**, foam resin **26**, and the insole **28**. The last mentioned stitching performs the function of reducing the peripheral thickness of the structure **23**. Prior to the application of the last mentioned stitching, the laminated structure **23** has a thickness of approximately ⅝ of an inch with the layer of foam resin **26** having a thickness of about ½ of an inch.

The edges of the structure **23** are concealed by a welt strip **30**. The upper edge of the side strip **30** is secured to the laminated structure **23** by a line of stitching **32**. The line of stitching **32** is concealed from view and the lowermost edge of the welt strip **30** is disposed between the layer of canvas **24** and the outsole **22** and adhesively secured thereto.

A line of stitching **34** in the form of a closed loop is spaced from the periphery of the structure **23**. The stitching **34** extends through the insole **28**, layer of resin **26**, and layer of canvas **24** at the position of the insole **28** which is adapted to support the ball of the foot. Thus, the provision of the stitching **34** substantially eliminates the possibility of slippage between the insole **28** and the layer of foam resin **26**. The stitching **34** is provided even though the insole **28** is adhesively secured to the layer of foam resin **26**.

The heel portion of the shoe **10** includes a heel support **36** which may be of wood covered with a layer of leather or other material. The outsole **22** extends beneath and is adhesively secured to the heel support **36**. A heel **38** is secured to the outsole **22** as illustrated in the drawing.

It will be noted that the stitching **34** materially reduces the thickness of the laminated structure **23** thereby substantially increasing the height of the structure **23** adjacent thereto. Accordingly, the portion of the structure **23** within the closed loop formed by the stitching **34** is substantially greater than the height of the remainder of the structure **23**. This prevents the stitching **34** from becoming a source of irritation to the ball of the foot of the wearer and provides a quilting effect. In actual shoes, it has been found that the most desirable results are attained when the stitching **34** extends from a portion immediately in front of the arch support to a point approximately ¼ of an inch from the tip of the toe, with the stitching **34** being spaced inwardly approximately ¼ of an inch from the stitching **32**. In this manner, substantially the entire portion of the ball of the foot is supported by that portion of the laminated structure **23** enclosed within the loop formed by the stitching **34**. As used hereinafter, the closed loop formed by the stitching **34** may be referred to as a tear-drop shaped closed loop.

The present invention has been illustrated in a shoe **10** which is a wedgie type sport shoe. It will be appreciated by those skilled in the art that the present invention may be utilized in substantially every type of shoe for men, women and children.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. A shoe comprising an upper, an outsole, an insole secured to said upper, a layer of foam resin secured to said insole, an intermediate layer secured to said layer of foam resin, said outsole being secured to said intermediate layer, and stitching in the form of a closed loop extending through said insole and said layer of foam resin, said loop being wholly disposed at the position of said insole adapted to support the ball of the foot, thereby providing a slippage control between said insole and said layer of foam resin.

2. An article of manufacture for use in shoes comprising an insole, a layer of foam resin of substantially the same size and shape as said insole, said layer of foam resin being secured to said insole so as to form a laminated structure, and stitching in the form of a closed loop extending through said insole and said layer of foam resin, said loop being wholly disposed at the position of said insole adapted to support a ball of a foot, thereby providing a slippage control between said insole and said layer of foam resin.

3. An article of manufacture for use in shoes comprising an insole, a layer of foam resin of substantially the same size and shape of said insole, said layer of foam resin being adhesively secured to said insole, a layer of canvas adhesively secured to said layer of foam resin so as to form a laminated structure, and stitching in the form of a closed loop extending through said insole, layer of foam resin, and canvas layer, said loop being wholly disposed at the position of said insole adapted to support the ball of the foot thereby providing a slippage control between said insole and said layer of foam resin.

4. An article of manufacture in accordance with claim 3 wherein said closed loop is spaced from the periphery of said laminated structure, and stitching adjacent the periphery of said structure extending through said insole, layer of foam resin, and said canvas layer.

5. In a shoe comprising a sole, said sole including an insole spaced from an outsole, said insole and said outsole being of substantially the same contour, a layer of foam resin interposed between said insole and said outsole, said layer of foam resin being of substantially the same contour as said insole and adhesively secured thereto, and stitching extending through said insole and said layer of foam resin at the position of said insole adapted to support the ball of the foot thereby providing a slippage control between said insole and said layer of foam resin.

6. In a shoe in accordance with claim 5 wherein said stitching extends from a position adjacent to the location adapted to be provided with an arch support to a point adjacent to the tip of the toe of said insole, said stitching forming a tear-drop shaped closed loop spaced inwardly from the periphery of the insole.

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