Jan. 13, 1948. E. A. SCHMIDLI 2,434,370

CEMENT TYPE SHOE WITH CUSHIONING MEANS

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Fig. 1

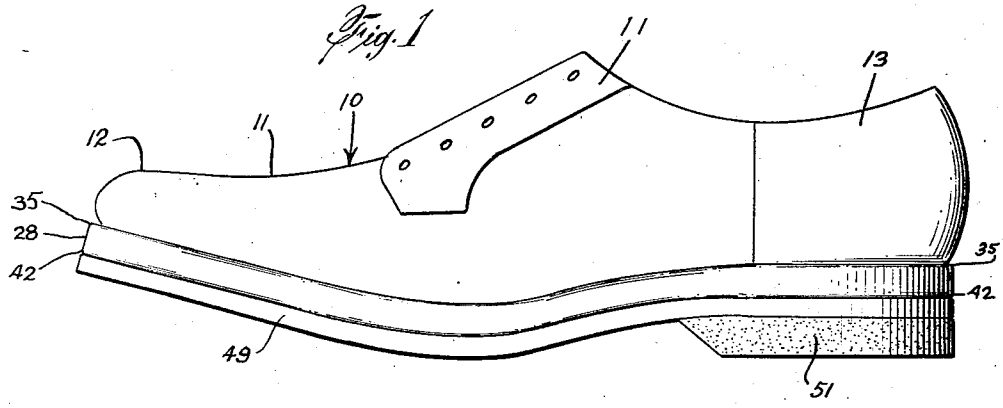


Fig. 4

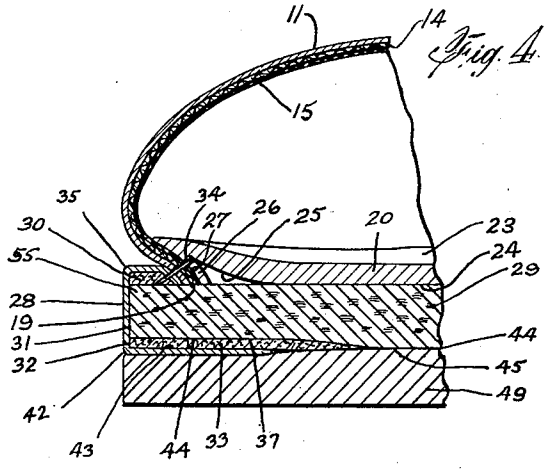
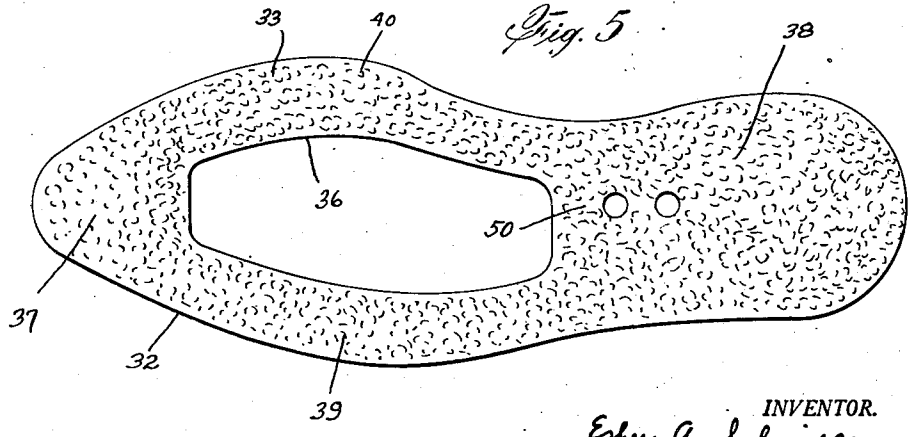


Fig. 5



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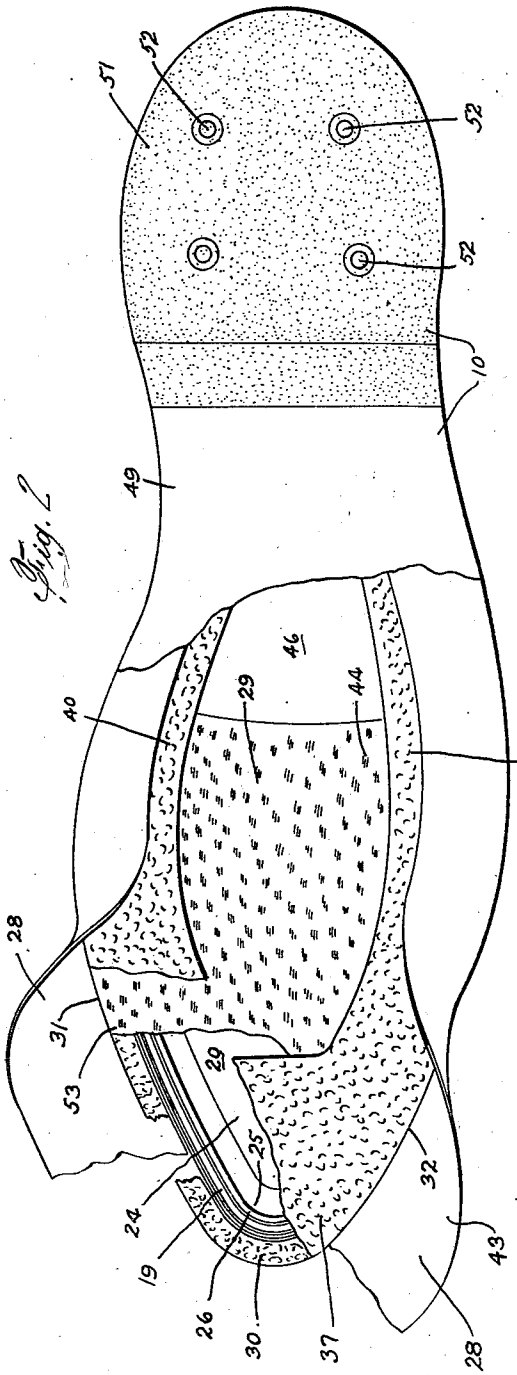


Fig. 2

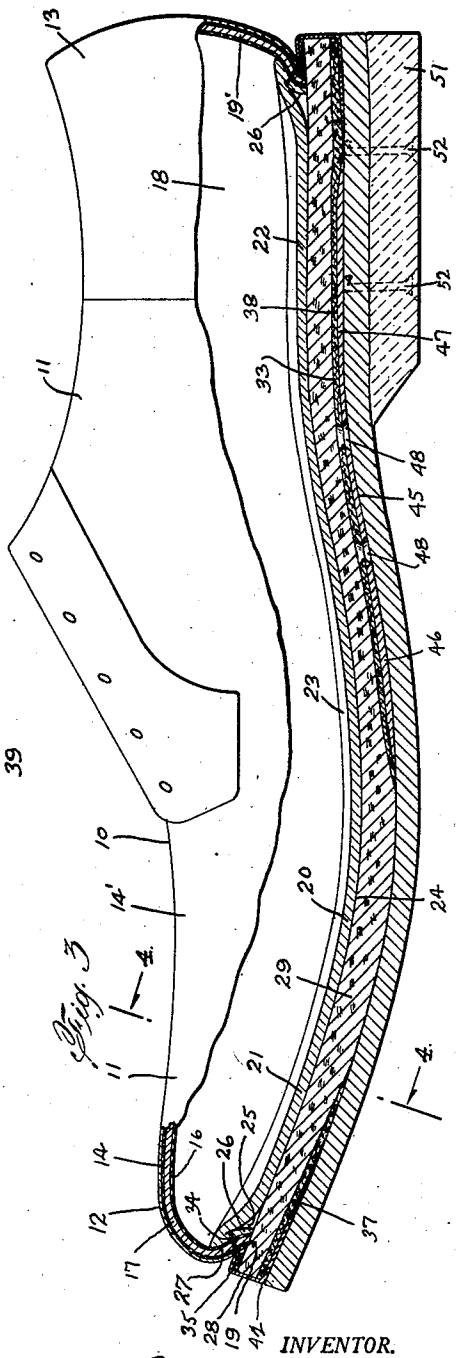


Fig. 3

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2,434,370

CEMENT TYPE SHOE WITH CUSHIONING MEANS

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2 Claims. (Cl. 36—19.5)

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This invention relates generally to shoes and more particularly to shoe constructions in which cushioning is provided for the bottom surface of the foot of the wearer.

Among the objects of the present invention lies the provision of a shoe construction which although offering a high degree of comfort to the wearer presents a neat and attractive appearance and does not detract from the style of the shoe though various forms of shoe upper configuration are incorporated therewith.

Another object herein lies in the provision of shoe construction of the class described, in which a relatively soft and resilient cushioning element is employed with means for the prevention of undesired distortion thereof.

A further object herein lies in the provision of shoe construction in which a relatively distortable cushioning element for the foot isolates the foot carrying and the outer sole portions from each other and yet by virtue of the present construction, the foot carrying or upper portion of the shoe and the outer sole and heel portions of the shoe are adequately interconnected so that a durable composite shoe is produced.

A feature of the invention lies in the fact that the cushioning element performs its desired function completely from the toe to the heel and closely underlies an inner sole which may be composed of leather or other suitable material having the desired characteristics of toughness, stability and moisture absorption.

In the present construction it will be noted that the securing means, such as nails, which attaches the heel to the rear portion of the outer sole, are sufficiently removed from the heel of the wearer so that contact between said securing means and the heel of the wearer is prevented. The clinched portions of the heel nails are sufficiently removed also, so that they do not deform the rear or heel portion of the inner sole, thereby preventing a frequent cause for discomfort.

Another object herein lies in the provision of shoe construction of the character described, which permits of resoling by conventional cementing processes so that the shoe may have a relatively long, useful life.

Since it is well known that adequate lasting periods during which the upper of the shoe is made to conform to the last, are required for the shoe to maintain its shape when subject to the stresses of use, it is important to note that the present invention permits the most approved types of lasting processes to be used and the shoe may be

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lasted an adequate period in accordance with the highest type of shoe making procedure.

In accordance with the present construction, a steel or metal shank may be incorporated in the shoe body in the main arch portion and this shank may serve to permit the rigidity of the finished shoe thereat without substantially detracting from the desired cushion effect produced by the main cushioning element.

These objects and other incidental ends and advantages will more fully appear in the progress of this disclosure and be pointed out in the appended claims.

In the drawings, similar reference characters designate corresponding parts throughout the several views and in which:

Figure 1 is a side elevational view of an embodiment of the invention.

Figure 2 is an enlarged bottom plan view of fragmented character of the shoe shown in Figure 1.

Figure 3 is a fragmentary longitudinal vertical sectional view.

Figure 4 is an enlarged fragmentary transverse vertical sectional view as seen from the plane 4—4 on Figure 3.

Figure 5 is a plan view of the lower reinforcing element.

The shoe is generally indicated by reference character 10 and while I have chosen a man's low cut or oxford type of shoe for illustration, it will be obvious to those skilled in the art to which the present invention relates, that this construction may be incorporated in shoes for women and children as well. The shoe 10, as just stated, may have the upper 11 of any desired construction, including a toe portion 12, a heel portion 13 and a vamp portion 14' disposed between the toe and heel just mentioned. The upper 11 may be provided with a strengthening layer 14 which is separate from the upper lining 15. The strengthening layer 14 prevents undue distortion of the material of which the upper 11 is composed and said strengthening layer 14 may consist of a thin layer of cloth or similar fabric cementitiously secured to the inner surface thereof. The material of which the upper is composed may of course, be leather or cloth or any other suitable material.

Interposed between the toe portion 12 of the upper 11 and the forward portion 16 of the lining 15 is the toe stiffener 17 and similarly interposed between the heel portion 13 and the rear portion 18 of the lining 15 is the counter 19'. This interposition is conventional. The various

components that go to make up the upper 11 therefore, all preferably meet coterminously at the peripheral edge 19 of the upper 11. The inner sole 20 may be of standard Goodyear welt construction including the forward portion 21, the rear portion 22, the upper surface 23, the lower surface 24 and continuous annular channels 25 and 27 which produce the downwardly extending flange 26. The channel 27 is relatively obtuse since it is pulled open in the integration of the parts.

Disposed circumferentially about the lower portion of the upper 11 is the main cushion covering element 28. The total length of this element is substantially equal to the circumference of the cushion element 29 and the ends thereof are preferably joined at the rearmost portion of the cushion element 29. The width of the cushion covering element 28 is sufficient to extend from the point of attachment thereof to the peripheral edge 19 about the reinforcing strip 30, the lateral edge 31 of the cushion element, the lateral edge 32 of the lower reinforcing element 33 and inwardly toward the center of the cushion element 29 a substantial distance, sufficient to obtain adequate adhesion as will more fully appear. The cushion covering element 28 is preferably composed of leather or similar distortable material so that the same may be shaped to conform to the parts which it covers. It may be noted here that when the shoe is fabricated the cushion covering element during the installation thereof, is adequately stretched so as to maintain the parts enclosed by the same under sufficient pressure. The cushion covering element 28 is preferably of substantially uniform width so that in the fabrication of the shoe the same may be formed from a strip of the desired material. As seen in Figures 3 and 4, the cushion covering element 28 is secured adjacent the uppermost edge thereof by an annular row of stitches 34. The stitches 34 are the well known Goodyear welt stitches which are used normally to secure the upper to the side of the flange 26 in the lower portion of the inner sole 20, and said stitches serve also to secure in place the inner skived edge of the reinforcing strip 30.

The cushion element 29 is preferably composed of a preformed mass of cork in the form of fine particles dispersed in a resilient medium such as sponge rubber. The cushion element 29 is preferably relatively thick and in actual practice I have found a thickness of 3/8 of an inch to be satisfactory. It is desirable that the cushion element 29 be easily compressed so that its shape may change to conform to a deformation of the insole 20.

The reinforcing strip 30 is preferably a continuous strip of a relatively stiff material such as stiff leather and is of a length substantially equal to the periphery of the cushion element 29. The height of the reinforcing strip 30 is sufficient to impart the desired rigidity to said strip while the width of the strip is such as to occupy the space between the upper edge of the cushion covering element 28 and the lateral edge 31 of the cushion element 29. The strip 30 serves to maintain the configuration of the fold or bend 35 in the cushion covering element 28 and to adequately distribute the pressure produced by the tension in the said cushion covering element so that the projecting lateral edge 31 is not undesirably distorted.

The lower reinforcing element 33 is best seen in Figure 5 wherein it is seen that the same includes an opening 36, a front portion 37, a rear portion 38 and side portions 39 and 40. The configuration of the peripheral edge 32 of the lower reinforcing element 33 conforms to the edge 31 of the cushion element 29 and said reinforcing element 33 at its outer edge performs in part a function similar to that which the strip 30 performs, namely, that it prevents undesired distortion of the fold or bend 42. The reinforcing element 33 is preferably composed of a stiff but porous vulcanized sheet and in addition to having the reinforcing function just described, also acts to make a more durable bond between the upper surface 43 of the cushion covering element 28 and the under surface 44 of the cushion element 29. The border of the opening 36 is preferably skived to a feather edge and this is also true of the inner edge of the lowermost portion of the cushion covering element 28. Where desired, the side portions 39 and 40 may be omitted from the lower reinforcing element 33 with a consequent loss of their function.

In the rear portion of the shoe, that is to say, below the large arch and extending into the heel area, there is disposed a steel or metal shank stiffener 46. The shank stiffener 46 is interposed between the lower surface 47 of the reinforcing element 33, which may be composed of fiber, and the upper surface 45 of the outsole 49, and is preferably maintained in position by a plurality of rivets 48 which penetrate the portion 50 of the reinforcing element 33 and the shank stiffener 46.

The heel 51 may be composed of any suitable material such as fiber, plastic, leather or rubber and is preferably secured in position by a series of nails 52 which penetrate said heel, and the rear portion lying thereover, of the outsole 49.

By way of example, one method of assembling the present shoe is given here. Assuming the upper 11 to have been integrated in the usual manner and the insole 20 to have been channeled for Goodyear welt stitching, the edge 19 of the upper is placed between the flange 26 and one edge of the cushion covering element 28. The inner skived edge of the reinforcing strip 30 is placed next to the cushion covering element, outwardly thereof, the parts are lasted, and the four parts in laminated condition are stitched together. Or, the strip 30 may be put in place as the stitching takes place. The upper surface of the cushion element 29 is next cemented to the lower surface 24 of the insole 20, the exposed edges of the flange 26, the upper 11, the cushion covering element 28, and the lower surface of the strip 30.

The steel shank 46 is secured to the lower reinforcing element 33 with the rivets 48, and the reinforcing element 33 is adhesively secured to the lower surface of the cushion element 29.

Following this the cushion covering element 28 is drawn down about the reinforcing strip 30 so as to slightly compress the upper portion 55 of the edge 31 of the cushion element 29 and then about the lower portion 53 of the edge 31. Following this the upper or inner surface 43 of the element 28 is cemented to the under or then exposed surface of the reinforcing element 33.

Next, the outsole 49 is cemented to the lower then exposed surfaces of the cushion covering element 28 and the lower reinforcing element 33. This leaves the central portion of the sole, particularly that lying under the ball of the foot, unconnected to the lower surface of the cushion element 29 and promotes flexibility of the parts since they may shift slightly laterally with respect to each other with an action comparable

to that between the leaves of a laminated spring. After the sole has been cemented in place under heat or pressure or both, the heel 51 may be secured to the sole by the nails 52. Alternatively, the heel may have been previously affixed to the sole prior to the cementing operation in which the outsole is secured in place upon the shoe.

Under actual conditions of use, shoes constructed in accordance with the present invention have proven to be very comfortable, have shown good wearing characteristics with no tendency toward breakage or disassembly. After the outsole has been worn down, it may be stripped from its cemented attachment to the cushion element and replaced. By virtue of the fact that a cushion exists under the entire length of the wearer's foot and also by virtue of the fact that an adequate lasting period may be utilized in the fabrication of the shoe, proper fit is obtained, the compressible qualities of the cushion element 29 permitting deformation of the inner sole to accommodate itself to irregularities in foot shape and bulk.

Although the cushion element is composed of relatively soft material, a proper shape is maintained to the outside covered edges thereof by virtue of the reinforcing elements associated thereat.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

I claim:

1. Shoe construction comprising: an upper shoe body; an insole having a downwardly extending peripheral flange; a cushion covering element, the peripheral edge of said upper shoe body being interposed between the flange of the insole and the upper edge of said cushion covering element and being secured thereat; a reinforcing strip composed of relatively stiff material disposed below and adjacent the upper edge of the cushion covering element; a cushion element; a lower reinforcing element disposed below said cushion element; said lower reinforcing element having an opening disposed between the front and rear portions thereof; said cushion element being disposed below the insole and secured thereto; said cushion covering element being lapped downwardly about the outer edges of the cushion element and secured to the lower reinforcing element; and an outsole secured to the outer surfaces of said cushion covering element and said lower reinforcing element, and being free of direct connection with said cushion element in the area of the opening in the reinforcing element, whereby the outsole lying under the ball of the foot, and the cushion element, may shift with respect to each other as the shoe is flexed.

2. Shoe construction comprising: an upper shoe body; an insole having a downwardly extending peripheral flange; a cushion covering element, the peripheral edge of said upper shoe body being interposed between the flange of the insole and the upper edge of said cushion covering element and being secured thereat; a cushion element; a lower reinforcing element disposed below said cushion element; said lower reinforcing element having a front portion and a rear portion which are spaced from each other; said cushion element being disposed below the insole and secured thereto; said cushion covering element being lapped downwardly about the outer edges of the cushion element and secured to said lower reinforcing element; and an outsole secured to the outer surfaces of said cushion covering element and said lower reinforcing element and being free of connection with said cushion element below the ball of the foot whereby the outsole lying below the ball of the foot may shift with respect to the cushion element as the shoe is flexed.

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