June 22, 1965 N. HANSJOSTEN 3,190,016

SHOES PROVIDED WITH INTERMEDIATE SOLES

Filed April 8, 1964

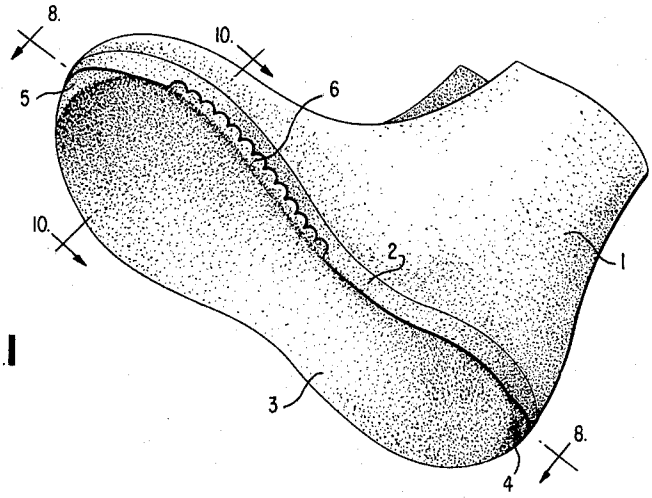
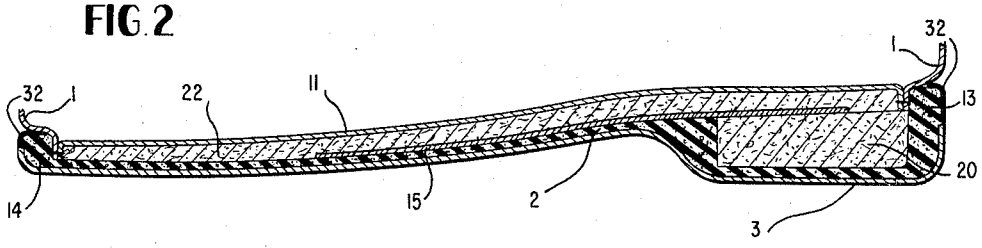


FIG.1

FIG.2



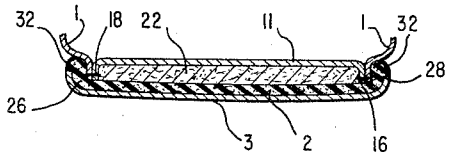


FIG.3

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United States Patent Office 3,190,016 Patented June 22, 1965

3,190,016

SHOES PROVIDED WITH INTERMEDIATE SOLES

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Filed Apr. 8, 1964, Ser. No. 358,186
Claims priority, application Germany, Jan. 9, 1956, R 19,195
7 Claims. (Cl. 36—2.5)

This invention relates to a new and improved shoe construction and, more particularly, to a new and improved shoe construction including an intermediate sole.

This application is a continuation-in-part application to the application of Nikolaus Hansjosten, Serial No. 631,762, filed December 31, 1956, now abandoned.

Shoes comprising an upper of a material such as woolen or cotton fabric joined to an intermediate sole and a wearing sole are well known in the art. The purpose of the intermediate sole with constructions of this type is to produce a cushioning effect between the wearing sole and the foot of a wearer, thus providing added comfort for the wearer.

Various means have been used for joining the upper, the intermediate sole, and the wearing sole; for example, stitching and vulcanization has been used. However, one of the disadvantages prevalent with these previously known shoe constructions is that the junction between the wearing sole and the intermediate sole is exposed to the weather and to mechanical forces which tend to destroy the bond between the layers and rapidly deteriorate the edges of the intermediate sole. Not only are the edges of the intermediate sole subject to direct mechanical abrasion and ultimate deterioration with a resultant tendency for the wearing sole to separate from the intermediate sole, but such construction is also unsightly in appearance.

In order to make shoes of this type more attractive to the wearer, manufacturers have been producing rounded sole edges of various configurations. Such configurations are especially prevalent in women's shoe constructions.

One example of rounded sole edge shoe construction is the turn-shoe or pump construction. In this shoe, a very light upper fabric is arranged wrong-side out and is sewn at the edges to a sole which is also placed wrong-side out. The shoe is then turned inside out to obtain a particularly desirable form of shoe construction with a rounded sole edge.

One method for overcoming the disadvantages of intermediate sole exposure includes the bonding of a strip of wearing sole material around the peripheral edges of the intermediate sole. This construction not only adds additional cost to the item, but also results in a rather bulky and unsightly sole edge definitely unsuitable for women's shoes.

It is an object of the present invention to provide a novel shoe construction which is pleasing in appearance, comfortable to the wearer, and is both relatively simple in construction and economical to manufacture.

It is another object of the present invention to provide a shoe including an upper, an intermediate sole and a wearing sole in which the intermediate sole provides a cushioning effect to the shoe, the intermediate sole being built up for additional cushioning at the points normally subjected to mechanical forces.

It is another object of the present invention to provide a shoe construction including a one piece wearing sole of substantially uniform thickness providing increased flexibility to the shoe.

It is another object of the present invention to provide a shoe construction wherein a one piece wearing sole of substantially uniform thickness extends upwardly at the heel and toe, such points being subject to increased wear in the normal usage of the shoe.

It is another object of this invention to provide a shoe

construction including an intermediate sole with a reinforced or smooth peripheral edge surface.

It is another object of the present invention to provide a novel shoe construction wherein the intermediate sole is protected from mechanical abrasions resulting from normal usage of the shoe.

It is another object of this invention to provide a shoe construction so formed that the wearing sole protects the edges of intermediate sole which would otherwise be exposed to mechanical abrasion and ultimate deterioration.

It is another object of the present invention to provide a shoe construction including a wearing sole of substantially uniform thickness turned up and into the marginal edge of the intermediate sole to provide mechanical protection for the intermediate sole against mechanical abrasion and deterioration.

Another object of this invention is to provide a novel shoe wherein an upturned wearing sole is designed in a manner by which wrinkling, folding or thickening of the upturned periphery of said wearing sole is prevented.

It is another object of this invention to provide a shoe construction including a shank for providing added stability and rigidity to the shoe structure.

Still another object of the present invention is to provide a shoe structure including an insole which is sewn to the upper of the shoe.

Other objects and advantages of this invention will be apparent by reference to the following description in view of the accompanying drawings and the appended claims in which the various novel features of the invention are more particularly set forth.

In the drawings:

FIGURE 1 is a perspective view of this shoe constructed in accordance with the novel features set forth in this invention.

FIGURE 2 is a sectional view of the novel shoe construction of this invention taken along line 8—8 of FIGURE 1.

FIGURE 3 is a sectional view of a shoe constructed in accordance with the novel features of this invention taken along line 10—10 of FIGURE 1.

Briefly the present invention contemplates a novel shoe construction comprising an upper and an insole sewn to the upper, an intermediate sole secured to the upper and a wearing sole secured to the underside of the intermediate sole. The wearing sole constitutes a sheet of material, such as compact plastic or rubber, of substantially uniform thickness, while the intermediate sole is of a soft cushion material such as sponge plastic, or sponge rubber. The margins of the wearing sole are turned upward into the region of the intermediate sole along the entire peripheral edge or a part of the peripheral edge thereof for the purpose of imparting mechanical protection to the intermediate sole margin. The upturned margins of the wearing sole are secured to the peripheral edge of the intermediate sole by a welding, hardening or vulcanization process which operates to cure the exposed face of the intermediate sole edge to produce a reinforced or smooth outer surface. This reinforced or smooth outer surface of the intermediate sole passes directly into the underside of the wearing sole without producing an exposed uneven joint at the line of jointure.

The process by which this new and improved shoe construction is achieved includes the use of a mold consisting of a base plate and a frame plate, the edges of which meet the base plate with a rounded off form. A wearing sole is stamped from a sheet of uniform thickness and is widened beyond the normally desired wearing surface area over the whole or part of the periphery thereof. As plastic deformation takes place during the working and vulcanizing operations to which the wearing and inter-

mediate soles are subjected, this margin is laid over into the side surfaces of an intermediate sole so that the regions of the intermediate sole normally subjected to mechanical abrasion, are protected.

Referring to FIGURE 1, the novel shoe construction presented in this invention includes an upper 1 of any suitable material such as cotton or wool fabric, or the like, an intermediate sole 2 possessing characteristics of resiliency such as sponge rubber, plastic, or the like, and a wearing or outer sole 3 of compact rubber or similar material possessing strong wearing characteristics and relative rigidity as compared to the intermediate sole 2. The wearing sole 3 has a margin extending upwardly to the wear points at the heel, as shown at 4, and at the toe, as shown at 5. The lateral or marginal edge of the wearing sole 3 is provided with a pointed or arcuate pattern 6, the peaks of which terminate approximately at the midpoint of the edge of the intermediate sole 2. This extension of the marginal edge of the wearing sole materially strengthens the intermediate sole at the points customarily subjected to mechanical wear and abrasion when the shoe is worn.

As shown at FIGURE 2, filler pads 20 and 22 of compressed fiber material or the like secured in the inside of the intermediate sole provide additional padding to the shoe.

Also, as shown in FIGURE 2, a shank stiffener 15 may be provided in order to impart stability and relative rigidity of shape to the shoe structure.

The upper 1, the intermediate sole 2, the outer sole 3 and the filler pads 20 and 22 are secured together by a vulcanization process. As a result of this vulcanization process the exposed face of the intermediate sole 2 is cured producing a reinforcing or smooth outer surface 32. This reinforcing or smooth outer surface 32 of the intermediate sole 2 conforms with the curvature of the wearing sole 3 without producing an exposed uneven joint at the line of jointure.

The intermediate sole 2 is built up and reinforced around the periphery as seen at points 13 and 14 in FIGURE 2 and at 26 and 28 in FIGURE 3, providing not only a cushion effect to soften the blow of the mechanical forces encountered at the toe, heel and edges of the shoe in normal usage, but also to provide greater thickness for the anchoring of the wearing sole 3 and the upper. The outer periphery of the insole 11 overlaps the upper 1 and is secured thereto by stitching. The buildup of material caused by the overlapping of the upper by the insole is placed adjacent to the built up peripheral portion of the intermediate sole, as is shown at 16 and 18 in FIGURE 3.

Referring to FIGURE 3 the wearing sole 3 is flexed upward and into the intermediate sole 2 strengthening the intermediate sole at the points subjected to mechanical wear.

In developing this new and improved shoe construction it was found that when the marginal edge of a wearing sole is turned upward and the upturned portions extend to any substantial height, wrinkling or thickening of the upturned periphery results. This distortion is the greatest at the extreme outer peripheral edge of the upturned portions.

In order to overcome this phenomenon, the peripheral portion of the wearing sole is formed in a series of points or arcs 6 as shown in FIGURE 1 to accommodate the final shape. In the case of the toe portion 5 and the heel portion 4 where the upturned edges of the wearing sole extend the farthest into the intermediate sole 2, the arc or point contour is commenced so as to give the entire upturned segment of the periphery an arcuate or pointed shape. Incidental to the formidable mechanical structural advantages of this invention is the fact that this novel and improved shoe construction also presents a pleasing appearance.

It is apparent, therefore, that as set forth in this invention there is now provided a novel and improved shoe construction in which means are provided for adequately protecting the intermediate sole of a shoe from mechanical forces that is pleasing in appearance, comfortable to the wearer, and economical to manufacture, a unique combination of features long sought in the shoe industry.

The description above showing one embodiment of the invention is for the purpose of explaining the principles thereof and is not to be construed as restricting or limiting the invention. For example, a soft rubber or plastic material could be used for the intermediate sole of the shoe, the shoe could be manufactured by a press method, or a plastic material could be injected into the structure to form the intermediate sole and other changes in the details of this invention may be readily made without departing from the spirit of the invention and the scope of the claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. A shoe comprising an upper, a flexible intermediate sole secured to said upper, said intermediate sole having an underside portion and being defined at its entire outer periphery by a marginal built up and reinforced portion, a wearing sole of sheet material of substantially uniform thickness secured to the underside of said intermediate sole, the margins of said wearing sole being flexed upward and anchored into the marginal portion of the intermediate sole so that the outer edge surface of said marginal reinforced portion of the intermediate sole conforms with the curvature of the wearing sole, the margin of said wearing sole further being formed with front and rear laterally extending portions turned upward and into said intermediate sole.

2. A shoe comprising an upper and an insole sewn to the upper, a flexible intermediate sole secured to said upper, said intermediate sole having an underside portion and being defined at its entire outer periphery by a marginal built up portion, a wearing sole of sheet material of substantially uniform thickness secured to the underside of said intermediate sole, the margins of said wearing sole being flexed upward and anchored into the marginal portion of the intermediate sole so that the outer edge surface of said marginal built up portion of the intermediate sole conforms with the curvature of the wearing sole, the margin of said wearing sole further being formed with front and rear laterally extending portions turned upward and into said intermediate sole.

3. A shoe having a heel and toe portion and comprising an upper, a flexible intermediate sole secured to said upper, said intermediate sole being defined at its entire outer periphery by a marginal built up and reinforced portion, filler pad means secured in the inside of said intermediate sole, a wearing sole of sheet material of substantially uniform thickness secured to the underside of said intermediate sole, the margins of said wearing sole being turned upwardly and into the peripheral edge surface of said reinforced portion of the intermediate sole to provide mechanical protection for the intermediate sole without subjecting the wearing sole to wrinkling or thickening, said wearing sole being so anchored to said reinforced portion of said intermediate sole that the outer edge surface of the intermediate sole conforms with the curvature of the wearing sole, said marginal portions of said intermediate sole extending between the wearing sole and the filler pad and uniting the wearing sole on its outer periphery with the upper.

4. A shoe as set forth in claim 3 wherein the margins of said wearing sole turned upward and into the peripheral edge surface of said reinforced intermediate sole to provide mechanical protection for the intermediate sole without subjecting the wearing sole to wrinkling or thickening includes arcuately shaped edges.

5. A shoe as set forth in claim 3, wherein said upper, said flexible intermediate sole, said filler pad means, and said wearing sole are respectively vulcanized.

6. A shoe according to claim 3 wherein the upwardly extending peripheral edge of the wearing sole in the region of the intermediate sole is substantially pointed.

7. A shoe having a heel and toe portion and comprising an upper and an insole sewn to said upper, a flexible intermediate sole secured to said upper, said intermediate sole being defined at its entire outer periphery by a marginal built up and reinforced portion, filler pad means secured in the inside of said intermediate sole, a wearing sole of sheet material of substantially uniform thickness secured to the underside of said intermediate sole, the margins of said wearing sole turned upwardly and into the peripheral edge surface of said reinforced intermediate sole to provide mechanical protection for the intermediate sole without subjecting the wearing sole to wrinkling or thickening, said wearing sole being so anchored to said reinforced margin of said intermediate sole that the outer edge surface of the intermediate sole conforms with the curvature of the wearing sole, said marginal portions of said intermediate sole extending between the wearing sole and the filler pad and uniting the wearing sole on its outer periphery with the upper,

and a shank member providing stability and relative rigidity of shape to the shoe structure positioned between said intermediate sole and said insole.

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