Aug. 6, 1940. A. L. EICH 2,210,332

SHOE CONSTRUCTION

Filed Feb. 3, 1939

Fig. 1.

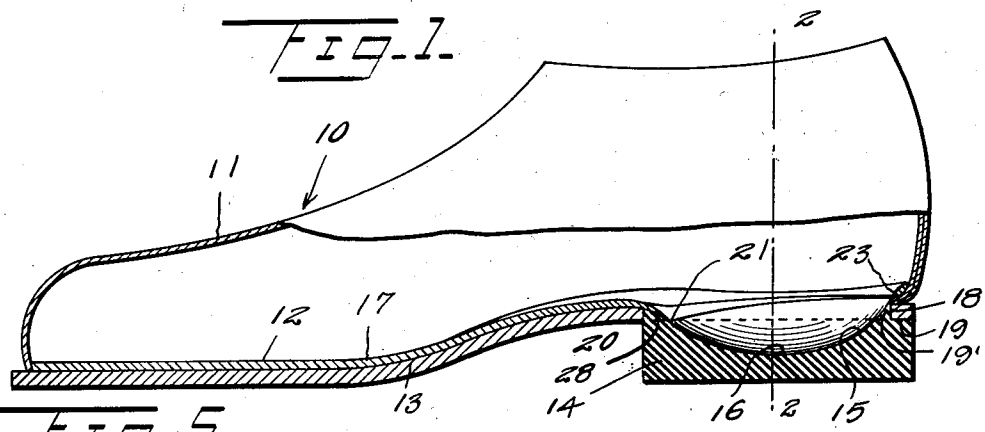
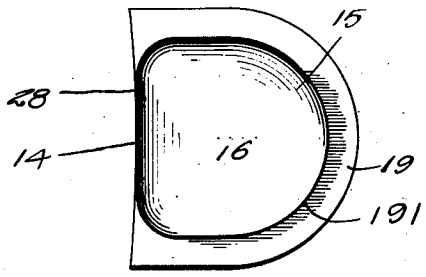


Fig. 5.



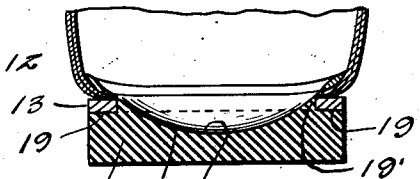
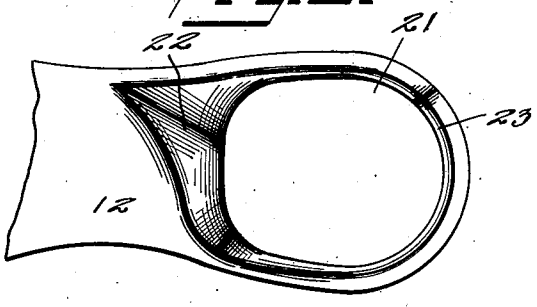


Fig. 2.

Fig. 3.



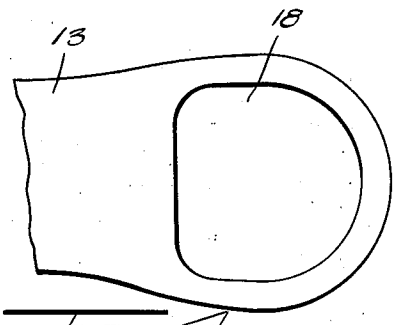
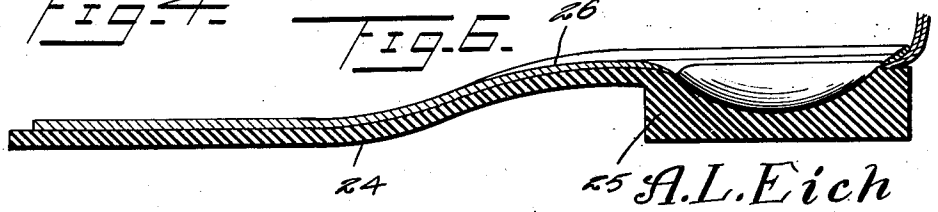


Fig. 4.

Fig. 6.



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SHOE CONSTRUCTION

August L. Eich, Chicago, Ill.

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2 Claims. (Cl. 36—8.5)

The present invention relates to footwear and more particularly to an improvement in the construction of shoes.

The primary object of the invention is to provide a shoe construction having a substantially level foot platform that imitates the natural ground platform when standing or walking in free nature barefoot. As is well known, the imprint of a bare foot in natural ground reveals the fact that the heel being narrower than the ball of the foot sinks deeper into the natural earth surface cupping the ground, and that the arch of the foot is supported by that surface in front of the cupped surface made by the imprint of the heel. This is the true natural gravitational platform balance for the foot since it also conforms to the anatomical structure of the foot when bearing the weight of the body.

Another object of the invention is to substantially imitate in a shoe construction the soft natural earth which prevents shocks and jars that would be transmitted to the heel and the entire supporting structure when walking and to also provide a direct contact for the heel with a soft rubber support.

A still further object of the invention is to provide a cupped platform for the heel, the purpose of which is to change the angle between the heel and ankle joint and supporting shafts tibea and fibula shin bones above. This angle change produces a shorter fulcrum at the heel which in turn produces a greater pull on the large tendon achillis attached to the posterior border at the heel bone for a more erect posture and for a level pelvic gravitational platform balance. There is also provided a gravitational foot balance that is assured with this shorter fulcrum as it places a greater holding effort on the plantar fascia ligaments that are attached to the anterior portion of the heel bone, from there to the tarsal and metatarsal bones on the bottom of the foot preserving the arch-like position of the bones. There is also produced a drawing effect away from the toes instead of pressure into the toes as in the conventional shoe, the weight being evenly distributed on the ball and heel of the foot thus placing no greater strain on ligaments on either side of the ankle.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawing which forms a part of the application.

In the drawing:

Figure 1 is a transverse sectional view illustrating a shoe constructed in accordance with the present invention.

Figure 2 is a vertical sectional view taken substantially on line 2—2 of Figure 1.

Figure 3 is a top plan view of the inner sole forming a part of the shoe construction.

Figure 4 is a top plan view of the outer sole forming a part of the present invention.

Figure 5 is a top plan view of a form of heel employed, and

Figure 6 is a transverse sectional view of a modified form of the invention.

Referring to the drawing for a more detailed description thereof wherein like parts are designated by like reference characters in the several views, the shoe construction indicated generally by the reference numeral 10 comprises an upper portion 11, the inner sole 12, outer sole 13 and heel 14 which are conventional parts of a shoe. The inner and outer soles 12 and 13, respectively, may be formed of leather, rubber or other similar materials without departing from the spirit of the invention. The inner and outer soles may be attached to the upper by any desired means such as cementing, stitching or the like.

The heel 14 is formed with a cupped or depressed portion 15 and the lowest point of the depressed portion indicated by the numeral 16 is disposed in a plane substantially level with the surface of the ball of the foot 17 whereby the bearing of the heel of the foot will be level with the bearing of the ball of the foot thus providing a level platform that imitates the natural ground platform when standing or walking in free nature barefoot. It will be noted that the depressed portion 15 forms a complete cupping for the heel of the foot, that is side to side and front and back to imitate the natural platform. The complete cupping further gives protection to the ligaments on the side of the ankle thus resulting in a firmer footing for the wearer.

In the formation of the heel 14, there is provided marginal flanges 19 on two sides and the back thereof for forming a supporting surface whereby the outer sole 13 can be attached directly thereto. Referring more particularly to Figures 1 and 2 of the drawing, it will be noted that a projection 19′ is formed about the depressed portion 16 which in conjunction with the marginal flanges 19 serves to securely hold the outer sole 13 and heel 14 in unitary relation. The front portion 28 of the heel 14 which is adjacent the arch of the shoe, is suitably tapered to form a properly sloping arch. In other words, the projection 19′ is absent from the front part of

the heel and is substituted by the gradual tapering thereof as more clearly shown in Figure 1 of the drawing.

The outer sole has the heel portion thereof formed with an opening 18 for attachment with the heel 14 and in assembling the same, the heel is slipped over the outer sole from the front portion 28 and the marginal flanges 19 and projection 19' securely unite the sole and heel and at the same time provide a more resilient cushion. The portion 20 of the outer sole which contacts the front end 28 of the heel 14 is tapered to conform with the tapered portion of said heel and the general depressed or cupped formation thereof.

The inner sole is likewise formed with a cut out portion 21 which in conjunction with the outer sole and cupped heel produces the required gravitational balance of the foot. The portion of the inner sole indicated at 22 in Figure 3 of the drawing is tapered and the marginal edges 23 of the cut out portion 21 are disposed about the depressed portion 15 of the heel 14 which construction provides a smooth finished cupping for the heel yet permitting the heel to come in direct contact with the rubber heel and thereby obtain full benefit of the resiliency thereof.

The tapering of the inner and outer soles 12 and 13, respectively, produces the same arch support in front of the heel as is obtained when standing barefoot on the ground since the inner and outer soles are slightly tapered in front of the heel. As is well known the inner and outer longitudinal arches require this support.

In Figure 6 of the drawing there is shown a modified form of the invention in which the outer sole 24 and cupped heel 25 are molded or otherwise fabricated from rubber or similar material. The inner sole 26 is tapered in the manner described in the preferred form to provide a smooth cupped formation for the shoe.

From the above description it will be readily apparent that there is provided a shoe embodying a foot platform that imitates the platform of natural ground when standing or walking in free nature barefoot. The arch of the foot is supported by the described surface in front of the cupping made by the heel and the heel is on a level plane with the ball of the foot as nature intended.

It is to be understood that the present invention contemplates the rebuilding of old shoes by replacing the original sole and heel with the improved sole and heel herein illustrated and described. In the building of a new shoe it will be necessary, of course, to provide proper lasts for the same.

Also it will be understood, of course, by those skilled in the art that variations in the hereinabove described device involving the substitution of substantial equivalents for the devices described are intended to be comprehended within the spirit of the present invention and that the invention is capable of extended application and is not confined to the exact showing of the drawing nor to the precise construction described and, therefore, such changes and modifications may be made therein as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

What is claimed is:

1. In a shoe construction, a shoe having a heel formed with a central depression in the upper surface thereof, said heel being provided with marginal flanges about said depression, an extending projection formed on three sides of said depression, an outer sole having a cut out portion surrounding said central depression and in engagement with said marginal flanges and adapted to be retained by said extended portions, and an inner sole having a tapered cut out portion adjacent the edges of said central depression, whereby a bearing surface for the heel is disposed substantially level with the bearing surface for the ball of the foot.

2. In a shoe construction, a shoe having a heel formed with a central depression in the upper surface thereof, an outer sole adapted to be attached to said heel, means on said heel surrounding said central depression for receiving said outer sole for attachment, and an inner sole having a tapered cut out portion adjacent the edges of said central depression, whereby a bearing surface for the heel is disposed substantially level with the bearing surface for the ball of the foot.

AUGUST L. EICH.