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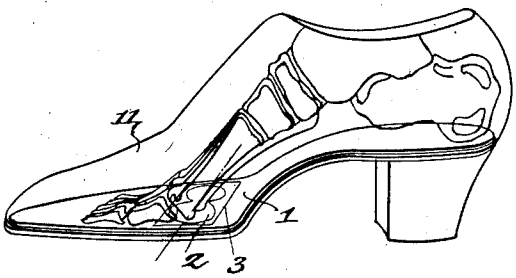
P. J. WENTWORTH

SHOE SOLE

Filed Sept. 16, 1925

Fig. 1.



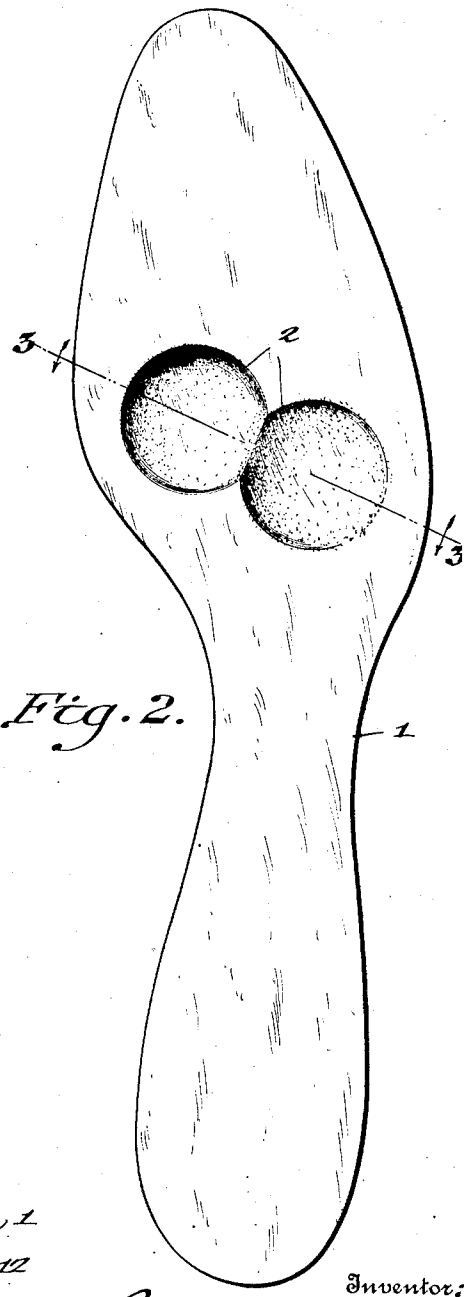
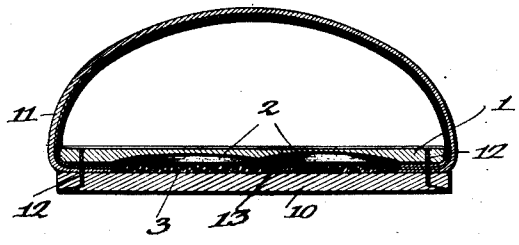


Fig. 2.

Fig. 3.



Inventor:
Pearl J. Wentworth

By Wood & Wood

Attorneys

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UNITED STATES PATENT OFFICE.

PEARL J. WENTWORTH, OF FORT THOMAS, KENTUCKY.

SHOE SOLE.

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This invention relates to the structure of a sole or insole to provide a portion thereof particularly at the ball portion of the foot in the region of the joint of the great toe depressible under the sustaining weight or pressure of the foot upon the inside surface of the sole, shaping the inside surface to conform to the foot and socket such portions of the foot to the relief of the foot of unnatural pressures and cramping.

This provides for a natural fitting of the inside or insole surface corresponding to the undersurface or palm of the foot, and preferably to such portion along a line and angle crosswise at the region of the first metatarsal and phalange of the great toe. The foot is suitably supported and anchored within the shoe to prevent undue motion of the foot within the shoe causing friction resulting in injury to the foot, and overcomes the tendency of the wearer to unnaturally tilt the foot and shoe when walking, so that there is no deformation of foot or "running over" of the sole of the shoe.

It is therefore an object of the invention to provide a shoe sole or insole having a portion or portions readily depressible by the foot to condition one side of the sole or insole to meet the requirements for the particular shape of undersurface or palm of the foot and without resulting in any change or effect to the outer surface of the sole and a sole or insole structure requiring no change in its normal outline dimensions for a definite last or shoe size over the ordinary standards, nor any changes to or in the process of shoe manufacture nor to any particular type as welt, McKay or turn.

The invention is easily adaptable in the manufacture of shoes employing an insole as a part of the sole organization, and in such capacity the insole at definite places or portions at its underside is skived out or recessed with the cavity or cavities suitably covered or protected so as not to be filled when the insole is applied in the shoe. This renders such portion of the insole depressible from the upper or face side.

Other objects and certain advantages will be more fully set forth in the description of the accompanying drawings forming a part of this specification, and in the drawings:

Figure 1 is a phantom view showing the approximate relations of the bones of the foot to the heel and ball supporting portions of the shoe, and insole.

Figure 2 is a bottom view of a left hand insole, showing one form of depression.

Figure 3 is a section of the shoe, having the insole incorporated as a part thereof, the section being taken through the ball portion of the shoe and insole, as indicated on line 3—3, of Fig. 2.

The invention is shown as incorporated with an insole of a McKay type of shoe as one of the modes of application, it being recognized that the same will follow for welt, turn and other type of shoe manufacture, or as an insert insole to any finished shoe; in the latter instance the insole may be regarded as not a permanent part of a shoe organization but of itself as an article of commerce. Its latitude is varied, not to be confined to the particular make or type of shoe disclosed, and which is selected merely for the purpose of exemplification, and therefore referring to the drawings 1 indicate an insole formed from any suitable material, preferably of a single thickness of leather for the most simple form of insole. In the region of the ball portion of the insole and at its underside, the same is skived out or recessed in any suitable manner to provide a depression 2, and this depression may be formed at any point along, or in the region of the ball support portion of the sole. As herein shown, two intersecting depressions are formed extending at an angle to the long axis of the sole, adapted to pocket and support the opposite rear bones of the toe joints.

This construction when incorporated in a shoe, is adapted to allow the foot to sink downwardly and to anchor the same at the ball portion and thus provide means whereby the direction of tilt of the foot at the ball portion may be changed to suit the tendencies of the wearer, or in other words, to cause a more natural rest for the foot. Thus, the depression may be placed on one side or the other, according to the tendency of the wearer to tilt the foot in the wrong direction.

The insole is preferably made an integral part of the shoe as shown in Fig. 3, and in this instance the depression is faced downwardly, and oppositely related to the inner side of the outsole. In order to prevent filling of the depression when the filling material is inserted between the outer and inner soles, a strip of material 3 is applied across the depression. The shoe is then sewed in

the usual manner which is represented conventionally at 12.

The invention may be applied to any form of shoe, and Fig. 3 represents a cross section of a shoe which includes an outsole 10, upper 11, and my improved insole 1. The insole, outsole and upper are stitched as shown conventionally at 12, and the usual filling material 13 is shown interposed between the insole and outsole, leaving a hollow space beneath the ball portion of the shoe, which is depressible, and resilient, and which extends at an angle thereacross, corresponding to the line of rear toe joints.

An unusual advantage gained by the use of my improved insole is, that the same may be incorporated in a shoe without changing the inside measurements of the shoe.

Another advantage is that the insole may be applied to an old shoe for changing the tilt, as a corrective measure.

Another advantage is that the foot virtually has a three-point support within the shoe, the forward supports being initially yieldable, thus permitting the bones at the ball portion to sink downwardly at an appropriate place, to obtain automatic adjustment.

Another advantage is that the wear of the shoe takes place at the thickest part of the sole and under the ball of the foot, as it should.

The insole 1 and outer sole 10 in a shoe are combined as a sole unit, hollow or interiorly cellular at definite portions thereof so as to be easily depressible for one or the inner side, so that for turned shoes or such type as do not employ a definite insole the upper or inside face of the outer sole may be skived with a covering layer applied thereover as representing a component of the sole for the purpose of the same cellular or hollow. The concept of the invention is to provide a sole which is depressible under the weight or pressure of the foot from the inner side, at definite portions and in which there is no protruding effect to the outer surface of the sole.

Having described my invention, I claim:

1. A shoe including an outsole and insole, said insole having a depression disposed in the region of the ball supporting portion facing the outsole, a section of flexible material covering and tautly bridging said depression, and filling material interposed between said outsole, insole and bridging depression, whereby when the ball portion of the foot rests upon the insole at a point overlying the depressions, the insole will yield downwardly in compensatory fashion.

2. A shoe including an outsole and an insole, said insole having a depression disposed in the region of the ball supporting portion and angularly arranged in correspondence to that of the rear toe joint line, a section of flexible material covering and tautly bridging said depression, and filling material interposed between said insole, outsole and bridging material and underlying said depression.

3. A shoe including an insole having a depression in the lower side and at the ball portion thereof, a section of flexible material cemented to said insole over said depression and tautly bridging the same, and filling material lying beneath and against said bridging material, said bridging material acting to prevent entry of the filling material into said depression, whereby a cushion is formed to receive the joints at the ball portion of the foot and yieldably support the same for compensatory movement to prevent or correct unnatural tilting of the shoe when walking.

4. A shoe including an outsole, and an insole, said insole having at its underside a depression disposed crosswise of the rear toe joint supporting area, said depression being opposingly related to the inner side of the outsole, a section of flexible material tautly covering and bridging said depression, and filling material between said insole and outsole beneath and against said flexible material.

In witness whereof, I hereunto subscribe my name.

PEARL J. WENTWORTH.