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J. D. PRICE ET AL

SHOE CONSTRUCTION

Filed Oct. 31, 1922

Fig. 1.

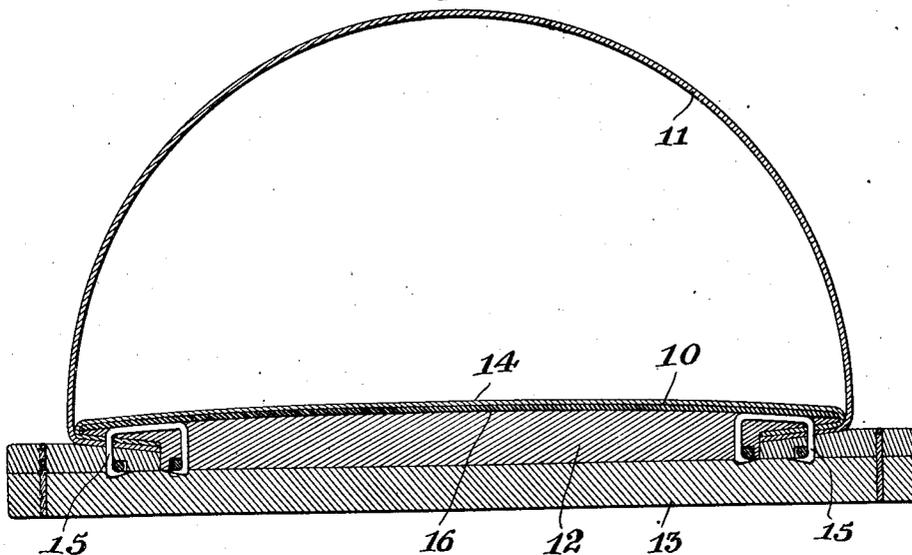


Fig. 4.

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Fig. 5.

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Fig. 6.

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Fig. 3.

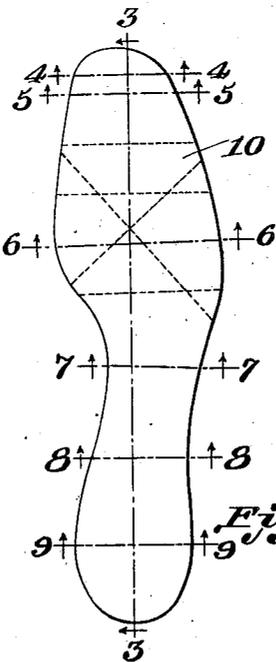


Fig. 2.

Fig. 7.

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Fig. 8.

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Fig. 9.

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UNITED STATES PATENT OFFICE.

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SHOE CONSTRUCTION.

Application filed October 31, 1922. Serial No. 598,132.

To all whom it may concern:

Be it known that we, JOHN D. PRICE and WALTER H. DRAKE, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Shoe Constructions, of which the following is a specification.

This invention relates to shoe constructions and has for an object to provide a shoe constructed of such material and combined in such manner as to constantly and at all times provide an interior sole construction, presenting a convex surface to the ball of the foot and concaved surfaces to other parts of the foot.

It is well known and has been repeatedly demonstrated that the natural requirement of the foot for the proper support of its anatomical structure is that of an upwardly curved member so that the foot itself, when so positioned, shall be concaved upon its tread surface. Attempts have been made to accomplish this in shoe construction but, by reason of the material employed and the manner of construction, such convexity of sole surface, although originally provided, is not maintained owing to the exigencies of wear.

The present invention is, therefore, directed in part to the employment of a member or unit entering into the sole which has an initial curvature and formation corresponding to the anatomical requirements of the foot, which said curvature by reason of the material will be maintained throughout the life of the shoe. As at present apparent, this member will be composed of metal of some kind, also as it at present seems this metal will preferably be tempered steel, and the invention further embodies means for employing this spring member to maintain it out of contact with the foot and the ground and to yet maintain all parts in the desired shape and provide that desired springiness of action requisite to easy walking.

Irrespective of materials or manner of making, the present invention is directed to a shoe which has upon its inner sole surface a convexity which it maintains throughout the life of the shoe.

With these and other objects in view, the invention comprises certain novel parts, elements, units, combinations, constructions and arrangements as disclosed in the draw-

ings together with mechanical and material equivalents thereof as will be hereinafter more fully described and claimed.

In the drawings:

Figure 1 is a view in transverse section of a shoe embodying the present invention.

Figure 2 is a top plan view of the spring or resilient member removed.

Figure 3 is a longitudinal section view through the spring member taken on line 3—3 of Figure 2.

Figure 4 is a transverse sectional view across the spring member taken on line 4—4 of Figure 2.

Figures 5, 6, 7, 8 and 9 are likewise transverse sectional views taken on lines indicated.

Like characters of reference indicate corresponding parts throughout the several views.

In a co-pending application Serial No. 598,131 filed on even date herewith, a means for attaching the upper to a construction which will include a metal plate is disclosed. In that application as well as in the present application, the term metal plate is employed to indicate any plate of sheet metal or the like which will embody and provide the requisite or desired features of springiness, elasticity, resiliency, and be water-proof, or such, all or several as circumstances may make desirable, and the term metal plate is to be understood as in no way limiting the invention to such material, as other materials, such for instance as vulcanites or the like, may at sometime be found acceptable or even preferable in the construction of the shoe and the present invention includes any and all such material.

The desideratum of the invention is that this plate 10 shall be so constructed, shaped and contoured as to present to the ball of the foot or the walking part a convex surface, as indicated by the bowed line in Figure 1 which is taken across the ball of the foot or substantially corresponding to line 6—6 of Figure 2. It will be noted that a foot positioned in a shoe of such contour comprising the upper 11, insole 12 and outer sole 13 will bear upon a convexed surface which is there represented by a liner 14 covering over the metal plate 10, and with the edges of such liner folded over and about the edges of the metal plate and under the edges of the insole 12 and secured by staples 15. The

present invention is not in any way limited to this fastening means, either including the staples 15 or even the exact manner of turning the edges of the liner and the edges of the upper under the insole for securing thereto. Such invention as may be involved in this feature is included in said co-pending application.

The metal plate 10, as will be noted, at the principal walking position, as for instance represented by the line 6—6 in Figure 6, is an upwardly curved or convexed surface, the ball of the foot resting directly upon its convexed surface. This convexity decreases toward the toe so that at the line 5—5 the sole is neither convexed nor concaved but is concaved at the line 4—4. Also at the line 7—7, as disclosed by Figure 7, this member is substantially plane, and the heel part of the plate is again concaved at the lines 8—8 and 9—9 as indicated by the figures corresponding thereto. It will also be noted that longitudinally the plate is concaved throughout the length including the foot from the arch to the toe. The metal plate 10 is, of course, stamped out or otherwise formed to correspond with these desired lines and contours and, when placed in the shoe with the liner covering over the surface adjacent the foot and properly attached to the sole, it maintains its shape during the life of the shoe. The formation of the insole by skiving the edges to form the center thicker as indicated at 16 in Figure 1 will be obvious to one skilled in the art as it is naturally desirable that the sole 13 present a surface which will correspond to the usual surface being walked upon, or in other words a surface made up of transverse straight lines.

It is again emphasized that, while the means for employing this spring member in association with other parts as disclosed in the drawings is found a desirable means and one which it is thought will be employed, the present invention is in no way limited thereto and includes the employment of a spring or resilient plate contoured to the desired shape for a tread surface and included in a shoe organization in any manner.

What we claim is:

1. An inner sole construction for shoes, embodying a plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely at the locus of the ball of the foot, an insulating covering member for the plate, and means to attach the insulating cover to maintain the plate in position.

2. An inner sole construction for shoes, embodying a plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely at the locus of the ball of the foot, a fabric covering for the plate having its marginal edges turned un-

der the plate, and means engaging the marginal edges for maintaining the plate in position.

3. An inner sole for shoes, composed of imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot.

4. An inner sole construction for shoes, embodying an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot, an insulating cover for the plate, and means to attach the insulating cover to maintain the plate in position.

5. An inner sole construction for shoes, embodying an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot, a fabric covering for the plate having its marginal edges turned under the plate, and means engaging the marginal edges for maintaining the plate in position.

6. An inner sole for shoes, composed of an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot with a transversely concaved portion at the locus of the heel.

7. An inner sole construction for shoes, embodying an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot with a transversely concaved portion at the locus of the heel, an insulating covering member for the plate, and means to attach the insulating cover to maintain the plate in position.

8. An inner sole construction for shoes, embodying an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot with a transversely concaved portion at the locus of the heel, a fabric covering for the plate having its marginal edges turned under the plate, and means engaging the marginal edges for maintaining the plate in position.

9. An inner sole for shoes, composed of an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot with a transversely concaved portion at the locus of the heel connected by an upwardly bowed, arched portion.

10. An inner sole construction for shoes, composed of an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely en-

5 tirely across at the locus of the ball of the foot with a transversely concaved portion at the locus of the heel connected by a cylindrical segment upwardly bowed, arched portion, an insulating cover for the plate, and means to attach the insulating cover to maintain the plate in position. 15

10 11. An inner sole construction for shoes, embodying an imperforate plate of rigid material attenuated to resiliency and presenting a uniform convexity transversely entirely across at the locus of the ball of the foot with a transversely concaved portion at the locus of the heel connected by a cylindrical segment upwardly bowed, arched portion, a fabric covering for the plate having its marginal edges turned under the plate, and means engaging the marginal edges for maintaining the plate in position. 20

In testimony whereof we affix our signatures.

JOHN D. PRICE.
WALTER HENRY DRAKE.