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J. M. HISS

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SHANK STIFFENER FOR SHOES

Filed May 21, 1931

Fig. 1.

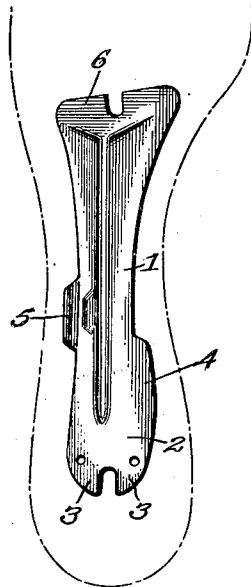


Fig. 2.

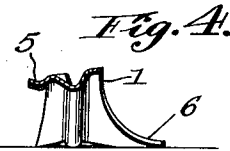
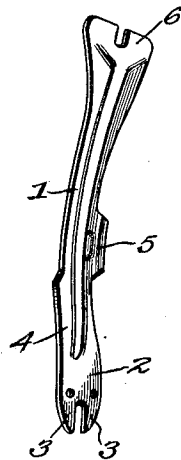


Fig. 4.

Fig. 3.

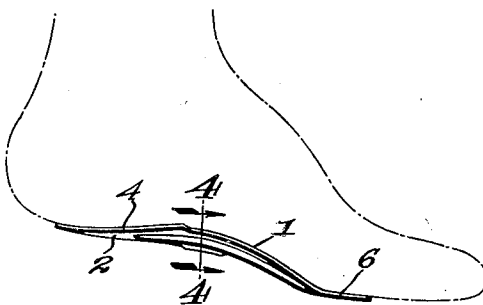
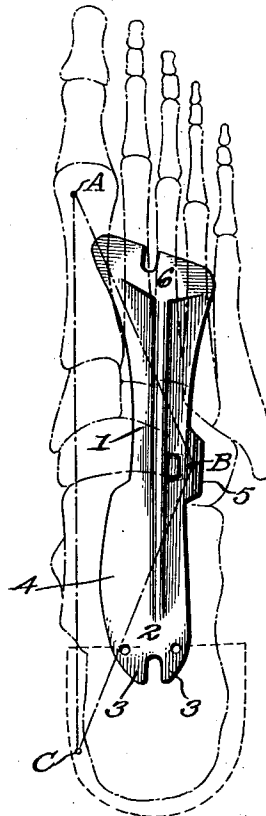


Fig. 5.



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SHANK STIFFENER FOR SHOES

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This invention relates to an improved metal shank piece or shank stiffener for shoes.

An object of the invention is to provide a metal shank piece for shoes as a rigid arch support to furnish a balanced, weight-bearing foundation for a proper distribution of the moving load in the act of walking.

Another object of the invention is to provide a metal shank piece for shoes of a comparatively narrow, rigid and arched, longitudinal body with plane extremities, one for the heel and the other for the ball of a shoe and lateral extensions or flanges at relative opposite sides of the body, one on the inner side in a region continuous forwardly with the heel extremity and the second at the outer side in a region in advance of the first and central of the length of the body to lie under the cuboid bone of the foot.

Another object of the invention is to provide a shank piece which will furnish a weight bearing support extending laterally toward the outer side of the foot and bridged to lie centrally between the heel and ball tread of the shoe.

Other features and advantages of the invention will be more fully set forth in the description of the accompanying drawings forming a part of this specification, in which:—

Figure 1 is a top plan view of the shank piece with the outline of a shoe sole in dotted line as therebeneath to show the relation of the shank piece with the inner and outer sides of the sole.

Figure 2 is a perspective view as viewed from the inner longitudinal edge and underside thereof.

Figure 3 is a side elevation of the shank piece in relation to a foot.

Figure 4 is a section on the line 4—4 of Figure 3 looking forward.

Figure 5 is a bottom plan view of the shank piece with a diagram of the foot bones in dotted lines and as viewed from the underside of the foot.

Referring to the drawings the shank piece represents a sheet metal stamping or plate of particular outline and configuration comprising a narrow longitudinal body 1, arched lon-

gitudinally and corrugated or ridged centrally, longitudinally for reinforcement and to give rigidity to the body to hold its curved or arched form under the weight of the wearer of the shoe. The flat heel portion 2 of the shank is preferably bifurcated at its rear end for use in shoes having wood heels to provide a clearance for a central screw employed in fastening the heel to the heel seat of a shoe upper. The prongs or branches 3, 3, each, are apertured to provide tack holes for attaching the shank to the heel or heel seat of the shoe.

The body of the shank immediately following or continuous with the heel portion and at the shoe inner side thereof is provided with a lateral lip or flange 4 elevating to the forward end thereof and giving the same slight convexity at the forward end. The lip aids to balance the heel of the foot, thereby preventing its rolling inward, and to guide the moving load toward the outer side of the foot in walking.

A lateral lip or flange 5 extends from the outer edge of the body, or side opposite from the lateral flange 4 and for a region forward thereof to present an area of the shank under the cuboid bone of the foot. The lip or flange is depressed slightly below the surface of the body, and aids to balance the shoe in support of the moving load as it passes to the outer side of the foot.

The forward or head end 6 of the shank is shaped to provide a plane extremity, widening or flaring outwardly from the body portion toward the front edge of the head, and more dominantly at the inside edge, giving a width greater, approximately than twice the width of the body, and reaches forward far enough in a shoe to overlies the rear ball portion of the outer sole of a shoe so as to have bearing with the outsole upon the ground. Its great width affords a wide surface of contact thereby making a stable forward tread and through this means a perfectly balanced shoe to support the moving load.

In the act of walking the heel strikes first, after which the moving load travels forward in the foot. As the load moves off the breast of the heel of the shoe, the shank guides the

moving load outward to the outer side of the foot by means of the elevated projection or flange extension 4, continuous with the heel. As the moving load travels further forward it is supported and perfectly balanced by the outer projection or flange extension 5 at the opposite side of the shank body from the flange 4, and which is in turn supported and maintained in proper position by the main or body portion of the shank. As the load continues forward the broad extremity or head 6 aids in distributing the load across all the heads of the metatarsal bones of the foot instead of only one or two, as is often the case. This latter feature tends to aid metatarsal trouble.

The shank piece is fitted in a shoe in the usual manner to lie between the in seams of the shoe.

Heretofore the common idea has been to consider the foot to rest on three points, the heel, the head of the fifth metatarsal and head of first metatarsal bones; the latter point being through the medium of the two sesamoid bones placed under the head of said first metatarsal bone. I have found this three point suspension or "tripod" weight-bearing to be erroneous.

What actually happens is that the foot bears its weight at the heel, the outer side of the foot and across the entire ball of the foot. This weight in reality, is a moving load in walking and in the act of walking the moving load travels through the foot in an orderly and regular manner. The balanced action of the foot can be diagrammed as a triangle as shown in dot and dash lines in Figure 5. Point A is at the weight-bearing point under the head of first metatarsal bone, point B, under the cuboid bone, and point C at the inner edge of the heel. I call this the "triangle of balance" and the purpose of my shank is to furnish balanced weight-bearing points, intermediate and in connection with the heel and ball tread of the shoe.

Having described my invention, I claim:—

1. A sheet metal shank piece for shoes, comprising a narrow and practically rigid longitudinal body, having plane extremities at its opposite longitudinal ends, respectively forming heel and ball tread portions, a lateral flange extending from the rear inner side of the body continuous forwardly of the heel extremity and a flange laterally extending from the outer side of the body near the middle of the shank piece.

2. A sheet metal shank piece for shoes, comprising a longitudinal, arched, body having plane extremities at its opposite longitudinal ends respectively forming heel and ball tread portions, with the ball tread portion widening from the inner side of the body and a lateral flange extending from the outer side of the body near the middle of the shank piece.

3. A sheet metal shank piece for shoes, comprising a longitudinal, arched, body having plane extremities at its opposite longitudinal ends respectively forming heel and ball tread portions, with the ball tread portion widening from the inner side of the body, a lateral flange extending from the outer side of the body near the middle of the shank piece and a lateral flange extending from the rear inner side of the body and continuous with the heel portion.

4. A sheet metal shank piece for shoes comprising a longitudinal arched body having plane extremities at its opposite longitudinal ends, respectively forming heel and ball tread portions and of greater width dimension than the body and a lateral flange extending from the outer side of the body, at an off-set elevation therefrom and near the middle of the shank piece.

In witness whereof, I hereunto subscribe my name.

JOHN MARTIN HISS.