April 12, 1932. A. R. BONFIELD 1,853,296

ARCH SUPPORT

Filed July 26, 1929

Fig. 4.

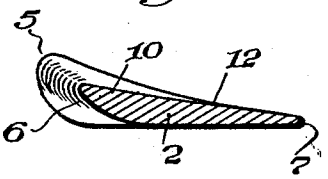


Fig. 1.

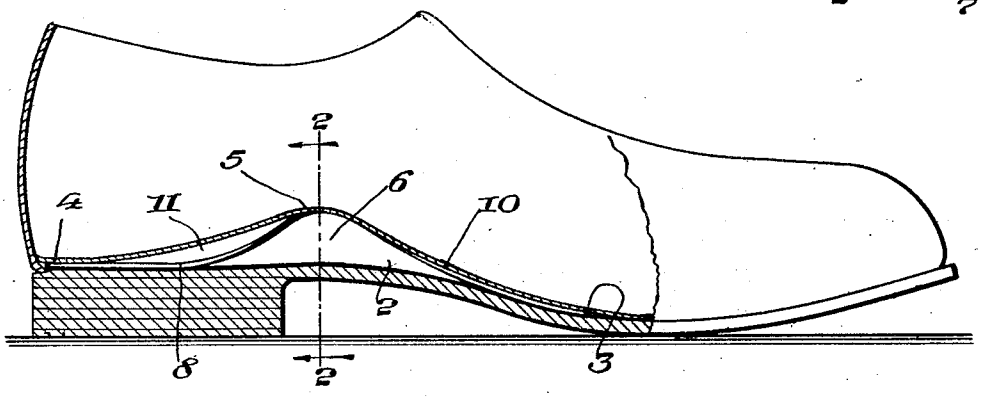


Fig. 3.

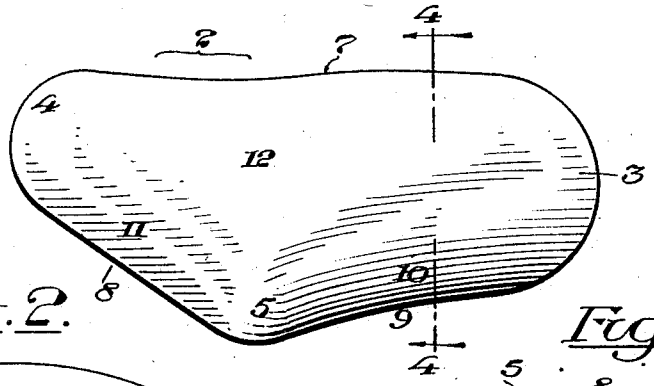


Fig. 2.

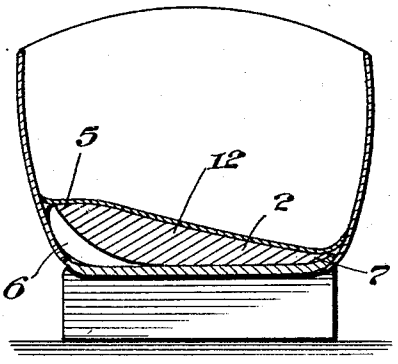
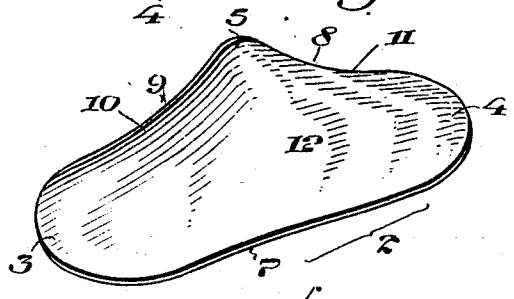


Fig. 5.



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UNITED STATES PATENT OFFICE

ALFRED R. BONFIELD, OF BROOKLYN, NEW YORK

ARCH SUPPORT

Application filed July 26, 1929. Serial No. 381,181.

This invention relates to arch supports for shoes, the object of the invention being to provide a simple, inexpensive, one-piece, light-weight, solid and non-resilient cast aluminum arch support so constructed as to be permanently incorporated in the shoe between the outer and inner soles thereof during the manufacture of the shoe.

Arch supports as usually constructed are resilient and consequently shift and frequently change their elevations, so that it is necessary to adjust and raise the arch, necessarily causing considerable inconvenience to the wearer, which operation also not infrequently results in the breakage or splitting of the metal of which the arch support is formed, thereby necessitating the purchase of a new pair of arch supports.

Moreover, arch supports as usually constructed are made up of a plurality of members fastened or riveted together and in use these parts not infrequently become loose and, furthermore, are expensive to manufacture. It is also common practice to provide arch supports adapted to be inserted into the shoe by the wearer, but such forms of arch supports are more or less uncomfortable, frequently shift, are not as effective as they should be, and cause more or less discomfort to the wearer while requiring frequent renewals.

Therefore, the object of the present improvement is to provide a properly-shaped and constructed aluminum arch support so constructed that it can be incorporated in the shoe during the manufacture of the shoe without materially adding to the weight of the shoe, which will permanently remain in position without any shifting thereof and which is made of one piece and is non-resilient, therefore requiring no adjustment to change the elevation at any time, and which will last as long as and, in fact, outlast the shoe, and will not materially add to the cost of the shoe.

In the drawings accompanying and forming a part of this specification—

Figure 1 is a longitudinal sectional view of a shoe with this improved arch support incorporated therein, this view illustrating a shoe for the left foot;

Fig. 2 is a cross-sectional view of a shoe taken on line 2—2, Fig. 1, illustrating this improved arch support;

Fig. 3 is a plan view of the arch support removed from the shoe;

Fig. 4 is a cross-sectional view taken on line 4—4, Fig. 3; and

Fig. 5 is a perspective view of this improved arch support.

Similar characters of reference indicate corresponding parts in the several views.

Before explaining in detail the present improvement and mode of operation thereof, I desire to have it understood that the invention is not limited to the details of construction and arrangement of parts which are illustrated in the accompanying drawings, since the invention is capable of other embodiments, and that the phraseology which I employ is for the purpose of description and not of limitation.

This improved arch support comprises a solid, one-piece, cast aluminum plate and is, therefore, without any resiliency, and has substantially the shape shown in Fig. 3, which illustrates an arch for the left foot and consists of a cast aluminum member or plate 2 having a relatively broad forward end 3, a relatively narrow rear or heel end 4, and therebetween a gradually thickened, elevated and convex surface 5 for supporting the arch of the foot, the under surface of this portion 5 being hollowed out or concaved, as at 6, for the purpose of permitting the proper shaping of the shoe. The opposed edge 7 of the arch member is slightly curved and this edge, together with the edges of the forward and heel parts 3 and 4, is relatively thin, the under face of the plate conforming to the shape of the outer sole of the shoe and comparatively flat.

The narrow heel portion 4 is connected with the convex portion 5 by a relatively sharp inclined edge 8, while the front portion 3 is connected with such elevated portion 5 by a slightly curved inclined edge 9 having, however, less inclination than the edge 8. The top surfaces adjacent to these edges 8 and

9, as at 10 and 11, are slightly curved, or hollowed out or concaved, thereby forming an easy rise to the convex portion 5; while the surface between the edge 7 and elevated portion 5, as at 12, has a very gradual upward convex formation, thus providing a comfortable arch effective to properly support the main arch of the foot.

This improved arch support is thus made solid in one piece without any connected members or rivets for incorporation in a shoe during the manufacture thereof between the outer and the inner soles for the purpose of supporting the main arch of the foot, and when so incorporated it is permanently located against shifting and by reason of its non-resilient construction no re-adjustment, due to wear or use, is required.

Thus it will be observed that this improved arch support, formed of cast aluminum, is made in one solid piece and is shaped to the form desired and is therefore without any pockets and is unsplit, the arch supporting portion being materially thicker than the edge 7, and may have a thickness corresponding to the elevation thereof. Hence the necessity of bowing the arch support and depending on the strength of such bowed material to prevent breakage is avoided, since when constructed in the manner described the cast aluminum plat is practically unbreakable in any normal use thereof.

It is to be understood that by describing in detail herein any particular form, structure or arrangement, it is not intended to limit the invention beyond the terms of the several claims or the requirements of the prior art.

Having thus explained the nature of my said invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I claim:

1. A one-piece, solid, non-resilient, lightweight arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a member having a relatively broad front portion and a relatively narrow heel portion having relatively thin edges and merging into a thickened convex elevated portion having a hollowed or concaved under portion.

2. A one-piece solid, non-resilient, lightweight arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a member having a relatively broad front portion and a relatively narrow heel portion having relatively thin edges and merging into the thickened convex elevated portion having a hollowed or concaved under portion, the inclination of the edge connecting the heel portion with the elevated portion being greater than the inclination of the edge connecting the front portion with the elevated portion.

3. A one-piece, solid, non-resilient, cast aluminum arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a plate having relatively thin longitudinal and front and rear edges gradually merging into a thickened, elevated convex top surface at one side conforming to the instep of the foot having an under concaved or hollowed portion.

4. A one-piece, solid, non-resilient, cast aluminum arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a plate having relatively thin longitudinal and front and rear edges gradually merging into a thickened, elevated convex top surface at one side conforming to the instep of the foot having an under concaved or hollowed portion, the opposite side of the plate from the elevated portion having inclined front and rear edges.

5. A one-piece, solid, non-resilient, cast aluminum arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a plate having relatively thin longitudinal and front and rear edges gradually merging into a thickened, elevated convex top surface at one side conforming to the instep of the foot having an under concaved or hollowed portion, the opposite side of the plate from the elevated portion having inclined front and rear edges, the inclined edge extending from the elevated portion to the rear being greater than the front inclined edge.

6. A one-piece, solid, non-resilient, cast aluminum arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a plate having a relatively thin, slightly curved, longitudinal edge and relatively thin front and rear curved edges, the front being broader than the rear, said plate having a gradually raised, convex, thickened, elevated portion at its opposite side merging into the front and rear portions by inclined edges, one of greater inclination than the other, and said plate having a hollowed or concaved portion under the elevated portion.

7. A one-piece, solid, non-resilient, cast aluminum arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a plate having a relatively thin, slightly curved, longitudinal edge and relatively thin front and rear curved edges, the front being broader than the rear, said plate having a gradually raised, convex, thickened, elevated portion at its opposite side merging into the front and rear por-

tions by inclined edges, one of greater inclination than the other, and said plate having a hollowed or concaved portion under the elevated portion and said plate having a relatively flat under surface.

8. A one-piece, solid, non-resilient, cast aluminum arch support permanently embedded between the inner and outer soles of a shoe and shaped to support the main arch of the foot and comprising a plate having a relatively thin, slightly curved, longitudinal edge and relatively thin front and rear curved edges, the front being broader than the rear, said plate having a gradually raised, convex, thickened, elevated portion at its opposite side merging into the front and rear portions by inclined edges, the rear inclined edge having greater inclination than the forward inclined edge, and said plate having a hollowed or concaved portion under the elevated portion and said plate having a relatively flat under surface.

Signed at Brooklyn, county of Kings and State of New York, this 24th day of July, 1929.

ALFRED R. BONFIELD.